CORVINUS UNIVERSITY OF BUDAPEST

THE IMPACT OF CHINA'S OUTWARD FOREIGN DIRECT INVESTMENT ON THE BILATERAL TRADE WITH BELT AND ROAD COUNTRIES

The Case of Central and Eastern European Countries (2005-2023)

DOCTORAL DISSERTATION

Supervisor: Prof. Szunomár Ágnes

Author: Song Wenxuan

Budapest

2025

Song Wenxuan:

The Impact of China's Outward Foreign Direct Investment on the Bilateral Trade with Belt and Road Countries

The Case of Central and Eastern European Countries (2005-2023)

Doctoral School of International Relations and Political Science

Department of World Economy

Dissertation Supervisor:

Ágnes Szunomár

The Committee of Assessors:

....

....

....

....

....

Corvinus University of Budapest

The Impact of China's Outward Foreign Direct Investment on the Bilateral Trade with Belt and Road Countries

The Case of Central and Eastern European Countries (2005-2023)

By Song Wenxuan

Supervisor: Szunomár Ágnes

DOCTORAL DISSERTATION

Submitted to

Doctoral School of International Relations and Political Science

World Economy Program

Budapest

2025

This page is intentionally left blank

Table of Contents

List of Figures

List of Tables

1.0 INTRODUCTION.

The political and economic connections between nations and regions are becoming increasingly closer as a result of international economic integration and the rapid pace of globalization. Nonetheless, the global financial crisis in 2008, the European sovereign debt crisis in 2010, the refugee crisis in 2015, and the COVID-19 pandemic in 2020 have all affected different nations and areas to varying degrees due to economic connectivity. Strengthening international collaboration is the most direct and efficient way to promote economic recovery in light of the current state of the world economy, which lacks growth spots in the global market. These days, one way to carry out trade and economic cooperation is through Foreign Direct Investment (FDI). It can maximize resource allocation and, to a certain degree, boost trade between the home and host nations. As an important economy in the world, China not only actively attracts foreign investment and learns advanced technologies, but also implements strategies such as "reform and opening up"[1] and "going global".[2] With the proposal of the Belt and Road Initiative (BRI), China and relevant countries actively advocate for positive economic cooperation and build a community of interests and a community of destiny, characterized by political mutual trust, financial integration, and cultural tolerance.

Central and Eastern Europe (CEE) is primarily a geopolitical concept, comprising 16 member states: Poland, the Czech Republic, Slovakia, Hungary, Latvia, Serbia, Estonia, Bulgaria, Croatia, Montenegro, Macedonia, Bosnia and Herzegovina, Albania, Romania, Lithuania, and Slovenia. Total area: 1332 thousand square kilometers; total population in 2023: nearly 117.5 million; total GDP: $2.4 trillion, accounting for approximately 2.3% of the global economy. Although Central and Eastern European countries (CEECs) are geographically far from China, the "Silk Road" connected the two sides over two thousand years ago. The CEECs experienced severe political turmoil and systemic changes in the late 1980s, resulting in a decline in economic and trade exchanges with China. From the mid-1990s, the economic development of CEECs expanded under the wave of economic globalization, leading to a gradual stabilization

[1] Deng Xiaoping announced China's Reform and Opening Up policy (gǎi gé kāi fang/改革开放) in 1978. It changed China's economy and government from a centrally planned economy to a market-oriented one.

[2] China's "Going Global" (zǒu chū qù, 走出去) strategy represents a fundamental shift in China's economic strategy from domestic focus to international expansion, encouraging Chinese state-owned enterprises and private companies to pursue overseas investments for market access, strategic assets, technology acquisition, and energy and mineral resources (Vendryes, 2012)

of the economic and political transition in CEECs, and trade and economic cooperation between China and CEECs began to intensify.

In 2012, the "16+1" cooperation mechanism was officially launched after the meeting between the leaders of the People's Republic of China (PRC) and 16 CEECs, marking a new era of China-CEE cooperation. With the announcement of Greece's accession in 2019, the "16+1" cooperation mechanism has expanded to the "17+1" cooperation mechanism, demonstrating that the cooperation between China and CEECs has gone further. However, in 2020, Lithuania decided to withdraw from the "17+1" mechanism due to concerns related to transparency and balance in some issues. Consequently, it reverted to "16+1" (Kizeková, 2021). Subsequently, in 2022, Estonia and Latvia announced that they would cease participation in the "16+1" mechanism, resulting in the current configuration of "14+1"[3] (Chan & Meunier, 2022).

China launched the "16+1" cooperation mechanism in 2012. Since then, China has encouraged CEECs to join the BRI as well. The initiative was introduced by Chinese President Xi Jinping in 2013. As a global initiative, the BRI represents one of the most ambitious infrastructure development strategies in modern history, designed to enhance connectivity and cooperation across Asia, Europe, and Africa through massive investments in transportation, energy, and digital infrastructure, with a focus on the economic spillover by infrastructure connectivity and macroeconomic policy coordination (McBride, Berman, & Chatzky, 2023). China and CEECs are working together to build a mutually beneficial, open, and inclusive platform for cross-regional collaboration. Despite complex challenges in the international cooperation environment, China-CEECs cooperation has been scrutinized over the past ten years, forming a series of cooperation principles accepted by all parties and contributing to promoting the recovery and growth of the world economy.

As of 2023, China has maintained economic and trade relations with 16 CEECs for more than 70 years, and a high degree of bilateral cooperation has been sustained. The total trade volume between China and all CEECs peaked at $129 billion in 2022, nearly a 9-times increase compared with 2005. More specifically, China's exports to CEECs rose dramatically between 2005 and 2023, increasing by 778.7% during this period. The export value grew from $10.8 billion in 2005 to $94.8 billion in 2023. At the same time, China's imports from CEECs also saw significant growth, expanding by 1287.4%. The import value rose from $2.1 billion to $30 billion over the same years (Appendix_1, Appendix_2). This growth indicates CEECs' rising

[3] Statement on the website of the Ministry of Foreign Affairs of Estonia and Latvia (2022.08.11)

importance for China's trade. They are now a significant market for Chinese goods. CEECs are also a key source of imports for China. However, the trade relationship remains imbalanced, with China consistently maintaining a substantial trade surplus, which widened from $8.6 billion in 2005 to $65 billion in 2023.

An examination of key trading partners in 2023 reveals a concentration of trade among a few CEECs. Poland ($37.2 billion), the Czech Republic ($16.3 billion), Hungary ($9.8 billion), Romania ($7.7 billion), and Slovenia ($6.2 billion) accounted for 81.4% of China's exports to the region. Similarly, Slovakia ($7.22 billion), the Czech Republic ($5.2 billion), Poland ($4.9 billion), Hungary ($4.7 billion), and Romania ($2.8 billion) constituted 82.9% of China's imports from the CEECs (Appendix_1, Appendix_2). This concentration suggests that China's economic engagement with the CEECs is primarily focused on these five countries.

Even though trade between China and CEECs has grown quickly, there is still a significant imbalance in trade between these nations, with 85% of all trade currently concentrated in six countries: Poland, the Czech Republic, Hungary, Romania, Slovakia, and Slovenia. A lack of trade diversity is also evident in the severely lopsided trade structure between China and CEECs, where trade in electrical and machinery goods substantially outweighs trade in all other products combined. Furthermore, the complex national circumstances and unequal economic development of the 16 CEECs also result in varying expectations regarding the scope and necessity of their commerce with China. Trade between China and CEECs has not yet achieved its ideal level due to this high degree of diversity, which leaves space for further growth.

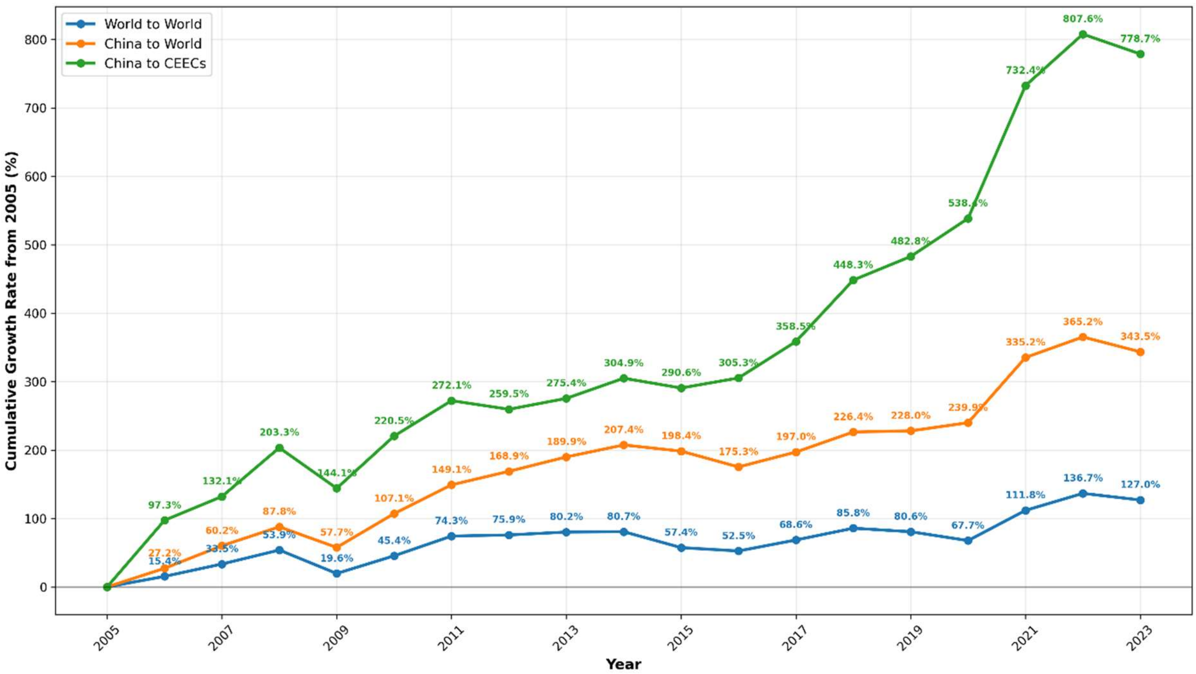
Investment comes after trade. The ongoing expansion of China-CEEC trade cooperation has laid the foundation for potential investment cooperation between China and the CEECs. China's Outward Foreign Direct Investment (OFDI) in CEECs has grown dramatically since the start of the "16+1" cooperation mechanism and the BRI. From 2005 to 2023, China's OFDI flows grew by 3709% in CEECs, with an average annual growth rate of more than 206%. From 2005 to 2023, CEECs expanded at an average annual rate of 437.6% when viewed through the lens of China's OFDI stock. Although China's OFDI flows and stock in the CEE region have increased significantly, China's OFDI in the region is still in its early stages. The share of China's OFDI flows and stock in the CEE region within China's overall BRI investment remains relatively small, but the outlook for future development is promising.

OFDI and trade relations between China and the CEECs need to be significantly strengthened in light of the current circumstances. Is there a relationship between China's OFDI and the growth of trade in CEECs, considering the evolution of bilateral OFDI and trade relations? How can China adjust its OFDI strategy in CEECs to encourage bilateral trade? This dissertation will conduct an in-depth and detailed study of the current status of bilateral trade between China and CEECs under the BRI framework, as well as the trade effects of China's OFDI in the CEECs, to identify the fundamental factors influencing trade potential. This will enable precise cooperation in trade between China and CEECs, promote the development of trade between China and CEECs, improve the trade structure, and support China's efforts to go global with its industrial capacity, which holds significant importance.

1.1 Relevance to the world economy.

According to World Trade Organization (WTO) statistics data (*Figure 1*), global trade grew from \$10.5 trillion in 2001 to \$23.9 trillion in 2023. China is becoming more and more important as a global trading power. In 2009, China's total import and export trade surpassed Germany's to become the world's largest commodity exporter and the second-largest commodity importer (NBC NEWS, 2010). In 2012, China's total import and export trade surpassed the United States for the first time, becoming the largest trading country in the World (Parker, 2013).

Figure 1: A comparison of the cumulative export growth rate from 2005 to 2023.



Source: Author's analysis of WTO Statistics Data, UN Comtrade Data

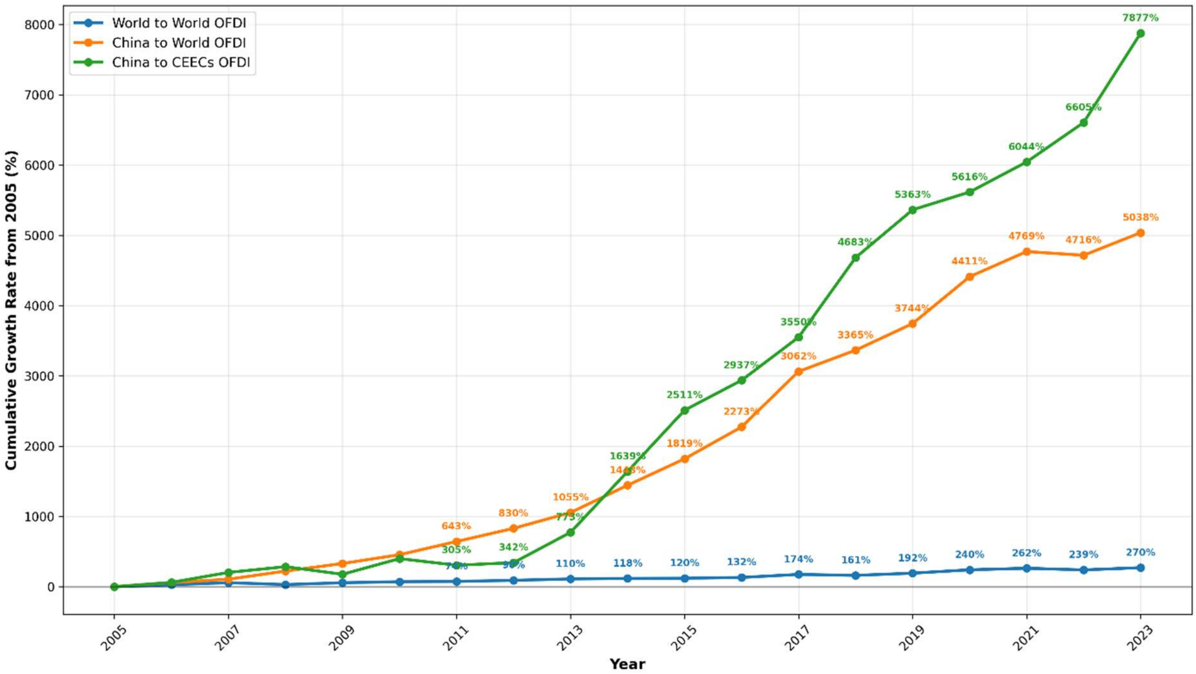
We can figure out how important China's growing economic links with the CEE region and its role as an exporter to the CEECs are by comparing China's export performance in the CEECs to that of other countries across the world. Data shows that China's exports to CEECs grew quite quickly between 2005 and 2023. During this time, they expanded by 778.7%. China's global exports, on the other hand, went up by 343.5% during the same time. This big difference in growth is important. It illustrates that China's exports to CEECs grew faster than the rest of the world. We used compound annual growth rates (CAGR) to get a better idea of how big this discrepancy was. Between 2005 and 2023, we looked at China's CEEC exports and its exports to the rest of the global. China's exports to the CEECs grew at a rate of 12.83% per year, which is far faster than China's exports to the rest of the world, which grew at a rate of 8.63% per year. At the same time, the CAGR for world exports is 4.66%, which obviously shows that China's export to CEECs presents a three-times higher rate than the world. This finding highlights the rapid growth of China's market share in CEECs. It also shows how important the area is becoming as a market for Chinese goods.

Also, the study shows that China's exports to CEECs stayed strong even throughout global economic downturns. World exports fell by 22.3% during the global financial crisis of 2008–2009. On the other hand, China's exports to the CEECs fell by 19.5%, which is less than the overall loss. During the COVID-19 pandemic in 2020, exports around the world plummeted by 7.2%. At the same time, China's exports to CEECs rose slowly, by 10%. These observations point to the fact that China's exports to the CEECs have been more stable than the global trend during periods of economic turmoil.

This evidence supports the claim that China has expanded its market share in CEECs. It also shows that strong economic ties with the region have developed. As China strengthens its economic links with the CEECs, understanding its export performance is becoming increasingly important. This is vital within global trade patterns. All policymakers, businesses, and researchers need to understand this new trend.

Figure 2 highlights that China's OFDI stock has seen significant growth from 2005 to 2023. The growth rate of China's OFDI stock in CEECs has been the most rapid, with a cumulative growth rate of 7876%, far exceeding the growth rate of China's global OFDI stock (5037%) and the growth rate of global OFDI stock (270%). Analyzing the CAGR of OFDI stock shows long-term trends more clearly. From 2005 to 2023, China's OFDI stock in CEECs grew at 27.5% annually. This rate surpassed China's global investment growth of 24.5%. It was also much higher than the global OFDI average of 7.6% during the same period. This extremely high growth mainly comes from the BRI. It also stems from the "16+1" Cooperation Mechanism, which began in 2012. Because those policies made CEECs a key focus region for China. After 2013, China's investment in the CEECs rose rapidly. This indicates that policy guidance has a significant impact on China's OFDI. To examine whether the sharp increase caused by the implementation of BRI, this dissertation will set BRI as a policy variable; a more detailed definition of the variables will be provided in Chapter 6.

Figure 2: A comparison of the cumulative OFDI stock growth rate from 2005 to 2023.



Source: Author's analysis of OECD FDI data from receivers, CEECs' national bank data, and China's OFDI data from MOFCOM

1.2 Significance of the research topic.

As of 2023, China has conducted economic and trade relations with CEECs for more than 70 years, and a high degree of bilateral cooperation has been maintained. Especially in 2012, the leaders of 16 CEECs and China held the first meeting in Warsaw, Poland. Wen Jiabao, the Premier of the State Council, officially released the "Twelve Measures for Promoting Friendly Cooperation with Central and Eastern European Countries"[4]. He proposed that China and CEECs should strengthen bilateral cooperation in trade, investment, and infrastructure construction in the future and promote exchanges in education and culture.

China's economy is now growing moderately, rather than rapidly. The steady growth of China's economy, however, is hampered by serious problems, including trade protectionism, frictions in international trade, and the slow decline of the demographic dividend. The BRI has not only strengthened communication between China and countries along the route but also enhanced trade relations. The geographical advantages of the CEECs are distinct. This means economic and cultural ties still have the potential to grow. Therefore, research in this field is

[4]These measures include establishing a $10 billion special credit line, which consists of a proportion of preferential loans primarily for infrastructure, high-tech, and green economy cooperation projects, and establishing the China-Central and Eastern Europe Investment Cooperation Fund, and so on.

needed. We should study the link between China's OFDI and trade with CEECs. Ultimately, fostering a stronger trade relationship between China and the CEECs is crucial. In addition, the BRI was proposed as a strategic option for promoting world peace, aiming to achieve connectivity and mutual benefit with the nations along its route. As a result, China's main trading partners in the future will unavoidably be the nations along the route.

Furthermore, the achievement of cooperation between China and CEEC is quite significant under the framework of "16+1". Both China's OFDI and trade with CEECs have grown strongly. CEECs' share in total BRI trade volume is also expanding. Their higher growth rates indicate CEECs are key partners under the BRI. Through data collection, a more thorough investigation of the OFDI effect on trade—particularly focusing on the CEECs along the BRI—could examine the current traits and influencing factors between OFDI and trade, offering both macro-level solutions for the dilemma of China's foreign trade and micro-level recommendations for corporation' OFDI strategies.

1.3 Actuality of the research topic.

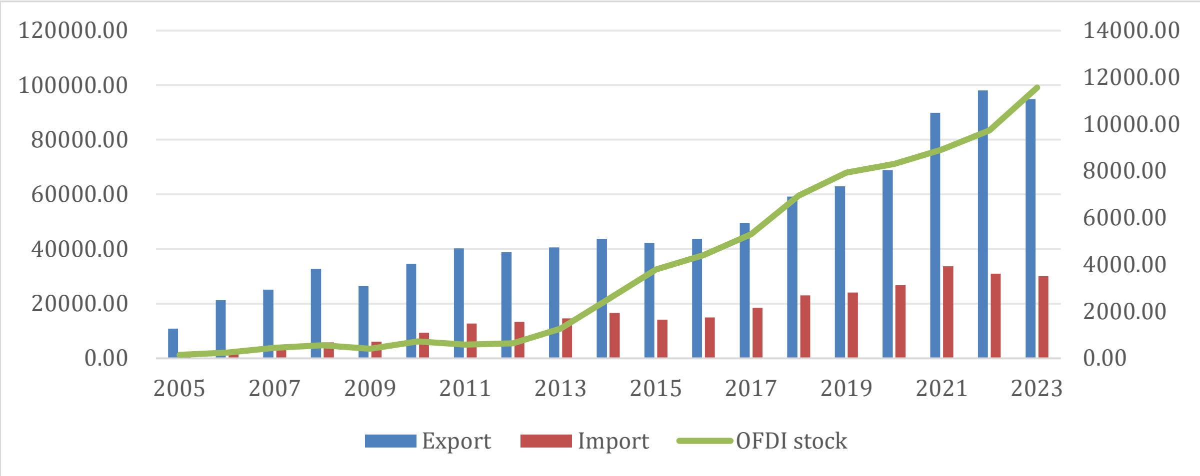
In the past 20 years, China has gone from being a fringe country to a source of direct investment for many developing countries. A critical moment in its transition phase was 2000. The Chinese government proposed a "Going Global" policy, which means that China will adopt investment liberalization strategies to encourage domestic companies to participate in international investment and make China more global. Between 2004 and 2007, 10 of the 16 CEECs joined the European Union (EU). Thus, the economic and trade relations between China and CEE are characterized by a duality: bilateral relations with China and multilateral relations with China within the framework of the EU. On the one hand, the large-scale accession promotes the free flow of CEE products in the EU. On the other hand, the EU's policy preferences and subsidies for foreign corporations help to accelerate CEE nations' opening, thus encouraging Chinese companies' desire to invest directly in CEECs.

While China's OFDI Stock in CEECs reveals remarkable growth during the period under study, the trade relations between China and CEECs have also undergone complex and profound changes. The industrial structure in CEECs has been continuously upgraded in the transition process to a market economy. Each country has its own development plan and target, so significant differences exist in countries' economic development and productivity. These differences are also reflected in their trade data with China.

1.3.1 Simultaneous increase in both trade scale and OFDI volume.

Since 2005, the volume of China's OFDI and trade scale with the CEECs has proliferated, and the trends are consistent. *Figure 3* exhibits that both China's exports, imports, and OFDI stock with CEECs have all shown an overall increasing trend from 2005 to 2023. Despite some fluctuations, the general trajectory has been positive, indicating growing economic ties between China and the CEECs over almost two decades.

Figure 3: The comparison of China's OFDI volume and Trade Scale with CEECs, 2005-2023.



Source: Author's analysis of UN Comtrade trade data and OFDI data from CEECs' national bank, OECD, and MOFCOM.

Further observations confirm the significant growth in China's OFDI stock within CEECs. This stock rose sharply from $145 million to $11.57 billion from 2005 to 2023 (Appendix_4). The rapid expansion highlights CEECs' growing economic importance to China. It is also a signal of deepening economic ties between China and CEECs.

At the same time, the export scale grew from $10.8 billion to $94.8 billion, nearly a ninefold increase, and the import scale grew from $2.2 billion to $30 billion, a more than tenfold increase (Appendix_1, Appendix_2). The total trade volume between China and the 16 CEECs reached $123.4 billion in 2021, surpassing the $100 billion mark for the first time, with a growth rate of 29.08% compared to the previous year. China's trade volume with CEECs grew significantly. This shows stronger economic ties between them. The graph also illustrates how global events affect China-CEEC relations. For instance, exports and imports clearly declined around 2009. That period was during the global financial crisis. Overall, China's OFDI volume to CEECs increased substantially. Trade scale rose significantly as well. Although many other factors may cause the growth of those trends, the consistent change in OFDI volume and trade scale cannot be denied.

More importantly, the data on China's OFDI stock in CEECs shows a notable increase in the years following the launch of the BRI. For instance, China's OFDI stock in Hungary grew from $92.6 million in 2013 to $5622.9 million in 2023, while the OFDI stock in Poland increased from $641.1 million to $1778.4 million over the same period (Appendix_4). This suggests that the BRI has been a catalyst for Chinese investments in CEECs, providing both the incentives and the institutional framework for Chinese firms to invest in the region. Moreover, the BRI has also facilitated the development of transport and logistics infrastructure in CEECs, such as railways and ports, which has further encouraged Chinese investments in the region.

Improved connectivity helps Chinese firms enter the European market through CEECs. This makes CEECs an attractive place for Chinese OFDI. However, note that the significance of BRI in boosting China's OFDI stock in CEECs. It is not the only factor. Other factors, such as the economic fundamentals of CEECs, the policy environment, and the overall growth of China's OFDI worldwide, have also contributed to the growth of China's OFDI stock in the region.

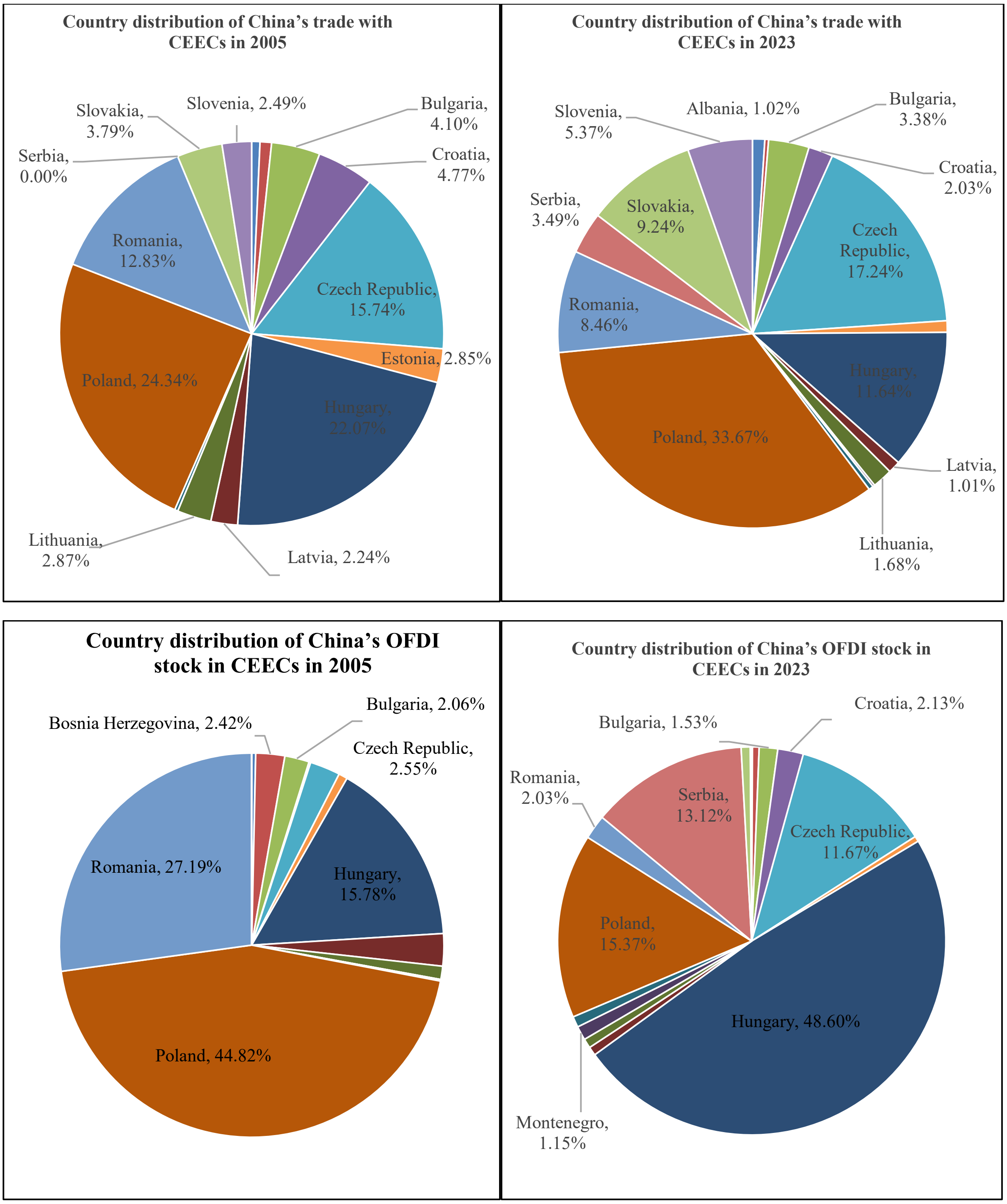
1.3.2 Uneven country distribution of trade volume and China's OFDI in CEECs.

Comparing China's OFDI and trade with CEECs in 2005 versus 2023 reveals changing economic ties. *Figure 4* shows this clearly. Differences between CEECs exist in geography, economic development, culture, and EU integration. These differences create distinct patterns in China's economic cooperation with each country.

China-CEEC trade conditions changed significantly from 2005 to 2023. Poland, Hungary, and Romania were the top three partners in 2005. Together they represented 59.24% of the total trade volume between China and 16 CEECs. Poland alone accounted for 24.34%. This shows high trade concentration. By 2023, Poland's share increased to 33.67%. It remained the leading partner. Romania's share, on the other hand, went down from 12.83% to 8.46%, and Hungary's share went down a lot, from 22.07% to 11.64%. The trade shares of Slovakia (up from 3.79% to 9.24%), Serbia (up from 0% to 3.49%), and the Czech Republic (up from 15.74% to 17.24%) have all gone up a lot.

Albania, Montenegro, North Macedonia, and Bosnia and Herzegovina, on the other hand, had low trade shares in both 2005 and 2023. This difference shows how hard it is for China to work with countries that may have weaker economies, less infrastructure, or unstable governments. Because of this, China's economic and trade ties with these countries are still not very strong. Consequently, China's economic and trade cooperation with these countries has remained comparatively underdeveloped.

Figure 4: The comparison of the country distribution of China's trade volume and OFDI stock in CEECs in 2005 and 2023.



Source: Author's analysis of UN Comtrade trade data and OFDI data from CEECs' national bank, OECD, and MOFCOM.

The distribution of OFDI shares has changed more than trade. Poland made up 44.82% of OFDI in 2005, followed by Romania (27.19%) and Hungary (15.78%). Together, these three countries made up 87.79% of the total. Hungary's part had grown to 48.60% by 2023, making it the most powerful country. Poland's portion had dropped drastically to 15.37%, and Romania's share had dropped to 2.03%. Serbia, on the other hand, became the third-largest place to invest in the area, going from 0% to 13.12%.

The reasons for trade diversification and investment concentration that are opposite to each other show that trade is more affected by the size of the market and the ability to consume. On the other hand, investment puts more weight on the quality of work, the stability of regulations, and the strategic position. The fact that economic activity is not evenly spread throughout CEECs shows that China needs to adapt its methods to the specific needs and problems of each nation in order to promote more balanced and long-lasting economic cooperation in the region. As China's economic links with CEECs grow stronger, it will be important to fix the problems and encourage growth that includes everyone in the area.

1.4 Research Design.

As more and more research focuses on the relationship between FDI and bilateral trade, it has been discovered that the differences in various attributes between home and host countries, such as differences in market demand, industrial structure differences, distance differences, and institutional differences, all have an impact on the direct investment and export-import relationship between home and host countries. Therefore, there is a limited range of explanatory validity for the coefficient relationship obtained based on any models reflecting direct investment, exports, and imports. While the mainstream findings accept the existence of country-specific effects in the relationship between direct investment and bilateral trade, this dissertation argues that the research should focus more on exploring the motives of China's OFDI in different countries in the CEE region and examine how different FDI motives affect the bilateral trade performance between China and CEE. Furthermore, the 16 CEECs have vastly different national circumstances. China's direct investment in CEE nations will influence bilateral trade differently. As a result, focusing on the impact of China's direct investment in CEE on bilateral trade between China and CEE is practical. This analysis will provide valuable insights to determine whether existing trade and investment policies require modification or if new policies should be developed.

This research aims to analyze the motivations of China's OFDI in CEECs and the different OFDI motivations that affect bilateral trade between China and CEECs by using FDI data and bilateral trade data from 2005 to 2023. A further question is whether China's OFDI will have a substitution effect on bilateral trade between China and CEECs or a complementary effect? And how China may maximize the growth of bilateral trade further by modifying its OFDI strategy in the region.

This dissertation employs a quantitative research approach to address the questions. It analyzes data on China's OFDI in CEECs and the bilateral trade figures between China and CEECs from 2005 to 2023. Using regression analysis, the research examines how China's OFDI in

CEECs influences the bilateral trade outcomes between China and CEECs. China's OFDI data used for the analysis has been collected from multiple sources: from the OECD and from the national banks of each country. For those countries for which data was missing from both OECD and national bank sources, the paper used data from the yearly Statistical Bulletin of China's Outward Foreign Direct Investment Data Report, which is normally published on the official website of the Ministry of Commerce of the People's Republic of China. Bilateral trade data between China and CEECs were collected from the UN Comtrade database.

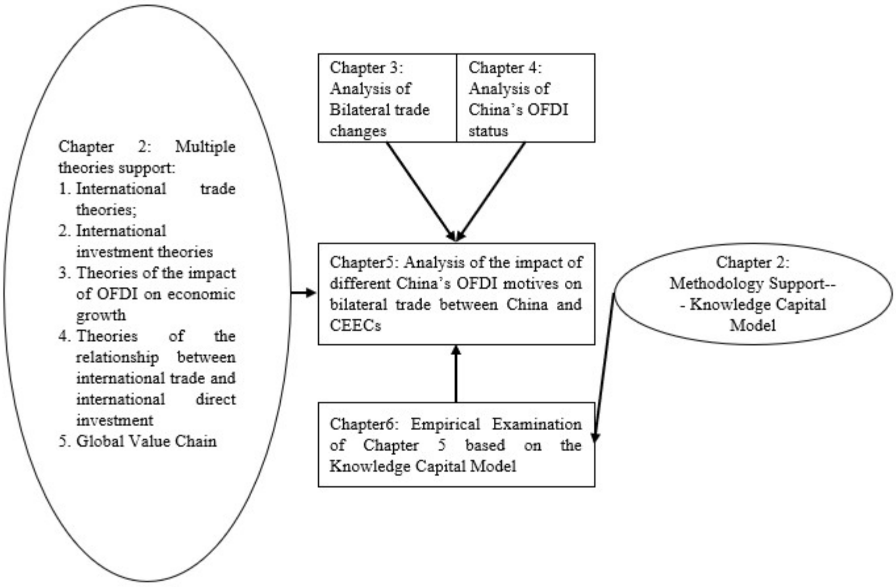
Considering that CEECs have different economic development levels, this dissertation will divide 16 CEECs into different groups to provide a more detailed and accurate analysis. More detailed hypotheses descriptions are stated in Chapter 6. The time frame of the selected data will be from 2005 to 2023, as this dissertation aims to observe the changes that encompass the impact of various global events.

This dissertation first focuses on sorting out the structure changes of bilateral trade between China and CEECs, and the characteristics of China's OFDI in CEECs. Then, the thesis tries to analyze the impact of different OFDI motives on trade in the CEE region. Followed by an empirical examination with the use of the Knowledge Capital Model to examine whether the OFDI motives align with the changes in bilateral trade performance by using China's OFDI stock in 16 CEECs and import and export data with CEECs from 2005 to 2023. Finally, this dissertation will summarize the impact of China's OFDI on bilateral trade under the framework of BRI with the reference case of CEECs and give policy suggestions. *Graph 1* below shows the research design used in this dissertation.

This dissertation will begin with an introduction to provide a comprehensive overview of the research background, objectives, and justification for the research topic. Chapter 2 will provide an overview of the research landscape, context, and focus, accompanied by a comprehensive literature review.

The four chapters that comprise the analytical section are Chapter 3, Chapter 4, Chapter 5, and Chapter 6. An examination of the evolution of China-CEEC bilateral trade between 2005 and 2023 will be presented in Chapter 3. A thorough examination of China's OFDI in CEECs over the sample period is given in Chapter 4. Chapter 5 will discuss the reasons behind China's OFDI in CEECs and the effects on bilateral trade by combining the analysis material from Chapters 3 and 4. The empirical analysis in Chapter 6 will determine if the motives and effects of China's OFDI in CEECs are consistent with the current situation.

Graph 1: Research Design.



Resources: Author's construction

Chapter 7 will provide a policy recommendation based on the empirical results to further enhance cooperation between China and the CEECs. Chapter 8 presents a conclusion to the entire study.

1.5 Innovations in research.

This dissertation creates a novel construction of horizontal FDI (HOFDI = LnOFDI × LnGDP_CEECs) and vertical FDI (VOFDI = LnOFDI × LnWages_CEECs), providing an innovative and novel empirical operationalization of market-seeking versus efficiency-seeking investment motivations in the context of OFDI from emerging economies. Adding the BRI policy variable to the analysis also makes a new way to look at things that connect theoretical FDI literature with current geopolitical and economic policy realities.

This Dissertation also does a good job of linking academic research with real-world policy implementation by making suggestions that focus on three specific policy goals: improving the trade balance, making it easier to upgrade structures, and raising volume. Using trade complementarity index (TCI) analysis and regression results together create a new way to make investment decisions in certain sectors. This method combines statistical data with information on how trade complements each other. A careful study of how policy works differently in different regions, especially when it comes to the implementation of the BRI, gives us crucial information for creating policies that take into account the variety of the CEEC region.

1.6 Limitations of the research.

However, this dissertation faces methodological constraints and data limitations as well. Firstly, the construction of key variables presents challenges, particularly in capturing the interaction between horizontal and vertical FDI motivations through the interaction terms HOFDI (LnOFDI × LnGDP_CEECs) and VOFDI (LnOFDI × LnWages_CEECs). The simple multiplier interactions may not fully capture the complexity of real-world investment motivations, as many FDI projects involve mixed or evolving motivations that do not fit neatly into these binary categories. The assessment of R&D investment gaps may not precisely represent the actual technological differences between China and specific CEECs, which could result in inaccurate evaluations of how these technological differentials influence trade relationships.

In addition, the data constraints inherent in this dissertation also present certain limitations that should be further considered. OFDI stock data is collected from multiple sources rather than a single unified source. The statistical standards of various open data sources may not be the same, which could make the data less reliable and change the statistical results. Also, putting trade data into big groups like total volume, exports, and imports may hide significant sector-specific connections between investment and trade patterns, even while it gives us a general idea of what is going on.

The Knowledge Capital Model framework itself, while theoretically sound, imposes certain assumptions that may not fully reflect contemporary FDI realities. The focus of this model is to differentiate horizontal market-seeking and vertical efficiency-seeking investments, although beneficial for analysis, it reduces the complexity of contemporary OFDI, where firms frequently engage in strategic asset-seeking, resource-seeking, or platform-seeking objectives that go beyond conventional classifications.

2.0 LITERATURE REVIEW.

International trade and investment liberalization are crucial drivers of modern economic globalization. It creates an external environment where countries, particularly developing countries, can participate in the international division of labor and develop their own economies. In this case, most of the developing countries' attention has inevitably turned to international trade and investment's evolving characteristics and interrelationships. According to Blomström & Kokko (1998), FDI promotes exports by boosting total factor productivity through learning, instilling a competitive culture, knowledge transfer, and capital injection (Blomström & Kokko, 1998). Poelhekke & Ploeg (2013) suggested that just increasing FDI inflows does not ensure favorable spillover effects. Instead, the beneficial impact of FDI inflows is primarily determined by the circumstances in host nations (Poelhekke & Ploeg, 2013). We can see that diverse study techniques and samples make those theories have confounded the link between OFDI and bilateral trade. It is important to understand and grasp the development of international trade theory and international direct investment theory to deeply explore the characteristics and causes of changes in China's foreign direct investment in the CEE region and the relationship with bilateral trade.

2.1 Theoretical background.

This chapter on theoretical background presents a full overview of the basic theories that explain how trade and investment work in the global economy. The chapter lays the foundation for understanding how trade and investment activities affect economic activities across borders.

2.1.1 International trade theories.

Compared with the practice of international trade, the theoretical study of international trade came relatively late, starting in the 18th century. Later, the theory developed into the classical international trade theory, the neoclassical international trade theory, and the intra-industry trade theory.

Classic International Trade Theories. Adam Smith, the pioneer of classical economics, proposed the theory of absolute advantage in his masterpiece "An Inquiry into the Nature and Causes of the National Wealth", published in 1776 (Smith, 1776). Absolute advantage refers to a country's labor productivity in a specific product being higher than other countries. According to the absolute advantage theory, the two countries involved in the exchange should specialize in the division of labor and production based on their absolute advantages and trade their products at a lower cost. However, the applicability and explanation of the theory were soon questioned because of the large gap between the assumption that each country has production sectors with absolute advantages and reality.

In 1817, the classical economist Ricardo published his work "On the Principles of Political Economy and Taxation", which developed the absolute advantage theory into the comparative advantage theory (Ricardo, 1817). The theory argues that the difference in labor productivity between two countries is not equal for any product. It assumes the country at a disadvantage has a comparative advantage in producing goods at a lesser disadvantage than other countries. So, two countries involved in the exchange should follow the comparative advantage to specialize, produce and exchange the products with lower comparative cost. However, the comparative advantage theory also has significant shortcomings. For example, the comparative advantage theory treats labor as the sole input factor and ignores the impact of capital, technology, and other factors on international trade. Furthermore, it assigns the cause of international trade to relative labor productivity differences. However, it did not explain the difference in relative labor productivity.

Neoclassic International Trade Theory. The limitations of comparative advantage theory led to the formation and development of neoclassical international trade theory. Heckscher and Ohlin proposed the factor endowment theory in 1933, which refined and modified the comparative advantage theory, arguing that international trade occurs because countries have different factor endowments rather than the inherent differences in labor productivity as described by the comparative advantage theory (Ohlin, 1934). According to the factor endowment theory, a country's comparative advantage is determined by its factor endowment. Countries with a relatively abundant and cheap labor supply have a cost and price comparative advantage in labor-intensive manufacturing over countries with a limited and expensive labor supply. They should focus on producing and exporting labor-intensive products. Countries with abundant capital should focus on producing and exporting capital-intensive goods. In this case, everyone could benefit from international trade. Nevertheless, the deficiencies of this theory are also obvious. For example, the assumptions of factor endowment theory are static, ignoring the dynamic changes of comparative advantage caused by technological improvement. At the same time, international trade has also seen the emergence of new phenomena, such as the bidirectional flow of products within the same industry, the cross-country transfer of production, and export advantages, and so on. These new international trade phenomena are beyond the explanatory scope of factor endowment theory.

Inter-industry Trade Theory. Classical and neoclassical trade theories explain inter-industry trade's foundations, patterns, and gains. Smith (1776) argues that differences in labor productivity between countries determine the division of labor and trade and that production technology is the basis for the emergence of trade between countries in absolute advantage theory (Smith, 1776). Ricardo (1817) states that a country can specialize in producing and exporting goods with a relatively small absolute disadvantage (goods with comparative advantage) (Ricardo, 1817). Technological differences are the primary reason for price differences between countries for the same goods. Classical trade theories agree that technological differences in production are the basis for the division of labor and trade between countries. It determines the scale and structure of a country's exports.

Neoclassical trade theory further explains the causes of comparative advantage. The theory argues that differences in factor endowments among countries are the basis for the emergence of international trade and determine the size and structure of the trade. The H-O theory is representative of the neoclassical trade theory, which argues that differences in factor endowments make factor prices, production costs, and commodity prices differ, leading to the occurrence of trade. In general, neoclassical trade theory and its extensions consider factor endowments as the basis of export trade. Most importantly, neoclassical trade theory states that the essence of product trade is the cross-country movement of factors of production. The characteristics of export trade reveal the structural characteristics of export trade.

Intra-industry Trade Theory. In a general sense, international trade is the inter-industry trade between countries. This inter-industry trade is focused on the trade between two countries with a large gap in economic development level. However, in the second half of the 20th century, with the deepening of international trade cooperation, Grubel found a large amount of trade in similar products within the European Economic Community (EEC). This form of trade is called intra-industry trade and mainly exists in countries with a similar level of economic development. In the mid-1970s, the publication of "Intra-industry trade: the theory and measurement of international trade in differentiated products" by Grubel & Lloyd (1975) proposed the intra-industry trade theory (Grubel & Lloyd, 1975).

The most important feature of intra-industry trade theory is the use of concepts such as heterogeneity and differentiation of traded goods, similarity and diversity of consumer preferences, specialized division of labor, and internal economies of scale to explain the phenomenon of trading similar products between different countries. In a closed economy, the market size of a single country may be small, and the number of firms and the variety of differentiated products that can be accommodated under the effect of internal economies of scale are limited. Consumers have narrow choices and high prices. In an open economy, however, the expansion of market size induces domestic and foreign firms to expand their production scale to reduce production costs and thus obtain economies of scale while triggering new firms to enter industry and produce more differentiated products.

2.1.2 International investment theories.

The theory of international direct investment originated in the 1960s when economist Hymer first proposed the theory of monopolistic advantage. Since then, many scholars have proposed the Theory of Internalization, the Eclectic Theory of International Production, Product Life Cycle Theory, and the Theory of Small-Scale Technology.

Theory of Monopolistic Advantage. Hymer (1960) first argues that in an imperfect market, a source of market power, the firm-specific advantage, can offset the challenges faced by multinational enterprises. Hymer observed foreign investment after World War II. He found that the U.S. foreign investment firms were typically oligopolistic industrial enterprises. In other words, a few firms with monopolistic positions have controlled the foreign investment of the whole industry (Hymer, 1960). Later, through the work of Kindleberger (1969), this market power developed into the monopolistic advantage, which constitutes a new idea and theory for studying international investment. MNC advantages, according to Kindleberger, are only useful in the event of market imperfections (Kindleberger, 1969). Superior technology, management knowledge, patents, and other advantages typically lead a company to invest in a foreign country to fully exploit them rather than share them with potential foreign market competitors (Nayak & Choudhury, 2014). The monopolistic advantage theory also has certain limitations. First, the theory lacks dynamism, as monopoly advantage is a relative concept, and it will change over time. Second, it cannot explain why a firm with a technological advantage must invest in foreign countries instead of exporting or transferring technology licenses to obtain benefits. Third, it cannot explain the increasing participation of SMEs in developed and developing countries in Foreign Direct Investment activities.

Theory of Internalization. The concept of internalization was first introduced by Coase (1937), who pointed out that the transaction costs would increase due to market imperfections. That firm could reduce market transaction costs by bringing various transactions in-house (Coase, 1937).

Buckley & Casson (1976) introduced the theory of Internalization in 1976 by integrating the principle of internalization of market transactions into the field of international direct investment. This theory pointed out the difficulties of intermediate product trading, external market failure and high external transaction costs. To prevent high market transaction costs due to the original asymmetry of market information and ambiguous information about intermediate products, companies cooperate with upstream producers or internalize them to reduce costs and increase profits (Buckley & Casson, 1976). This kind of internalized production is also known as the OFDI process of enterprises. Internalized production is conducive to the reform and innovation of technology and patents within multinational enterprises and can promote the technological upgrading and progress of the industry in which the industry is located and related industries.

The internalization theory of FDI combines outward investment and intra-firm trade, making it able to explain the outward investment behavior of multinational firms in a larger framework. As a result, the theory is more dynamic and closer to the facts. However, the theory also has shortcomings. It ignores the influence of the international economic environment and fails to explain why intra-firm trade must be achieved across borders rather than at home.

Eclectic Theory of International Production. Dunning (1980) proposed the Eclectic Theory of International Production, which is based on the idea that firms with ownership, internalization, and location advantages can engage in OFDI (Dunning, 1980).

The ownership-specific advantage is a prerequisite for foreign investment (Dunning, 1980). It refers to an enterprise having relative advantages over enterprises in other countries. In addition to primary advantages such as raw materials, labor, capital, it also includes technology, management and marketing skills, innovation ability, and stuff. In the case of an incomplete external market, firms with the ownership advantage internalize the external market to avoid market imperfections. The advantage of internalization is achieved by transferring the assets owned by the company to its foreign subsidiaries through internalization. The advantage that one country or region can provide more favorable conditions for foreign manufacturers to invest in their own country or region than another country or region can be called a location-specific advantage.

Dunning's eclectic theory of international production emphasizes the role of the level of economic development and the ability of enterprises to invest abroad. It provides multinational enterprises with ownership advantages, internalization advantages, and location advantages (Dunning, 1980). The theory is a practical guide for multinational enterprises to go abroad. However, the conditions of OFDI emphasized by this theory cannot explain the rapidly developing OFDI behavior of developing countries.

Product Life Cycle Theory. Vernon (1966) proposed the product life cycle theory and apply it to the field of international direct investment. Product life cycle theory suggests that every product has a so-called life cycle: the new product stage, the maturity stage, and the standardization stage (Vernon, 1966).

The investment behavior of a company is different at different product life stages. Companies will invest in the new product stage where production costs are low, combining technological advantages with the resource advantages of the investment location to quickly capture market share and earn profits. As the product life cycle enters the stage of maturity and standardization, the investment will flow to other countries. This forms the evolutionary process of investment diffusion from developed to developing countries.

The product life cycle theory provides a good explanation of OFDI from the United States in the 1950s and 1960s. It explains firms' motivation, conditions, and conversion from export to direct investment. However, product life cycle theory has some limitations in practical application (Vernon, 1966). However, it cannot explain the two-way investment behavior among developing countries and the increased share of investment in industrial sectors that are not export substitutes.

Theory of Small-Scale Technology. Since developing countries tend to lag developed countries in terms of both capital and technology, their OFDI lacks the necessary prerequisites under the traditional theory. In practice, however, the emergence of developing countries has called into question the validity of the traditional theory.

The Theory of Small-Scale Technology advocated by Wells (1983) mentioned that developing countries engage in OFDI because of market-seeking, low-cost and political risk avoidance. According to Wells, the comparative advantage of developing country firms in OFDI lies in their possession of small-scale production technology, and the competitive advantage of such small-scale production technology is usually manifested in three ways (Wells, 1983):

1. Large-scale production technology is often unable to meet the needs of different market segments, and labor-intensive small-scale technology can fill this market gap, thus gaining economies of scale.
2. The “national bond” provides a stable market base for developing country enterprises to produce and sell national products overseas.
3. The lower production and operation costs make the prices of products in developing countries lower than those in developed countries, and the multi-level market demand for products provides sales channels for these products, thus opening larger overseas market space for developing country enterprises.

The Theory of Localized Technological Change (TLC) proposed by British economist Lall (1983) states that developing country firms can use small-scale technology as their comparative advantage to make developing country firms more competitive in international markets (Lall, 1983). Relatively low labor costs also make small-scale production in developing countries more competitive. Technology localization theory also points out that the key factors that determine the competitiveness of developing countries are factor prices and quality levels, technology and product innovation, the degree of economic efficiency of small-scale production, and the ability to develop diversified consumer goods.

2.1.3 Theories of the impact of OFDI on economic growth in the home country.

The industrial development effect of OFDI, the technology spillover effect of OFDI, and the labor effect of OFDI reveal the relationship between OFDI and home country industrial development, technology level, and labor market. Industrial development, technology level, and labor endowment are the basis for a country’s participation in international trade. The theory of the impact of OFDI on the home country's economic effect reveals the relationship between OFDI and export scale and structure.

Theory of Home Country Industrial Development Effect of OFDI. Akamatsu (1962) studied the characteristics of industrial development in Japan and found that the industrial development went through four stages import → local production → export development → export growth. By extending this phenomenon to international industrial transfer, industries in which developed countries had a comparative advantage will gradually lose their advantages to underdeveloped countries due to changes in comparative efficiency. These industries can gradually develop into comparative advantages in underdeveloped countries and counter-export to the originally developed countries (Akamatsu, 1962). Kojima (1978) proposed the theory of marginal industrial transfer, which emphasizes that international industrial transfer starts from marginal industries that have lost comparative advantage in the home country to other countries with comparative advantage. International industrial transfer shifts domestic industries out of the country, freeing up space for developing new industries. The home country's industrial structure and comparative advantage then change (Kojima, 1978).

The Reverse Technology Spillover Theory of OFDI. This theory suggests that the home country uses OFDI to bypass the TNCs' technology blockade, gain full access to the host country's technology, utilize its R&D resources, and obtain technology spillovers from the host country. Kogut & Chang (1991) and Yamawaki (2004) studied the OFDI behavior of Japanese firms in the US. They found that Japanese firms invested in the US, usually in industries with higher R&D intensity than Japan and tended to acquire advanced technology through OFDI (Kogut & Chang, 1991) (Yamawaki, 2004). Neven & Siotis (1993, 1996) studied OFDI by US and Japanese firms in EU countries and found that it mainly goes to technology-intensive industries with prominent technology-seeking characteristics (Neven & Siotis, 1993) (Neven & Siotis, 1996). The close linkage between OFDI and the home country's technology level implies that OFDI can promote home countries' industrial development and export transformation by improving their technology level.

The Labor Effect Theory of OFDI. Vertical specialization theory, represented by Feenstra and Hanson (1995), argues that OFDI will affect the relative factor demand and relative factor prices in both home and host countries. The traditional division of labor suggests that the international intra-product division of labor occurs when developed countries transfer low-skilled labor to developing countries. The transfer of labor will reduce the demand for low-skilled labor in the home country and increase the demand for low-skilled labor in the host country (Feenstra & Hanson, 1995). However, Feenstra and Hanson presented a different view on this issue in the later years. They were the first to develop a theoretical analysis modeling that OFDI would simultaneously increase the skill intensity of both countries. Thus, increasing the relative demand for skilled labor in both countries and eventually widening the wage gap between skilled and unskilled labor in the country. Changes in demand for and returns to labor factors will change the long-run supply of skilled and unskilled labor (Feenstra & Hanson, 1997) (Feenstra & Hanson, 2000) (Feenstra & Hanson, 2001).

2.1.4 Theories of the relationship between international trade and international direct investment.

Along with the development of Outward Foreign Direct Investment (ODFI) and Transnational Companies' investment behavior, the theories that related to OFDI and investment behavior of Multinational Companies have also developed rapidly since the 1950s. Mundell (1957) first proposed the mutual substitution effect between international trade and international direct investment (Mundell, 1957). Since then, scholars have challenged the theory and have put forward the complementary effect between international trade and international direct investment and the uncertain relationship between international trade and international direct investment.

Substitution Effect. Mundell (1957) first proposed a model to analyze intercountry direct investment and trade from the perspective of commodity trade and mobility of factors of production. The model is built based on the framework of two countries, two products, and two factors of production with following assumptions: (1) The functions of production of the two countries are identical. (2) At any price of any factor, one product requires more factors than the other at any point on the production function. (3) The factor endowment reaches a point where the possibility of specialization is ruled out (Mundell, 1957). Under the three assumptions described above, if there are trade barriers in the form of tariffs between two countries, the international movement of factors of production due to price differences in two countries will lead to the elimination of trade. In other words, it shows that the products of the exporting country can be manufactured in the other countries through the movement of factors of production, causing exports to be substituted (Mundell, 1957).

Buckley & Casson (1976) proposed the theory of internalization, who claim that market incompleteness and transaction costs encourage enterprises to internalize. The core of direct investment is the extension of management and control of the business based on ownership rather than the transfer of capital (Buckley & Casson, 1976). Assume the home nation uses OFDI to bypass the host country's trade or non-trade barriers. In that case, the substitution effect between the home country's OFDI and trade from the home country is apparent. Helpman, Melitz & Yeaple (2004) uses industry-level data from 38 countries to examine that OFDI and exports exhibit a mutual substitution relationship (Helpman, Melitz & Yeaple, 2004).

Complementary Effect. Markusen (1983) presents the exact opposite opinion to Mundell, who argues that there is a complementary relationship between international trade and international direct investment. He said that the factor mobility between two countries increases the amount of merchandise trade between the two countries. This proposition is built on six assumptions: (1) The relative factor endowments of the two countries are identical. (2) The production technologies of the two countries are identical. (3) The two countries have a similar demand curve. (4) The function of production has constant returns to scale. (5) The manufacturers are perfectly competitive with each other. (6) The domestic allocation of factors is efficient. The results showed that in several cases, when they release the condition of stated assumptions, factors flow due to differences in factor prices all lead to an increase in trade volume between countries (Markusen 1983).

Schmitz & Helmberger (1970) found that OFDI will promote home country exports when the home country is in a vertical division of trade with the host country (Schmitz & Helmberger, 1970). In addition, Japanese scholar Kojima (1978) also supports the complementary relationship between trade and foreign direct investment. He integrated trade and investment theories based on comparative advantage. Kojima believes that a country should develop the industries with a comparative advantage, export the products of those industries, and import products of industries without comparative advantage. While for the outward foreign investment, he believes that multinational firms should invest in an industry with a comparative advantage in the host country (Kojima, 1978). Obviously, in this case, international direct investment will promote the development of international trade. Eaton & Tamura (1996) conducted an empirical analysis of trade and investment between Japan and the United States between 1985 and 1990 and found a mutually reinforcing relationship between trade and investment (Eaton & Tamura, 1996). Chiappini (2011) studies the amount of foreign direct investment in the French automotive industry and finds that investment catalyzes trade exports (Chiappini, 2011).

Unstable Relationship. Concerning the interrelationship between direct investment and foreign trade, many scholars have suggested through numerous studies that there are not simply substitutes or complements relationships between ODFI and foreign trade. In reality, the relationship is often unstable and intertwined. Petri (1994), on the other hand, starts with the motives of OFDI investment and concludes that the difference in the relationship between foreign trade is due to the different motives of OFDI. He classifies OFDI into the following three different motives: market-oriented, production-oriented, and trade-promoting, and concludes that only market-oriented OFDI has a substitution relationship with trade, while the latter two can increase trade between host and investing countries and have a complementary relationship (Petri, 1994). Markusen (1983) further analyzes the interrelationship between the movement of factors and commodity trade, stating that whether they behave as substitutes or complements depends on whether the relationship between trade and non-trade factors are "cooperative" or "non-cooperative". If the relationship is cooperative, trade and investment show a complementary effect. If they are non-cooperative, then trade and investment exhibit a substitute effect (Markusen, 1983). Swenson (2004) finds both a complementary and a substitution relationship between direct investment and bilateral trade, with the relationship determined by the granularity of the product classification based on the analysis of most OECD countries' FDI in the US (Swenson, 2004).

To sum up, various aspects such as industrial structure, trading patterns, traditions, and culture between the host and home countries frequently affect the impact of OFDI on bilateral Trade. With the increasing proportion of foreign trade in China's overall income structure, especially after the Belt and Road Initiative proposal, many scholars have explored China's OFDI and its impact on bilateral trade with the implementation of BRI. However, most of the studies focus on the qualitative analysis of the BRI, discussing the location choice of China's FDI and the theoretical connotation of China's OFDI. Although, Lipsey, Ramstetter, & Blomström (2000) examined the U.S. OFDI flows are significantly and positively correlated with exports to the host country, and Blonigen & Piger (2011) used a Bayesian analysis method to examine the influence of various factors on bilateral trade, the in-depth quantitative studies on the mechanism of mutual influence between China's and bilateral trade with countries along the BRI is still insufficient (Lipsey, Ramstetter, & Blomström, 2000) (Blonigen & Piger, 2014).

2.1.5 Global value chain.

Porter (1985) put forward the concept of value chain for the first time in his book "Competitive Advantage." He formed the "Enterprise Value Chain Theory," which believed that the enterprise's internal design, production, sales, and auxiliary activities constituted a whole production chain, creating corresponding value for the enterprise (Porter, 1985). In the process of studying the value chain, Kogut (1985) clearly pointed out that the comparative advantages of countries and regions determine how the various links of the entire value chain are spatially allocated between different countries and regions (Kogut, 1985). Compared with Porter, Kogut broadened the value chain concept from within the enterprise to the relationship between enterprises. However, the value chain he discussed remains in the relationship between enterprises in the R&D and production activities of manufacturing enterprises and does not involve high value-added activities such as marketing and after-sales service.

Gereffi & Korzeniewicz (1993) first proposed the concept of “Global Commodity Chain (GCC).” The main concern of GCC is the material flow of commodity production, and it lacks further analysis of value-added and value creation in the production process (Gereffi & Korzeniewicz, 1993). Gereffi (1999) further systematically analyzed the global commodity chain and pointed out that the snapshot is the basic unit that constitutes the global commodity chain. Each snapshot contains content links such as raw material input, operation organization, and marketing. He also pointed out that the global commodity chain can be divided into two typical transnational economic networks, namely the “Producer-driven global commodity chain” and the “Buyer-driven global commodity chain” (Gereffi, 1999). In the 21st century, Gereffi, Humphrey, Kaplinsky, & Sturgeon (2001) clearly put forward the concept of “Global Value Chain (GVC),” which provided a method to study the globalization of production activities and marked the formation of the GVC specialization system (Gereffi, Humphrey, Kaplinsky, & Sturgeon, 2001).

The United Nations Industrial Development Organization (UNIDO, 2002) pointed out that enterprises in GVC perform related activities to bring a product (or service) from design and product development to production, marketing, and sales and consumption, after-sales services, and eventual recycling (UNIDO, 2002). According to different criteria, the activities involved in GVCs can be grouped into different groups: main activities and supporting activities (Porter, 1991) (Priem & Swink, 2012) (Tansuchat, Nimsai, & Piboonrungroj, 2016); According to the degree of participation in the production process, the activities can be grouped into upstream activities, intermediate activities, and downstream activities (Mudambi, 2008) (Mudambi & Puck, 2016). Baldwin & Venables (2015) proposed a model, which involves two countries, a small open developing country, and a more economically advanced country, to analyze the forward and backward linkages in the value chain in developing countries (Baldwin & Venables, 2015). Wu, Hou, & Xin (2020) examine whether BRI has brought new opportunities to countries along the routes to participate in GVCs by employing a different-indifferences method with propensity score matching. The results indicate that BRI has a positive effect on promoting the countries along the routes to participate in GVCs, and the effect is lagging and fluctuant (Wu, Hou, & Xin, 2020).

2.1.6 Knowledge-Capital model.

With the deepening of economic globalization, multinational companies have gradually become the main protagonists of economic activities globally. The literature of international trade classifies the FDI behaviors of MNCs into three categories: Horizontal FDI (HFDI), Vertical FDI (VFDI), and the Knowledge-Capital (KC) model that combines HFDI and VFDI. The first literature on HFDI began with Markusen (1984), which indicates that firms conducting HFDI typically set up production in countries close to consumers to avoid high trade costs (Markusen, 1984). These MNCs must trade-off between achieving economies of scale and avoiding tariffs. If they locate the headquarters and all productions in the home country, the firms will gain economies of scale but face high marginal costs from exporting; Conversely, if they locate production in the host country, they will save on trade costs but pay high fixed costs (Markusen, 1984).

Therefore, HFDI is also known as the "Proximity-Concentration Hypothesis". This hypothesis was first empirically tested and supported by Brainard (1997) using data on U.S. multinationals and developed by Helpman, Melitz & Yeaple (2004) within the framework of heterogeneous firm trade theory (Brainard, 1997) (Helpman, Melitz & Yeaple, 2004). The main factors affecting HFDI are the host country's market size and trade costs. When HFDI occurs, substitution between FDI and exports occurs.

Helpman (1984) pioneered the study of VFDI. Differences in comparative advantages between countries induce some firms to split production into different stages and allocate production to firms in different countries (Helpman, 1984). For example, allocating labor-intensive and technology-intensive production activities to labor-rich and capital-rich countries, respectively, takes advantage of local comparative advantages and effectively reduces production costs. Yeaple (2003) examines the determinants of OFDI in the United States and confirms the role of comparative advantage, supporting the prediction of VFDI (Yeaple, 2003). The main factors affecting VFDI are the cost of trade and the difference in factor endowments between home and host countries. In addition, Keller & Yeaple (2013) include the cost of knowledge transfer in the analysis of vertical specialization of MNCs and argue that this cost is also one of the determinants of VFDI by MNCs (Keller & Yeaple, 2013). The emergence of VFDI will induce MNCs to engage in intra-firm trade and intermediate product trade, thus triggering the complementarity of FDI and trade.

Scholars have encountered data difficulties in the actual study of HFDI and VFDI. Since no data set strictly distinguishes between HFDI and VFDI, the type of FDI can only be determined by testing the significance of the factors that affect them separately. Markusen, Venables, Konan & Zhang (1996) and Markusen (1997, 2002) established and developed the Knowledge-Capital model (KC Model) to analyze the factors affecting FDI by combining the motivation of MNCs to engage in HFDI and VFDI (Markusen, Venables, Konan, & Zhang, 1996) (Markusen, 1997) (Markusen, 2002). The KC Model assumes that there are two homogeneous products (X and Y), two countries (h and f), and two homogeneous factors: unskilled labor (L) and skilled labor (S). Those two factors cannot be freely moved between countries but within countries. Product Y is an unskilled labor-intensive product produced in a perfectly competitive industry with constant scale returns. Product X is a skilled labor-intensive product, produced under increasing returns to scale, in an industry subject to Cournot competition[5], where firms are free to enter and exit. The KC model has three main assumptions: First, knowledge-based services such as R&D can be geographically separated from production activities and supplied to producers at lower costs. Second, knowledge-intensive activities are more skill-intensive than production (Skilled Labor Intensive). Third, knowledge-based services can be used by multiple producers at the same time. The first two assumptions create an incentive for vertical segmentation of production. Firms can locate R&D activities in countries where skilled labor is abundant, and production is located in countries where unskilled labor is abundant. At the same time, they provide an incentive for production activities to be market sized when there are economies of scale at the firm level. The third assumption creates firm-level economies of scale, providing incentives for HFDI. It shows that firms can replicate the same product or service in different regions. Within an enterprise, Headquarters services and manufacturers can be geographically separated, and a firm can have manufacturers in one or two countries simultaneously. A company can have manufacturers in one or two countries simultaneously. Based on this, there will be six types of enterprises:

A. Hh(Hf) type: Horizontal MNCs refers to enterprises that have their headquarters located in the home country, with factories located in both home and host countries, and sales happen in the place of production. The classification of Hh and Hf depends on the location of headquarters.
B. Nh (Nf): Domestic enterprises with both headquarters and factories located in the home country, with or without exporting to host countries. The classification of Nh and Nf depends on the location of the enterprise.

[5] Cournot competition: an economic model that usually occurs under monopoly or oligopoly conditions. The general premise of the model is that an oligopoly will have a higher output and lower prices than a monopoly, but lower output and higher prices than perfect competition.

C. Vh(Vf) type: Vertical MNCs are enterprises with their headquarters and factories separately located in the home and host countries, usually exported to home or other countries. It can be divided into Vh and Vf types by the location of headquarters.

Markusen, Venables, Konan & Zhang (1996) and Markusen (1997) develop a complete set of formulas to simulate the results using numerical computer methods and provide theoretical predictions that can be tested empirically. Hh-type firms will become the dominant firms in country h if the market size and factor endowments are similar between the two countries and the transportation cost is high. It means that horizontal multinationals will emerge when the market size and relative factor endowments are similar between countries (Markusen, Venables, Konan, & Zhang, 1996) (Markusen, 1997). If the relative factor endowments are similar between countries, while the market size is different, firms will choose N-type to avoid paying high fixed costs in small countries. Suppose the relative factor endowments differ significantly between countries, while the market size is similar. In that case, firms have a strong incentive to concentrate their headquarters services in countries with abundant skilled labor and locate their production processes in countries with scarce skilled labor, so that firms will choose to do VFDI when trade costs are not very high.

Carr, Markusen, & Maskus. (2001) test the predictions of the KC model and show that when bilateral trade costs between home and host countries increase, production of affiliated firms decreases if the host country is a developing country and increases if the host country is another high-income country (Carr, Markusen, & Maskus, 2001). The difference in factor endowments between developing countries and the U.S. is significant, and the increase in trade costs leads to a decrease in intra-firm trade. Bergstrand & Egger (2007) further extend the KC model to the three-factor, three-country case (Bergstrand, 2007).

In this dissertation, the Knowledge-Capital model will be used to analyze the motives of China's OFDI in different countries in the CEE region and examine how different FDI motives affect the bilateral trade performance between China and CEE.

2.2 Research Context.

The theoretical bases of international trade, international investment, and relations between FDI and trade are important for understanding how economies interact with each other on a global scale. However, when these theories are applied to specific regional situations, especially come to the case of China-CEECs cooperation, there are big gaps in the methods and analysis used. The Knowledge Capital model, the gravity model, and different FDI theories all give us strong ideas for looking at the complicated link between OFDI and bilateral trade flows. However, when these theoretical frameworks are applied to examine China's economic ties with CEECs, they fall short in terms of both methodological rigor and theoretical depth.

2.2.1 Methodological Limitations on China – CEECs Trade Cooperation Analysis.

Most of the research on trade cooperation between China and CEECs employs descriptive analysis and basic complementarity measures. This shows that there are big problems with the methods used that make the research results less reliable.

Chen & Yang (2017) use a quantitative analysis method, attempting to have a systematic measurement. It uses statistical models to look at the business environment in CEECs through 51 indicators across eight modules and bilateral cooperation through 17 indicators across five dimensions (Chen & Yang, 2017). However, this method has serious problems with how it specifies econometrics because it uses static correlation analysis instead of dynamic causal modelling. The study does not deal with the issue of endogeneity between improvements in the business environment and cooperation outcomes, which could lead to false relationships. Also, giving all indicators the same weight without a theoretical reason is a big methodological flaw that makes composite indices less reliable.

Stanojevic, Qiu, & Chen (2021) thorough study of trade cooperation between China and the CEEC uses a theoretically sound gravity model approach with panel data from 167 countries from 2001 to 2019. It specifically looks at whether the 16+1 cooperation mechanism led to much new trade. The study found something that does not make sense: instead of helping trade grow, the results show that Sino-CEEC trade slowed down after 2012. This means that the cooperation has not led to much new trade so far. This finding goes against what descriptive studies have said about how cooperation mechanisms automatically lead to good trade effects (Stanojevic, Qiu, & Chen, 2021). This method is a step forward in using theoretically based gravity models to study China-CEEC relationships, but the study still looks at total trade flows without separating them into different types of trade relationships or investment-driven versus purely commercial exchanges.

Matura (2019) looks at trade, investment, and politics between China and CEE countries. It shows how economic and political factors affect each other in bilateral relationships (Matura, 2019). The study shows that political factors have a big impact on China's economic outcomes in CEECs, but the methodology is mostly descriptive and does not use econometric methods that can separate political policy from economic effects. This problem is common in China-CEE literature, where interdisciplinary factors are recognized but not consistently included in empirical models that could show how things are related.

The most important thing these studies are missing is advanced econometric modelling that can separate the effects of China's OFDI on trade patterns. The Knowledge Capital model provides a robust theoretical framework for distinguishing between horizontal and vertical FDI effects. This is an area where the current literature falls short. Because of this, researchers cannot determine whether the observed trade patterns are caused by investments seeking to find new markets and replace exports or by investments aiming to improve efficiency and increase trade through transactions within the same company. It also makes them less useful for making policy and for contributing to academic knowledge.

2.2.2 Theoretical deficiencies in China – CEECs OFDI analysis.

Research on China's OFDI to CEECs is still in its early stages, mostly using case studies that do not have strong theoretical support. There is not much research specifically about Chinese investment in the CEE region because this is a relatively new trend. Most of the significant Chinese investments in the region did not start until the "16+1" cooperation mechanism was set up in 2012.

Most of the traditional empirical research on China's relationships with CEECs has focused on total OFDI flows without properly separating different investment strategies. This means that they missed the complex theoretical framework that the knowledge capital model offers for understanding the complicated relationship between trade and investment. Ramasamy & Yeung (2022) acknowledge that the motivations to invest in developing countries differ according to regions, and for the case of CEE, domestic markets, access to the larger EU market, strategic assets like technology, and prior relationships drive investment decisions (Ramasamya & Yeung, 2020). However, this analysis fails to operationalize these different motivations into distinct econometric specifications. This gap in theory is particularly problematic because China's OFDI exhibits characteristics of both market-seeking horizontal investment and efficiency-seeking vertical investment. This means that it needs a more complex analytical framework than what is usually used.

According to McCaleb & Szunomár (2017), the institutional perspective shows that market opportunities, EU membership, qualified but cheap labor, possibilities of acquiring a visa or permit of residence, and quality of political relations have a big effect on Chinese foreign direct investment in Central and Eastern Europe (McCaleb & Szunomar, 2017). This analysis of institutions gives us useful information, but it does not have the theoretical depth to explain how these factors work with knowledge capital endowments to affect investment choices and trade effects.

Additionally, the BRI is one of the most significant policy changes in modern international economics. However, current research does not effectively examine how this broad policy framework influences horizontal and vertical foreign direct investment patterns in different ways. The agglomeration effects documented by Liu et al. (2018) suggest that Chinese OFDI exhibits path-dependent characteristics, where firms choose countries with existing Chinese investment concentrations rather than countries with high concentrations of non-Chinese FDI. This finding has profound implications for understanding how the BRI influences different investment types, yet current studies have not examined whether horizontal and vertical investments exhibit different agglomeration patterns or respond differently to the policy incentives created by the BRI framework (Liu, Jiang, Zhang, & Chen, 2018).

Existing studies have shown that the characteristics of the host country, institutional factors in the host country and BRI all have different effects on Chinese firms' OFDI activities. However, the size and direction of this effect depends a lot on how willing host countries are to participate in the initiative and their specific economic conditions. So far, researchers have not looked at how BRI participation interacts with the knowledge capital motivations for different types of investments in a systematic way. Not being able to tell the difference between these different policy effects is a big problem with current research and makes it harder to come up with specific policies that will make China-CEE economic cooperation work better.

2.2.3 Contradictory findings in analyzing the impacts of OFDI on trade.

The research that looks at the link between OFDI and trade shows conflicting results, which show that we need more advanced theoretical frameworks.

Some research results have shown that the relationship between OFDI and trade scale is mainly between substitution and complementarity effects. The former suggests that OFDI tends to reduce the scale of trade, while the latter, on the contrary, emphasizes that OFDI contributes to the expansion of trade. The earliest related studies concluded that the effect of OFDI on the trade scale is mainly a substitution effect. Mundell (1957) was among the first researchers to investigate the trade effects of OFDI. He used factor endowment theory as the core, emphasizing that international investment and trade have a substitution relationship (Mundell, 1957). Vernon (1966) published the product life cycle theory, which found that foreign direct investment will change to domestic exports and therefore is prone to reduce the trade scale from the perspective of the dynamic evolution of comparative advantage (Vernon, 1966). In the 21st century, in line with the continuous development of new trade theories, Head & Ries (2003) conclude that the emergence of costs has led to the fact that only efficient firms have sufficient capacity to invest abroad (Head & Ries, 2003). Moreover, foreign investment by efficient firms will reduce the country's export volume.

The view that the impact of OFDI on the trade scale is a complementary effect is proposed later than the view of the substitution effect. The Japanese researcher Kojima (1978) cast doubt on the perception of substitution effects by comparing the specific characteristics of "the US-style OFDI" and "Japan-style OFDI". He concluded that the transfer of "marginal industries" from the latter home country to another would promote the export of domestic machinery, equipment, and proprietary technology, which is conducive to the increase of trade between the two countries (Kojima, 1978). Blomström & Kokko (1998) analyze the results around the U.S. and Switzerland in the period 1978-1982 and conclude that the emergence of outward investment boosts the demand for the home country's products (Blomström & Kokko, 1998). This demand will stimulate trade between the two countries. There is a complementary relationship between outward investment and international trade. Mirela & Voica (2017) investigated the OFDI and trade relationship between Romania, observing the existence of an evident complementary relationship between OFDI and trade (Mirela & Voica, 2017). Studies of Japanese FDI in East Asia have set a good example, but they need to be changed to fit the China-CEE situation. Eaton & Tamura (1994) show that there are positive correlations between trade and direct investment lag periods (Eaton & Tamura, 1994). This shows how Japan's direct investment increased the size of bilateral trade and strengthened trade ties between regions. Ishida (1994) shows that Japanese direct investment changed the way goods were imported and exported, and the flow of trade within East Asia (Ishida, 1994). For example, trade between Japan and the region tripled. However, these results cannot be directly applied to relations between China and Central and Eastern Europe because the two regions have very different levels of economic development, industrial structures, and institutional frameworks. The mechanism identification gap in the current literature is due to the fact that it is hard to tell the difference between these types of investments and their trade effects.

The Knowledge Capital model helps make sense of these conflicting results by giving us a way to tell the difference between different kinds of FDI and how they affect trade in different ways. Horizontal FDI, which is driven by the desire to enter new markets, usually replaces exports when companies build factories in other countries to meet local demand. On the other hand, vertical FDI, which is motivated by efficiency-seeking goals, tends to support trade by increasing transactions between firms as they split up their production processes across different locations to take advantage of their strengths. This theoretical difference helps researchers understand why some studies find complementary effects and others find substitution relationships.

2.3 Research Focus on Customized Knowledge Capital Model building.

The connection between FDI and trade has changed over time through a number of different methods, each of which has shown certain flaws that make it clear that more advanced theoretical frameworks are needed. This change in methods goes from simple empirical relationships to complicated theoretical models. However, there are still significant gaps in our understanding of how OFDI from emerging economies affects trade between two countries, especially when it comes to China's investments in CEECs.

The uses of the gravity model in the 1990s and 2000s showed important theoretical flaws but also established basic empirical relationships. Goldberg & Klein use gravity equations to figure out how Japanese direct investment affected trade flows in East Asia. They showed that Japan's FDI increased trade between the two countries (Goldberg & Klein, 1998). Nakamura & Oyama (1998) improved this method by grouping economies by their level of development. They found that Japanese investment boosted trade in all stages of development in the host country (Nakamura & Oyama, 1998). But these early studies looked at FDI as a single thing and did not look at the different reasons or ways that people invest. The models could find correlations, but they could not explain why FDI sometimes adds to trade and other times takes its place. This gap in the theoretical foundation becomes even more of a problem when looking at China's OFDI to CEECs, where some relationships create trade and others show limited economic benefits, even though there are formal cooperation mechanisms in place.

Sectoral analysis became popular in the 2000s and 2010s, but the results were often contradictory and did not help explain the complicated relationship between FDI and trade. Inhwan (2008) looked at Japan's manufacturing FDI from 1989 to 2004 and found that Japanese OFDI made trade with the Philippines, Indonesia, and Thailand decrease, but trade with India and Malaysia went up (Inhwan, 2008). This showed that OFDI and manufacturing trade can be both substitutes and complements, depending on the specific country, but the study did not have any theoretical guidance to explain why these effects were different. Using dynamic computable general equilibrium models, Latorre & Hosoe (2016) made the empirical picture even more complicated by showing that falling Japanese FDI would hurt China's economic growth by lowering subsidiary production and causing the currency to lose value (Latorre & Hosoe, 2016). These conflicting results show that we do not really understand why FDI effects are so different in different countries and industries.

Filippaios & Papanastassiou (2008) used two-stage least squares estimation to deal with endogeneity issues when looking at U.S. investment in EU countries. They found that the level of economic development, the quality of the labor force, and the costs of intermediate goods were important factors that affected FDI. These advanced methods did solve some technical econometric problems but were not able to explain how FDI affect trade flows (Filippaios & Papanastassiou, 2008). Blonigen & Piger (2014) used Bayesian methods to sort the factors that affect foreign direct investment (FDI) into four groups: gravitational factors, economic factors, factors related to the business environment, and costs for businesses in the host country (Blonigen & Piger, 2014). This all-encompassing approach was a big step forward in terms of methodology because it systematically organized FDI determinants. However, the framework treated each factor as separate and did not take into account how they might interact with each other.

Contemporary studies also show that there are still methodological problems that are similar to bigger problems in international trade econometrics. Bhowmik, Zhu, & Gao (2021) show that gravity models are better at looking at trade cooperation between China and ASEAN. They do this by using trade integration indices, Herfindahl-Hirschman indices, and complementarity measures in a consistent econometric framework (Bhowmik, Zhu, & Gao, 2021). Their method addresses several issues that have not been explored in the China-CEE literature, including how to handle zero trade flows, how to incorporate multilateral resistance terms, and how to utilize dynamic panel estimation techniques. The difference shows that China-CEE research is behind in terms of methods, as most studies use cross-sectional analysis or simple time-series methods without dealing with important econometric issues.

When you compare existing methods to more advanced econometric methods used in similar situations, it becomes clear that they are not good enough. Alam et al. (2023) use the Global Vector Autoregressive (GVAR) method to look at how China's economy impacts its trading partners. This shows that they know how to deal with complex cross-country interdependencies and dynamic shock transmission mechanisms (Alam, Ma, Hussain, & Fazal, 2023). This method addresses several issues that have been troubling the China-CEE literature, including how to handle country-specific external factors, how to assess structural stability, and how to utilize impulse response analysis to evaluate policy effectiveness. Without these advanced methods, it is hard to understand how macroeconomic shocks in China affect CEE economies through trade and investment channels.

These advanced methods did solve some technical econometric problems, but they were still atheoretical, which made them less useful for explaining things and making policy decisions.

The advanced methods were used on frameworks that could find correlations but not explain how FDI and trade affect each other. This was especially true for complicated cases like China’s OFDI decisions, which were based on economic, technological, political, and institutional factors. Those gaps lie in their lack of sophisticated econometric modelling capable of isolating the specific impact of China’s OFDI on trade patterns. The Knowledge Capital model offers a robust theoretical framework to distinguish between horizontal and vertical FDI effects, addressing the mechanistic void that current literature fails to fill.

2.4 Summary of literature review.

The systematic review finds important gaps that make it harder to understand the economic ties between China and CEECs as a whole. First, researchers cannot figure out how trade patterns work because there are no econometric models based on theory that can tell the difference between horizontal and vertical FDI effects. Second, not including the effects of BRI policy in more complex analytical frameworks makes it harder to understand how significant policy changes affect different kinds of international economic relationships. These limitations have big effects on both how academics understand things and how policies are made. Policymakers do not have important information about which cooperation mechanisms work best to promote good economic relationships because they cannot tell the role of policies and the difference between different types of FDI effects.

The Knowledge Capital model gives us a strong theoretical basis for telling the difference between different types of FDI and their different effects on trade, but it is still not used enough in studies of China and the CEEC. There are advanced econometric methods that can deal with endogeneity, dynamic relationships, and policy effects, but they are not often used in this region. The coming together of these gaps in methods and theory makes it necessary to find more advanced ways to analyze the complicated dynamics of China-CEEC economic cooperation and make policy. Therefore, in the context of economic globalization and further cooperation between China and countries along the BRI, this dissertation takes 16 CEECs along the BRI as the research object and studies the relationship between China’s OFDI and bilateral trade by constructing a knowledge capital model. The study hopes to make suggestions on China’s future investment and trade in CEECs, as well as the optimization of domestic industrial structure and the direction of industrial transfer, and to help China find a better economic development point.

3.0 THE ANALYSIS OF BILATERAL TRADE BETWEEN CHINA AND CEECS.

As China and the CEECs work together more closely, trade between the two countries is becoming more common and growing in size. Since the BRI started in 2013, commodity trade between China and CEECs has been growing steadily (Tang, 2020). The UN Comtrade database shows that in 2021, trade between China and 16 CEECs reached $123.45 billion. This was the first time trade between the two countries had ever gone over $100 billion, and it grew by 29.08% compared to the same time last year. Looking at the state of trade between China and the CEECs can help us figure out where trade cooperation between the two countries is headed in the future. This chapter looks at trade from the point of view of trade sales, trade structure, and trade complementarity. Its goal is to give a whole picture of what bilateral trade between China and CEECs is like.

3.1 Economic Background of CEECs.

Overall, the economy of 16 CEECs has been growing in recent years as a whole. However, there are big differences in how fast each country grows. All countries saw an increase in per capita GDP, but the Western Balkans stood out the most, though it is important to note that these high growth rates reflect their lower starting baseline. Albania had the highest growth rate at 25.3%, followed by Montenegro at +20.9%, and Serbia at +22.5%. This shows that the economy in this sub-region is robust (*Table 1)*.

Table 1: Overview of Foreign Trade and Economic Development in CEECs.

Country/Year	GDP/Capital (USD)		Total Ex+Im Trade (Million USD)	
	2022	2023	2022	2023
Albania	6,846.43	8,575.17	12,713.58	13,043.78
Bosnia Herzegovina	7,655.59	8,663.02	25,057.78	24,577.08
Bulgaria	13,999.67	15,883.86	108,341.95	101,429.20
Croatia	18,466.10	21,865.46	69,497.97	67,223.07
Czech Republic	28,282.22	31,591.06	478,009.14	482,240.82
Estonia	28,451.15	30,133.30	51,135.90	43,545.66
Hungary	18,483.64	22,312.18	309,268.68	308,104.44
Latvia	20,227.23	22,675.58	49,678.53	45,086.39
Lithuania	25,085.78	27,786.01	101,612.05	91,043.97
Montenegro	9,990.20	12,077.37	4,458.83	4,838.57
North Macedonia	7,606.24	8,624.28	21,484.54	21,047.25
Poland	18,891.21	22,145.26	752,719.79	753,333.74
Romania	15,557.88	18,404.27	229,529.16	232,605.38
Serbia	10,022.97	12,281.51	70,203.26	70,762.19
Slovakia	21,334.60	24,673.55	224,022.86	232,418.77
Slovenia	28,373.84	32,610.11	114,882.33	121,196.86

Source: Author's collection of World Bank and UN Comtrade Data

However, there is still a clear tiered difference in economic size: Slovenia, the Czech Republic, and Estonia make up the top tier with GDP per capital over 30 thousand US dollar in 2023; Poland, Croatia, Hungary, Slovakia, Latvia and Lithuania are in the middle tier; and Albania, Bosnia and Herzegovina, North Macedonia, and other Western Balkan countries, even though their growth rates are faster, still have per capita GDP below $20,000, showing that regional development gaps still exist.

The trade landscape highlights high concentration. Poland, the Czech Republic, and Hungary are the region's economic pillars. In 2023, they had a combined trade volume of $154.3 billion, which was 68% of the total for the 16 countries. Poland was still the biggest trading partner, with $75.3 billion (up 0.08% from 2022). The Czech Republic was second, with $48.2 billion (+ 0.9%). Trade volumes in the Baltic states, on the other hand, have generally gone down a lot. Estonia's trade volume dropped by 14.8%, Lithuania's by 10.4% ($9.10 billion), and Latvia's by 9.2% ($4.51 billion). This shows that geopolitical conflicts are still having an effect on this region's supply chains. The Western Balkans' smaller economies had different trends: Montenegro's trade volume grew by 8.5% to $480 million, while Bosnia and Herzegovina's trade volume fell by 1.9% to $2.46 billion.

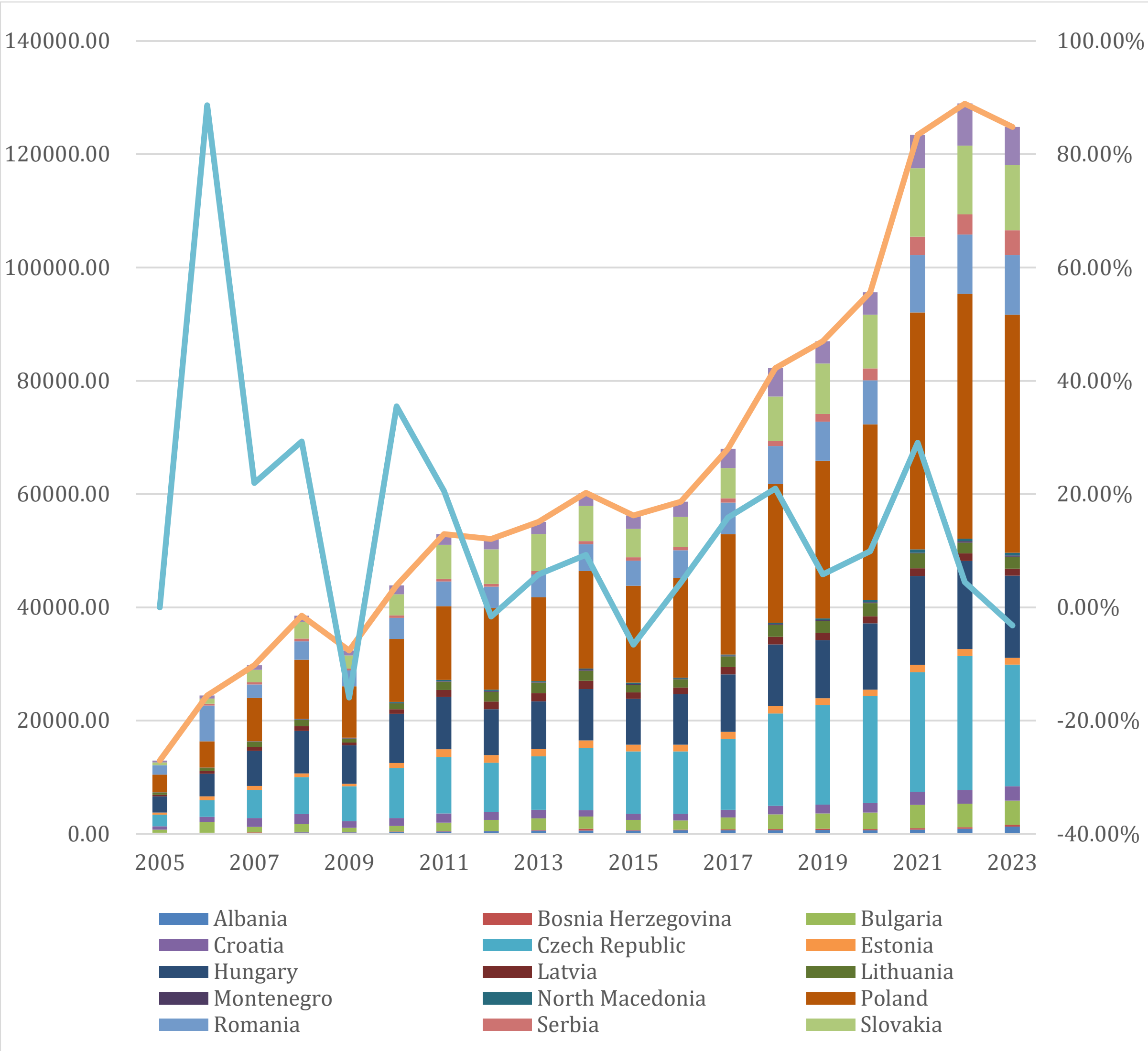
3.2 Analysis of the total trade scale between China and CEECs.

The scope of bilateral trade between China and the CEECs has expanded dramatically in recent years, and the two parties have become more intimate trading partners.

As illustrated in *Figure 5*, the overall bilateral trade volume increased dramatically between 2005 and 2023, reaching a peak of around 129 billion in 2022, with a remarkable growth rate of 88.66% in 2006. This surge was probably a result of China's quick economic development and early involvement with the CEECs. However, the total trade volume shrank by about 6.14 billion due to the global financial crisis, and it showed a negative growth rate of 15.9% in 2009. The CEECs were then severely impacted by the European sovereign debt crisis, which resulted in a slowdown in the growth rate of trade volume between China and the CEECs, with trade volumes fluctuating between $40 and $60 billion.

Bilateral trade between China and CEECs has resumed rapid growth since 2017. By 2019, the bilateral trade volume between China and CEE had reached nearly $87 billion. The COVID-19 pandemic had a devastating effect on the world economy in 2020. The world economy is trending downhill, and the global supply chain has been stagnant for a considerable amount of time. However, the expansion of bilateral trade between China and the CEECs has shown a steady growth, reaching new peaks of around 129 billion in 2022, though growth rates moderated significantly compared to the pre-2015 boom years. Trade volumes were led by Visegrád Group (V4), which benefited from EU membership and more robust logistics systems. On the other hand, the Balkans, such as North Macedonia and Bosnia and Herzegovina, fell behind because of their less integrated marketplaces. However, after 2015, Serbia and Romania experienced greater growth due to Chinese infrastructure investments like the Budapest-Belgrade railway.

Figure 5: Total bilateral trade volume between China and 16 CEECs from 2005 to 2023, Million USD.



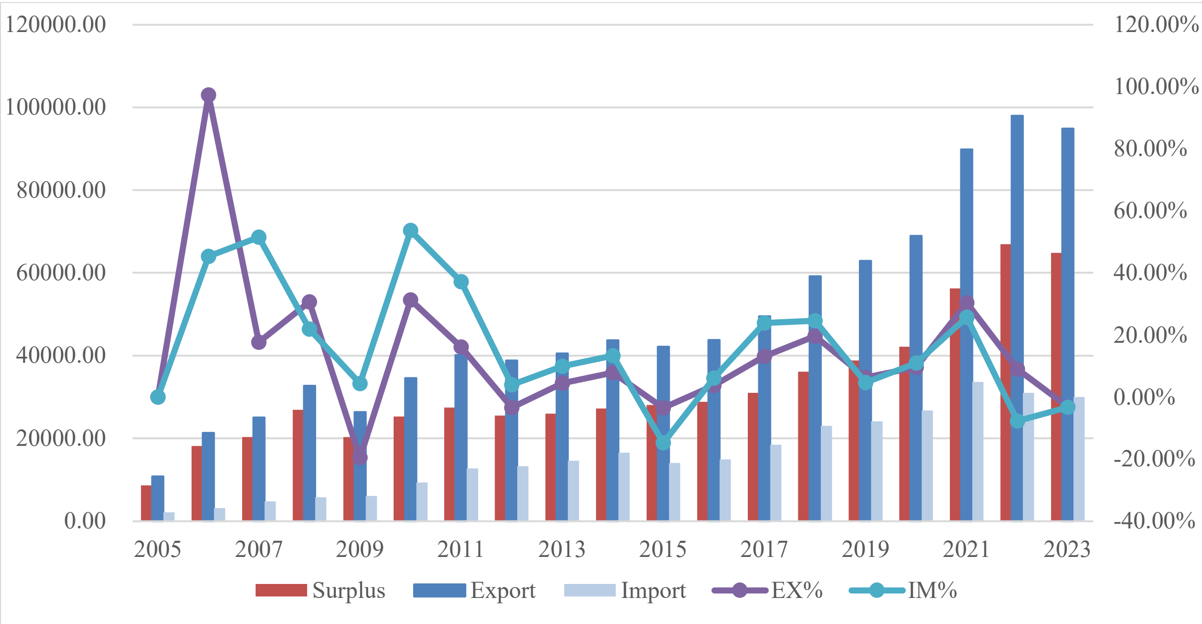
Source: Author's analysis of UN Comtrade data

Analyzing China's import and export volume with CEECs, a long-term trade surplus can be observed in *Figure 6*, where the scale of exports is always greater than the scale of imports. The ongoing and growing trade imbalance has been the most noticeable structural aspect of the economic and trade connections between China and CEECs for almost 2 decades. Prior to early

2005, the trade imbalance between China and CEECs was very minor, but it has subsequently increased. China's trade surplus rose from $25.55 billion in 2012 to $64.85 billion in 2023, more than 2.5 times what it was in 2012. This happened after the "16+1" system was set up in 2012. This growth curve shows that CEECs are becoming more and more dependent on Chinese industrial goods because China's manufacturing sectors are becoming more and more integrated into the GVC.

The trade imbalance exhibits a noteworthy three-tier differentiation pattern when viewed from the standpoint of nation distribution. The "heavy deficit group" comprises highly industrialized nations like Poland, the Czech Republic, and Hungary, whose average yearly deficit exceeds $3 billion, with Poland's deficit reaching an average of $14 billion in almost 2 decades.

Figure 6: Import and export volume and trade balance between China and CEECs, Million USD (2005-2023).



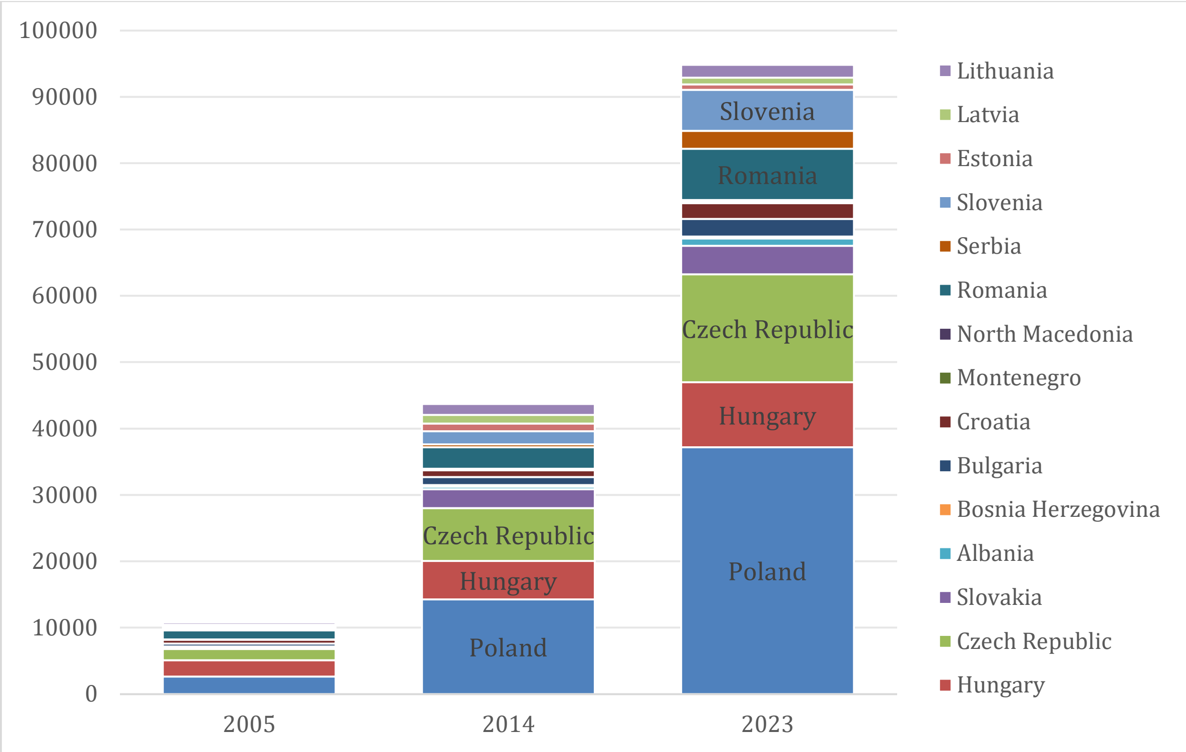
Source: Author's analysis of UN Comtrade data

The "moderate deficit group" consists of Slovenia, Romania, and other nations, with average deficits kept between $1 billion and $3 billion for the examined period. Only a few nations, such as Bulgaria, Montenegro, and North Macedonia, have established a reasonably balanced economic relationship by exporting specialized products. The disparities in economic progress between nations are reflected in this differentiation pattern. It reveals the CEECs' lack of industrial cooperation with China. All in all, the analysis shows that China's exports to CEECs have experienced significantly faster growth than imports, indicating substantial potential for further trade development between the two regions. A further cultivation of trade relationships between China and CEECs has the potential to foster mutual economic growth and benefits for both parties.

3.2.1 Analysis of export scale.

The UN Comtrade database shows China's exports to CEECs have grown a lot over the last 20 years. From 2005 to 2023, total exports went up 7.8 times, from $10.79 billion to $94.83 billion, with an average annual growth rate of 12.83%, as shown in *Figure 7*. The share of CEECs in China's overall exports to Europe climbed from 9.3% in 2014 to 18.7% in 2023, and this growth rate is far greater than the average growth rate of China's global exports during the same time (8.5%).

Figure 7: China's Export Scale to 16 CEECs, Million USD.



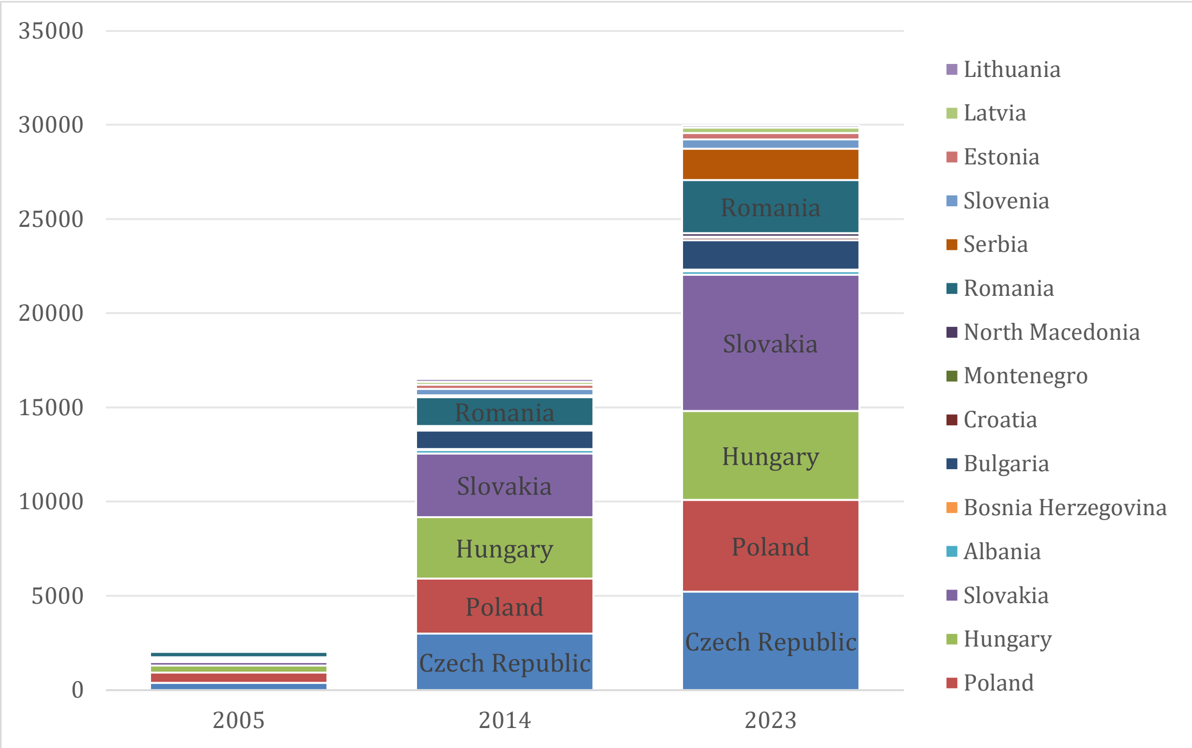
Source: Author's analysis of UN Comtrade data

V4 is solidifying its key positions in terms of regional distribution. From 2005 to 2023, the group's proportion of China's exports to CEE grew from 65.5% to 71.2%. Poland was the top export destination with 39.2% of all exports in 2023; the Czech Republic overtook Hungary as the second-largest export market with 17.2%; Hungary and Slovakia came in at 10.3% and 4.5%, respectively. The volume of exports from China coincides with the economic volume of cooperating countries. A country with a larger economic volume can absorb China's exports more easily. The Baltic states (Lithuania, Estonia, and Latvia) experienced negative growth in export proportion. As Lithuania, Estonia, and Latvia have successively announced their withdrawal from the "16+1" cooperation mechanism, it is anticipated that China's exports to these three countries will experience negative growth.

3.2.2 Analysis of import scale.

Figure 8 shows that China's total imports from CEECs expanded 13.9 times over the study period, going from \$2.16 billion in 2005 to \$29.98 billion in 2023. The average CAGR was 15.7%. This growth rate, which reflects the strengthening of trade and economic cooperation between China and CEECs, is far higher than the growth rate of China's total imports of products over the same period (10.2%).

Figure 8: China's Import Scale from 16 CEECs, Million USD.



Source: Author's analysis of UN Comtrade data

V4 has always been the leader in terms of geographical distribution, although its market share has changed over time. In particular, the V4's proportion of China's total imports from 16 CEECs went up from 68.4% in 2005 to 76.1% in 2014, then slightly declined to 73.5% in 2023. This trend reflects two key characteristics of regional economic and trade cooperation: first, the deep integration of the automotive supply chain before 2014 led to a sharp increase in imports from V4 countries, with Slovakia (up 17.4 times) and Hungary (up 7.9 times) standing out; second, the catch-up effect of non-V4 countries started to emerge after 2014, with Serbia achieving a milestone growth from 0 to \$1.652 billion, increasing the overall share of Western Balkan countries by 2.5 percentage points. China's import trade volume from the Baltic States is relatively small, with the sum of the three countries accounting for only 2.5% of China's total import volume from 16 CEECs.

3.3 Analysis of the trade structure between China and CEECs.

Products are classified into ten categories according to the Standard International Trade Classification (SITC Rev.4), as shown in *Table 2*. This chapter examines the bilateral trade structure between China and CEECs by using the commodities SITC code. The mainstream commodity structural classification is divided into two categories: SITC 0-4 are primary products, and SITC 5-9 are manufactured products. If manufactured goods account for a significant amount of bilateral trade, this indicates a better trade structure. This classification system is inadequate. The classification from the viewpoints of the factors of production and the technical level of the product will be more comprehensive in reflecting the characteristics of the China-CEEC bilateral structure.

Table 2: Commodity Groups of Standard International Trade Classification, Revision 4.

SITC	Product Category	SITC	Product Category
0	Food and live animals	5	Chemicals and related products
1	Beverages and tobacco	6	Manufactured goods
2	Crude materials	7	Machinery and transport equipment
3	Mineral fuels, lubricants	8	Miscellaneous manufactured articles
4	Oil, fats, and waxes	9	Not classified elsewhere in the SITC

Source: Author's collection from United Nations Statistics Division

3.3.1 Analysis of the trade structure based on the density of factors.

This section employs the one-digit Standard International Trade Classification (SITC Rev.4) and refers to the method proposed by Pavitt (1984), divides the trade products between China and 16 CEECs into four groups, as illustrated in *Table 3*.

Table 3: The Product Structure Division from Factor Density Dimension.

Categories	Corresponding SITC Code
Resource Intensive Product (RP)	SITC0, SITC2, SITC3, SITC4
Labor Intensive Product (LP)	SITC6, SITC8
Capital Intensive Product (CP)	SITC1, SITC5
Technology Intensive Product (TP)	SITC7

Source: Author's construction refers to (Pavitt, 1984)

Table 4 illustrates that the way China exported goods to CEECs changed a lot from 2007 to 2023. This is because China's role in the GVC changed, and demand in the CEE market changed. Technology-intensive goods (TP) have always been the most popular in terms of total volume. Their export values grew from \$13.08 billion in 2007 to \$55.66 billion in 2023, which is an average CAGR of almost 9.5%. Labor-intensive products (LP) and capital-intensive products (CP) followed, while resource-intensive products (RP) had the smallest scale, accounting for less than 2% of China's total exports to CEECs in 2023.

Table 4: Analysis of trade scale and growth rate of China's export commodities to CEECs from factor density dimension, 2007-2023

Year	RP		LP		CP		TP	
	Volume (Million USD)	Growth Rate (%)	Volume (Million USD)	Growth Rate (%)	Volume (Million USD)	Growth Rate (%)	Volume (Million USD)	Growth Rate (%)
2007	589.02	–	10624.49	–	751.25	–	13083.03	–
2008	751.95	27.66%	13210.88	24.34%	974.98	29.78%	17797.97	36.04%
2009	554.85	-26.21%	9395.65	-28.88%	734.98	-24.62%	15658.51	-12.02%
2010	675.53	21.75%	12314.08	31.06%	1044.09	42.06%	20553.31	31.26%
2011	920.32	36.24%	15209.01	23.51%	1489.68	42.68%	22542.85	9.68%
2012	741.61	-19.42%	15836.17	4.12%	1556.57	4.49%	20670.43	-8.31%
2013	763.41	2.94%	16443.15	3.83%	1633.58	4.95%	21679.01	4.88%
2014	803.05	5.19%	17374.49	5.66%	1802.97	10.37%	23722.78	9.43%
2015	719.58	-10.39%	16711.98	-3.81%	1736.64	-3.68%	22988.91	-3.09%
2016	716.55	-0.42%	17829.05	6.68%	1744.00	0.42%	23421.51	1.88%
2017	778.07	8.59%	20539.15	15.20%	2144.73	22.98%	25959.57	10.84%
2018	932.28	19.82%	23297.47	13.43%	2759.15	28.65%	32131.26	23.77%
2019	870.38	-6.64%	23602.31	1.31%	2900.36	5.12%	35028.93	9.02%
2020	842.48	-3.21%	24866.45	5.36%	3402.89	17.33%	39226.45	11.98%
2021	916.52	8.79%	30742.99	23.63%	5368.01	57.75%	52095.83	32.81%
2022	1234.44	34.69%	31322.26	1.88%	7220.95	34.52%	57297.57	9.98%
2023	1161.32	-5.92%	30081.15	-3.96%	6583.72	-8.82%	55656.91	-2.86%

Source: Author's analysis of UN Comtrade Database

More specifically, TP's export growth has followed a pattern of "rapid growth, volatility, and stabilization". The growth rate dropped to -12.02% in 2008 because of the global financial crisis, but it swiftly rose to 31.26% in 2010, showing how flexible demand for computer products is. The growth rate reached 32.81% in 2021. This could be because of the rise in worldwide demand for high-tech goods like medical equipment and technological devices during the pandemic. LP's export value increased from $10.62 billion in 2007 to $30.08 billion in 2023, but the growth rate fluctuated significantly. The rate of LP exports has slowed down since 2015, and by 2023 it was -3.96%. This means that the CEE market's demand for conventional labor-intensive commodities like furniture and textiles is either close to saturation or being challenged by Southeast Asian countries. CP's exports were the best, hitting $7.22 billion in 2022, which is over nine times more than in 2007. Growth rates have sped up a lot since 2017 (for example, 57.75% in 2021). This could be because CEECs and China's infrastructure investment demand have gone up, and China's cross-border transportation has become more competitive. Nonetheless, the growth rate in 2023 was -8.82%, which made people worry about what may happen if trade restrictions were put in place, if the economy in the region went into a recession. RP exports are the smallest and have grown slowly, with no sign of returning to the 2011 peak by 2023. The percentage of RP in China's exports has gone down, which shows how the resource-dependent paradigm has failed over time.

The division of labor of CEECs in the GVC, as well as the structural adjustment of China's market demand, are reflected in the significant dynamic changes in the structure of China's imports from CEECs between 2007 and 2023, as shown in *Table 5*.

Table 5: Analysis of trade scale and growth rate of China's Imports of Commodities from CEECs from the factor density dimension, 2007-2023

Year	RP		LP		CP		TP	
	Volume (Million USD)	Growth Rate (%)	Volume (Million USD)	Growth Rate (%)	Volume (Million USD)	Growth Rate (%)	Volume (Million USD)	Growth Rate (%)
2007	470.98	–	957.55	–	381.67	–	2944.75	–
2008	431.39	-8.41%	1412.51	47.51%	400.10	4.83%	3553.49	20.67%
2009	425.59	-1.34%	1527.56	8.15%	443.75	10.91%	3653.76	2.82%
2010	964.47	126.62%	1969.50	28.93%	595.97	34.31%	5766.86	57.83%
2011	1148.10	19.04%	2879.58	46.21%	548.42	-7.98%	8175.01	41.76%
2012	1214.19	5.76%	3185.30	10.62%	580.76	5.90%	8275.89	1.23%
2013	1818.77	49.79%	3511.35	10.24%	577.74	-0.52%	8666.91	4.72%
2014	1846.78	1.54%	4192.35	19.39%	660.94	14.40%	9808.34	13.17%
2015	1359.42	-26.39%	3838.07	-8.45%	696.52	5.38%	8176.40	-16.64%
2016	1259.91	-7.32%	3621.02	-5.66%	635.16	-8.81%	9408.59	15.07%
2017	1658.60	31.64%	4821.02	33.14%	758.19	19.37%	11240.47	19.47%
2018	1831.50	10.42%	5320.18	10.35%	876.15	15.56%	14996.39	33.41%
2019	2243.39	22.49%	5861.96	10.18%	862.28	-1.58%	15115.24	0.79%
2020	2274.21	1.37%	6326.19	7.92%	925.50	7.33%	17186.37	13.70%
2021	3146.80	38.37%	7792.77	23.18%	1226.64	32.54%	21414.33	24.60%
2022	3636.05	15.55%	5974.76	-23.33%	1251.53	2.03%	20130.01	-6.00%
2023	3988.07	9.68%	5969.43	-0.09%	1097.42	-12.31%	18911.01	-6.06%

Source: Author's analysis of UN Comtrade Database

With import values rising from $2.94 billion in 2007 to $18.91 billion in 2023, an average CAGR of roughly 12.3%, TP has continuously dominated the overall volume, followed by CP and LP. RP makes up a comparatively minor portion, with a total of $3.99 billion in 2023. Combining with the rapidly increasing demand for CP, this structure suggests that China's imports from CEECs are mostly high-value, technology-driven goods.

A pattern of "high growth - volatility – adjustment" can be observed in the increase of TP imports. The global economic recovery and China's demand for industrial upgrading may be the reasons for the historical peak of the import growth rate in 2010, when it hit 57.83%. Import volumes fell 16.64% in 2015 due to uncertainty in the global economy, but recovery resumed after 2017 and reached 24.60% in 2021. However, 2022 and 2023 saw consecutive negative growth rates of -6.00% and -6.06%, which may have been caused by trade barriers related to technology and global supply chain restructuring.

LP imports have shown significant fluctuations. There have been big changes in LP imports. The growth rate peaked at 47.51% in 2008, but it dropped by 23.33% and 0.09% in 2022 and 2023, respectively. This shows that demand for products that need a lot of work is quite sensitive to outside events. These changes could be because of China's industrial growth and competition from markets in Southeast Asia. The amount of CP that comes into the country has stayed rather steady. But in 2023, there was a negative increase of -12.31%, which means that the structural changes in Chinese demand or the stability of supply networks in CEECs should be looked at more closely. The amount of RP imports changes a lot. This instability is directly related to CEECs' policy on exporting resources and the fluctuations in global commodity prices. For example, the energy crisis of 2022 may have made it necessary to import some raw resources.

3.3.2 Analysis of trade structure based on the commodity's technical complexity.

This section further considers technological content and adopts the three-quartile classification method for trade products proposed by Lall (2000). Lall (2000) used three-digit SITC codes to categorize traded goods into primary products (PP), resource-intensive manufactured products (RB), low-tech manufactured products (LT), medium-tech manufactured products (MT), and high-tech products (HT) (Lall, 2000). This was done because the one- to two-digit SITC codes are too coarse to represent the hierarchical structure of traded goods adequately. The representative products of each category are listed in *Table 6*.

Table 6: Lall's Trade Product Classification.

Categories	Representative products
PP	Fresh fruits, meat, cocoa, tea, timber, coal, crude oil;
RB	Preliminary processed meat, fruits, beverages, forest products, edible oils, petroleum/rubber products, cement, and glass;
LT	Textile fabrics, clothing, hats, footwear, leather goods, pottery, simple metal parts, furniture, jewelry, toys, plastic products;
MT	Vehicle parts, synthetic fibers, chemicals and paints, electric motors, industrial machinery, pumps, switchgear, ships, watches;
HT	Telecommunication equipment, televisions, transistors, turbines, power generation equipment, pharmaceuticals, aircraft, optical instruments;

Source: Lall, 2000

This classification has the advantage of being able to distinguish technical distinctions between different trading commodities, which makes the study results more useful and allows for a more rational explanation of the structural features of macro-level commodity trading.
A matching classification of the SITC three-digit code according to the Lall 2000 standards is shown in *Table 7*.

Table 7: Three-digit SITC code classification.

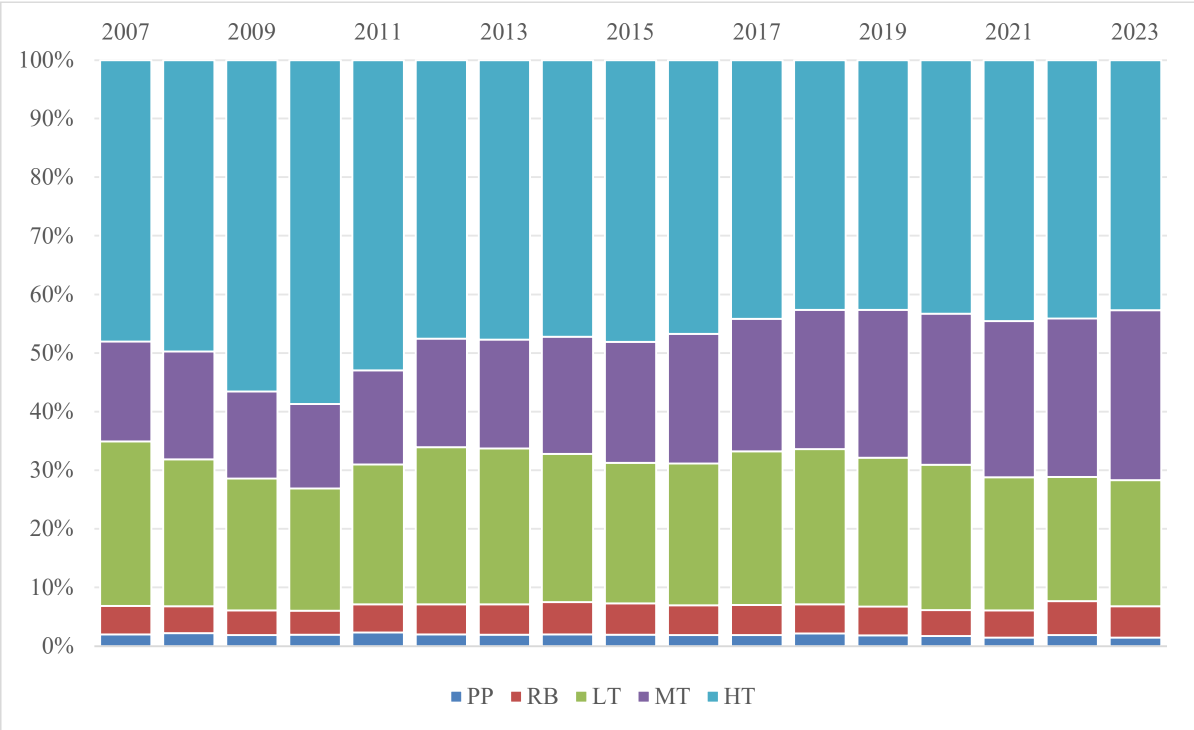
PP	RB	LT	MT	HT
001, 011, 022, 025, 034, 036, 041, 042, 043, 044, 045, 054, 057, 071, 072, 074, 075, 081, 091, 121, 211, 212, 222, 223, 232, 244, 245, 246, 261, 263, 268, 273, 274, 277, 278, 291, 292, 322, 333, 681, 682, 683, 684, 685, 686, 687	012, 023, 024, 035, 037, 046, 047, 048, 056, 058, 061, 062, 073, 098, 111, 112, 122, 247, 248, 251, 264, 265, 269, 281, 282, 286, 287, 288, 289, 334, 335, 411, 431, 511, 514, 515, 516, 522, 523, 531, 532, 551, 592, 621, 625, 633, 634, 635, 641, 661, 662, 663, 664, 667, 689	611, 612, 613, 642, 651, 652, 654, 655, 656, 657, 658, 659, 665, 666, 673, 674, 675, 676, 677, 679, 691, 692, 693, 694, 695, 696, 697, 699, 821, 831, 842, 843, 844, 845, 846, 848, 851, 893, 894, 895, 897, 898, 899	266, 267, 512, 513, 533, 553, 554, 562, 572, 582, 583, 591, 598, 653, 671, 672, 678, 711, 713, 714, 721, 722, 723, 724, 725, 726, 727, 728, 737, 741, 742, 743, 744, 745, 749, 762, 763, 772, 773, 775, 781, 782, 783, 784, 785, 786, 791, 793, 812, 872, 873, 882, 884, 885,	525, 541, 712, 716, 718, 751, 752, 759, 761, 764, 771, 774, 776, 778, 792, 871, 874, 881

Source: Author's construction based on Lall, 2000

Figure 9 and *Figure 10* illustrate that the types of goods that China imports and sells to CEECs are very different. *Figure 9* shows that China's exports to CEECs were mostly in the HT category. In 2023, HT exports were worth $37.90 billion, which was 42.72% of all exports. Next came the LT and MT groups, which made up 21.52% and 28.98%, respectively. Exports of PP and RB accounted for a smaller share, totaling less than 10%. China has a more balanced import structure with CEECs when compared with exports.
Figure 10 shows that the largest category of imports in 2023 was MT, which accounted for $13.57 billion, or 49.57% of total imports. The HT category came in second with 26.27%. It is interesting that the PP and RB categories together made up 17.74% of all imports, which is far more than their percentage of exports.
More specifically, HT has always been a big share of China's exports to CEECs. It expanded steadily from 2007 to 2021, at an average annual rate of 16%. And it reached a peak of $37.59 billion in 2021. This increase is closely related to China's enhanced position in the GVC, especially when it comes to electronics and telecoms. But there was a drop in 2022–2023,

which could be closely related to the US-China chip war.[6] The United States has been slowly tightening export regulations on chips and equipment to China since 2020. The most severe limitations were put in place in October 2022, which had a direct effect on the production capacity of China's semiconductor industry. Exports of MT have grown quickly, reaching $25.71 billion in 2023, which is 5.4 times more than in 2007. The growth rate went up a lot, especially after 2017. This shows that China is becoming more competitive in areas like machinery and cars. After 2019, the rise of LT exports slowed down, probably because other Southeast Asian countries were becoming more competitive. Additionally, this suggests that China's competitive advantage is eroding in conventional labor-intensive industries.

Figure 9: The changes of China's Export Commodity Structure from a Technical Complexity Perspective, (2007-2023).



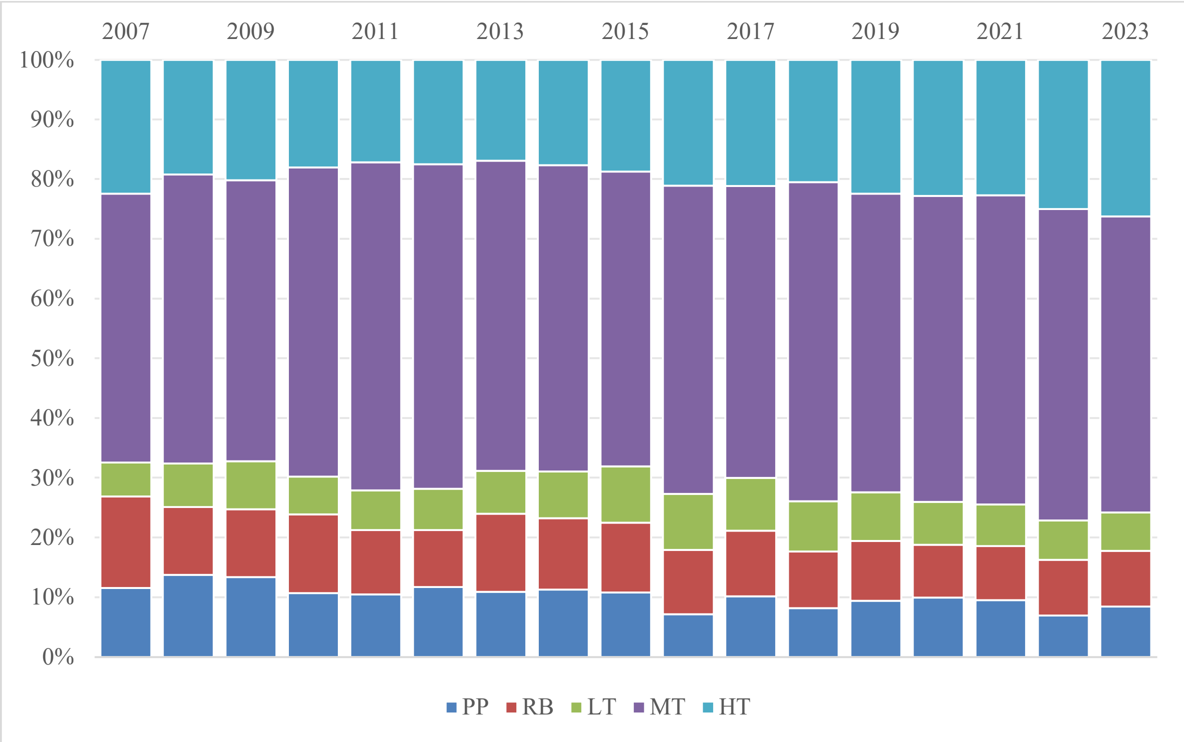
Source: Author's analysis based on UN Comtrade Database

Looking at the changes in the structure of imports, MT is the main type of goods that China buys from CEECs. In 2023, the value of these imports was $13.57 billion. During the time period studied, the MT category grew by an average of 32.92% each year. There have been big changes in imports. For example, they fell by 16.6% in 2015 and rose by 26.4% in 2021. These changes might be because CEECs are having trouble making things like cars and

[6] The US-China semiconductor conflict, also known as the "US-China chip war", got worse in October 2022 when the Biden administration put strict export controls on advanced semiconductor technology to China (Gupta, Borges, & Palazzi, 2024).

machines. HT product imports have been gradually rising, reaching $7.19 billion in 2023. The average annual growth rate from 2007 to 2023 was 35.29%. It shows a far higher growth rate than that of exports. This indicates that China's demand for high-tech products from CEECs continues to expand. LT imports are the smallest in scale and grow slowly, reflecting a weakening demand for low-end manufactured goods in China.

Figure 10: The changes of China's Import Commodity Structure from a Technical Complexity Perspective, (2007-2023).



Source: Author's analysis based on UN Comtrade Database

3.4 Analysis of competitiveness and complementarity of trade between China and CEECs.

This section employs the Trade Intensity Index (TII) and the Trade Complementarity Index (TCI) to conduct a detailed study of trade competitiveness and complementarity between China and the CEECs, as well as how these factors have evolved since the implementation of the BRI.

3.4.1 Calculation of the Revealed Comparative Advantage (RCA) Index.

International trade theory states that a country's trade patterns are based on its comparative advantage. The revealed comparative advantage index (RCA) is a standard way to figure out how competitive a country is over time. Balassa (1965) used RCA in 1965 to show industrial comparative advantage . The formula is listed below:

$$RCA_{ij} = (X_{ij} / X_{it}) / (X_{wj} / X_{wt})$$

This formula gives the export value of j products in country i as X_{ij}, the export value of all products in country i as X_{it}. X_{wt} represents the global export value of all items, while X_{wj} represents the global export value of j products (Balassa, 1965). Country j can be treated as having a strong comparative advantage in exporting product i if $RCA_{ij} > 1$; if $RCA_{ij} > 2.5$. meaning that product i of Country j has extremely strong export competitiveness.

Based on the SITC 1-digit coding scheme, the RCA Index for China and 16 CEECs in 2015 and 2023 is shown in *Table 8* and *Table 9*, respectively.

Table 8: Calculated results of RCA Index, 2015.

2015	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9
China	0.40	0.17	0.18	0.12	0.06	0.52	1.36	1.28	2.03	0.02
Albania	0.85	0.22	2.40	0.85	0.00	0.05	1.18	0.08	2.84	4.10
Bosnia Herzegovina	1.02	0.82	3.16	0.67	2.52	0.64	1.80	0.40	2.05	0.55
Bulgaria	1.63	2.20	1.87	1.02	2.09	0.89	1.73	0.56	1.07	0.70
Croatia	1.64	1.83	2.24	1.05	0.48	1.08	1.24	0.66	1.27	0.21
Czech Republic	0.57	1.03	0.64	0.28	0.65	0.55	1.25	1.53	0.96	0.05
Estonia	1.32	1.48	2.06	1.05	0.67	0.48	1.08	0.87	1.19	1.11
Hungary	1.03	0.43	0.47	0.22	1.06	1.01	0.81	1.55	0.67	0.40
Latvia	1.98	4.76	3.82	0.72	0.44	0.72	1.43	0.64	0.80	0.54
Lithuania	2.25	3.15	1.38	1.57	0.80	1.34	0.84	0.50	1.24	0.38
Montenegro	1.30	10.17	5.77	1.42	0.39	0.37	2.40	0.26	0.34	0.00
North Macedonia	1.17	4.26	1.38	0.13	0.91	2.06	1.40	0.68	1.37	0.00
Poland	1.67	1.98	0.63	0.32	0.55	0.81	1.48	1.07	1.19	0.03
Romania	1.04	2.27	1.15	0.43	0.70	0.42	1.28	1.20	1.17	0.59
Serbia	2.43	3.96	0.97	0.27	2.38	0.77	1.69	0.80	1.04	0.27
Slovakia	0.53	0.19	0.52	0.34	0.39	0.43	1.32	1.63	0.77	0.05
Slovenia	0.58	0.58	1.07	0.51	0.18	1.58	1.66	1.03	0.83	0.07

Source: Author's calculation based on UN Comtrade

There is a clear pattern of differing competitive advantages between China and the CEECs. China has a big edge in manufacturing (SITC 6–8) since its industrial manufacturing system and high-tech skills are so advanced. China does not have an advantage in businesses that use a lot of resources, especially in SITC 4, where it is not very competitive at all.

Additionally, CEECs exhibit distinct divergences. Resource-exporting countries like Albania, Montenegro, and Latvia continue to be highly competitive in the primary product sectors. For instance, Montenegro's RCA index of SITC 1 is still the highest in the area, even if it dropped from 10.17 to 7.72. Slovakia, Hungary, and the Czech Republic are examples of manufacturing-specialized nations that are highly skilled in particular manufacturing fields. Slovakia now has the highest RCA index for SITC 7 in the region, rising from 1.63 to 1.76. Slovenia and Estonia are examples of transition and adjustment nations that have effectively accomplished industrial upgrading. The RCA index of SITC 4 in Estonia has risen sharply from 0.67 to 4.69, and Slovenia has a similar situation for SITC 5.

These results suggest that there is a great deal of room for collaboration between China and CEECs in a number of areas. The main products of CEECs are naturally complemented by China's manufacturing capabilities in machinery and equipment, while the latter's strengths in particular technology-intensive products can satisfy China's market demand. China and Slovenia working together on pharmaceutical technology, Estonia's agricultural product processing, and the automotive supply chain working with Hungary and the Czech Republic are all areas that should be given priority for expansion. In general, China's industrial strengths are moving from labor-intensive to technology-intensive industries. At the same time, CEECs are using a dual-track development model that combines "resource exports" and "technological specialization". The ability of two sides to work together in fields such as machinery manufacturing and the chemical industry is getting stronger, which is a good sign for future cooperation.

Table 9: Calculated results of RCA Index, 2023.

2023	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9
China	0.33	0.14	0.17	0.17	0.18	0.65	1.41	1.32	1.85	0.35
Albania	1.46	0.83	1.40	0.58	1.11	0.16	1.62	0.20	2.65	3.03
Bosnia Herzegovina	0.71	0.73	2.07	0.87	1.37	0.68	2.08	0.55	2.12	0.00
Bulgaria	1.93	1.04	1.53	0.72	3.28	0.87	1.74	0.65	0.93	1.02
Croatia	1.87	2.76	1.62	1.10	0.72	0.99	1.45	0.68	1.13	0.08
Czech Republic	0.60	1.15	0.47	0.18	0.42	0.57	1.13	1.63	1.06	0.06
Estonia	1.44	1.03	2.04	0.80	4.69	0.51	1.27	0.87	1.17	0.78
Hungary	1.05	0.66	0.42	0.28	1.18	0.98	0.76	1.61	0.74	0.03
Latvia	2.45	5.36	3.14	0.66	0.84	0.81	1.35	0.59	0.90	0.47
Lithuania	2.14	4.18	1.24	1.31	0.45	1.21	0.91	0.57	1.35	0.30
Montenegro	1.06	7.72	3.30	3.35	0.62	0.66	1.28	0.28	0.36	0.00
North Macedonia	0.89	3.36	1.11	0.38	0.27	2.78	0.99	0.74	1.00	0.02
Poland	1.80	2.39	0.49	0.28	0.56	0.76	1.44	1.06	1.44	0.04
Romania	1.24	2.72	1.03	0.49	0.80	0.39	1.39	1.24	1.06	0.34
Serbia	1.66	4.38	1.76	0.56	1.62	0.73	1.75	0.84	0.98	0.18
Slovakia	0.58	0.30	0.44	0.32	0.24	0.33	1.27	1.76	0.75	0.04
Slovenia	0.50	0.46	0.58	0.51	0.18	3.32	1.25	0.74	0.68	0.03

Source: Author's calculation based on UN Comtrade

3.4.2 Calculation of Trade Intensity Index (TII).

The trade intensity index refers to the share of one country's exports going to a partner divided by the share of world exports going to the same partner. It comprehensively reflects the degree of trade interdependence between the two regions. It is mainly used to measure the closeness of trade relations between the two countries or the potential for trade growth. The specific formula is as follows:

$$TII_{ij} = (X^i_j / X_{it}) / (X^w_j / X_{wt})$$

Where X^i_j represents country i's exports to country j, X_{it} is country i's total exports, and X^w_j means the value of world exports to country j, X_{wt} is the world total exports. Close trade ties between the two nations are indicated if $TII_{ij} > 1$, and the strength of those ties grows as the value rises. The two nations have loose trade relations if TII_{ij} is less than 1, and the smaller the value, the more distant the trade relationship.

According to *Table 10*, it can be seen that Germany's trade ties with CEECs were significantly stronger than China's between 2005 and 2023. This is consistent with the current state of trade development between CEECs, China, and Germany. Although China's overall trade ties are relatively weak, it has made significant progress in some countries, such as Albania, Hungary, and Slovakia.

Table 10: Comparison of CEECs' TII with China and Germany in 2005, 2014, and 2023.

	China			Germany		
	2005	2014	2023	2005	2014	2023
Albania	0.09	0.41	0.26	0.46	0.47	0.87
Bosnia Herzegovina	0.01	0.02	0.02	1.58	2.55	2.65
Bulgaria	0.11	0.29	0.26	1.37	2.02	2.26
Croatia	0.02	0.06	0.04	1.49	1.88	2.01
Czech Republic	0.07	0.14	0.12	4.67	5.37	5.42
Estonia	0.10	0.14	0.16	0.80	0.74	1.05
Hungary	0.12	0.23	0.14	4.19	4.61	4.33
Latvia	0.04	0.12	0.11	1.43	1.14	1.10
Lithuania	0.02	0.05	0.04	1.31	1.22	1.28
Montenegro	0.00	0.09	0.04	0.00	0.30	0.53
North Macedonia	0.09	0.23	0.14	2.48	6.92	7.27
Poland	0.12	0.13	0.10	3.93	4.35	4.61
Romania	0.14	0.13	0.11	1.95	3.23	3.44
Serbia	0.00	0.01	0.46	0.00	2.01	2.49
Slovakia	0.07	0.26	0.30	3.59	3.68	3.46
Slovenia	0.05	0.07	0.05	2.77	3.37	2.22

Source: Author's calculation based on UN Comtrade

There is a gradient distribution of "V4 > Western Balkans > Baltic states" in the trade between Germany and the CEECs. Germany has the most intensive trade activities with the V4 countries, which demonstrates a big difference in how trade is concentrated in different regions. This is directly linked with the level of industrialization of each sub-region.

Trade between CEECs and China is far less intense than trade between CEECs and Germany, but China has a lot of room to grow. It had an average annual growth rate of 7.2% from 2005 to 2023, which was far higher than Germany's (2.25%). The Western Balkans saw the most rise, with Serbia's TII with China going from almost nothing to 0.46. A closer look shows three important things about the trade intensity between CEECs and China: First, trade performance between China and the CEECs is very project-driven, with big infrastructure and capacity cooperation projects immediately causing big jumps in the index. Serbia is a good example. Second, the small size of the markets and the way the industries are set up in the Baltic nations and Montenegro have kept their trade intensity levels low for a long time. Also, it is important to note that the average growth rate of trade intensity levels in EU member states is lower than that of candidate countries. This shows that the institutional part of EU membership has a big effect on trade intensity levels.

3.4.3 Calculation of Trade Complementarity Index (TCI).

To better reflect the complementarity of trade between CEECs with commodity structure, this section uses a comparative analysis of the trade complementarity index (TCI) from 2007, 2015, and 2023 to explore the degree of alignment between China's export trade development model and the import trade patterns of CEECs in bilateral trade before and after the financial crisis and the outbreak of the pandemic.

$$TCI_{ijk} = RCAx_{ik}\ 1\ RCA_{Mik}$$

The TCI between exporting nation i and importing country j for product k is represented in the formula above. Countries i and j are complementary in product k if the TCI_{ijk} is greater than 1. Both nations will benefit more from increased trade in related products when the TCI_{ijk} is higher. This index is useful for exploring the efficiency of bilateral cooperation. $RCAx_{ik}$ and RCA_{Mik} represent the revealed comparative advantage of country i in exporting product k and the revealed comparative disadvantage of country j in importing product k, respectively, calculated by the following formulas:

$$RCAx_{ik} = (X_{ik} / X_{it}) / (X_{wk} / X_{wt})$$

$$RCA_{Mik} = (M_{jk} / M_{jt}) / (M_{wk} / M_{wt})$$

Where X represents export value, and M represents import value. i and j represent different countries, k represents corresponding products, and w represents all countries worldwide.

The results of the TCI between China and CEECs in 2007, 2015, and 2023 are calculated based on the above formulas.

Table 11 shows the distribution of the TCI between China and CEECs in 2007. It can be observed that resource-intensive products, particularly those classified under SITC 2, SITC 3, and SITC 4, generally have TCI below 0.5, indicating a weak complementarity between the two sides in the areas of agricultural products, minerals, and other primary commodities. Labor-intensive products (SITC 6 and SITC 8) show a significant advantage, with the TCI of SITC 6 with North Macedonia reaching 2.56. SITC8 generally exceeds 1.5 in the V4, highlighting the competitive edge of China's manufacturing exports. Regional differences have been observed in technology-intensive products - SITC 7 - with highly industrialized nations like the Czech Republic (1.46), Slovakia (1.48), and Hungary (1.64) fluctuating around 1.5, whereas Balkan nations typically fall below 1. This result shows how China's exports of machinery and transportation equipment are starting to match CEECs' need for industrial modernization.

Table 11: Calculated results of TCI between China and 16 CEECs, 2007.

2007	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9
Albania	–	–	–	–	–	–	–	–	–	–
Bosnia Herzegovina	–	–	–	–	–	–	–	–	–	–
Bulgaria	0.45	0.14	0.40	0.25	0.09	0.35	1.82	0.97	1.30	0.03
Croatia	0.69	0.12	0.09	0.19	0.07	0.44	1.77	1.10	2.21	0.00
Czech Republic	0.43	0.12	0.13	0.10	0.04	0.41	1.87	1.46	1.87	0.00
Estonia	0.63	0.42	0.19	0.18	0.06	0.35	1.58	1.09	1.76	0.05
Hungary	0.34	0.08	0.07	0.12	0.03	0.34	1.26	1.64	1.24	0.08
Latvia	0.75	0.44	0.22	0.14	0.09	0.39	1.56	1.13	2.05	0.03
Lithuania	0.75	0.23	0.17	0.20	0.12	0.50	1.44	1.14	1.47	0.01
Montenegro	–	–	–	–	–	–	–	–	–	–
North Macedonia	0.97	0.13	0.31	0.23	0.24	0.37	2.56	0.66	1.27	0.00
Poland	0.52	0.10	0.16	0.13	0.08	0.52	1.89	1.20	1.60	0.03
Romania	0.50	0.10	0.14	0.13	0.08	0.40	2.02	1.26	1.59	0.02
Serbia	0.45	0.15	0.20	0.22	0.06	0.56	1.96	0.97	1.66	0.00
Slovakia	0.42	0.14	0.15	0.14	0.05	0.35	1.55	1.48	1.98	0.01
Slovenia	0.55	0.11	0.31	0.12	0.06	0.48	2.02	1.16	1.74	0.00

Source: Author's calculation based on UN Comtrade

Table 12 illustrates the calculation results of TCI between China and CEECs in 2015. There is still not much complementarity between the two parties when it comes to resource-intensive products. Only Montenegro got an index of 1.30 in SITC 0 (food and live animals), while all the other nations scored below 1. The complementarity of labor-intensive goods has grown even stronger, with North Macedonia's TCI of SITC 6 rising to 3.96, which is the highest level ever. At the same time, Croatia and Poland's TCI of SITC 8 also went over 2 in 2015. This shows that China's export competitiveness in this type of product is still becoming better. The TCI for technology-intensive products (SITC 7) remained stable overall, with the Czech

Republic, Hungary, and Slovakia maintaining their leading positions. However, most of the Western Balkan countries had lower TCI with SITC 7, indicating that the complementarity of technology-intensive trade varies by country.

Table 12: Calculated results of TCI between China and 16 CEECs, 2015.

2015	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9
Albania	0.73	0.45	0.09	0.10	0.10	0.44	2.22	0.61	2.08	0.06
Bosnia Herzegovina	0.88	0.55	0.13	0.14	0.11	0.59	2.52	0.71	1.70	0.00
Bulgaria	0.47	0.29	0.38	0.16	0.04	0.61	1.81	0.86	1.25	0.02
Croatia	0.72	0.25	0.08	0.16	0.06	0.64	2.02	0.83	2.37	0.00
Czech Republic	0.32	0.14	0.10	0.07	0.03	0.50	1.90	1.59	1.93	0.00
Estonia	0.51	0.43	0.14	0.14	0.02	0.44	1.51	1.13	1.59	0.03
Hungary	0.27	0.11	0.08	0.09	0.02	0.54	1.51	1.61	1.34	0.02
Latvia	0.66	0.63	0.17	0.14	0.06	0.53	1.63	0.97	1.84	0.02
Lithuania	0.64	0.44	0.17	0.21	0.07	0.67	1.39	0.83	1.41	0.01
Montenegro	1.30	0.76	0.11	0.11	0.08	0.47	1.71	0.77	2.38	0.00
North Macedonia	0.60	0.22	0.15	0.11	0.10	0.53	3.96	0.70	1.16	0.00
Poland	0.46	0.16	0.14	0.08	0.04	0.63	1.91	1.26	2.05	0.01
Romania	0.46	0.19	0.12	0.07	0.03	0.60	2.26	1.24	1.62	0.01
Serbia	0.40	0.26	0.18	0.12	0.03	0.68	2.02	0.96	1.27	0.03
Slovakia	0.29	0.14	0.10	0.09	0.03	0.40	1.66	1.63	2.20	0.00
Slovenia	0.47	0.18	0.25	0.11	0.03	0.68	2.10	1.08	1.68	0.00

Source: Author's calculation based on UN Comtrade

The performance of trade complementarity in 2023 is shown in *Table 13*. The TCI of resource-intensive products has further weakened, with an overall declining trend compared to 2015. The TCI of labor-intensive products remains at a high level, with North Macedonia's TCI of SITC 6 further rising to 4.11. Albania, Bosnia and Herzegovina, Montenegro, and Serbia also show significant increases, indicating that China's export benefits in the Western Balkans continue to expand. The TCI of SITC7 is showing an overall upward trend, with V4 countries such as the Czech Republic (1.80), Hungary (1.69), and Slovakia (1.85) standing out, indicating that trade potential in this sector, the machinery and transportation equipment, is beginning to materialize in V4.

China and the CEECs have trade complementarity mostly in areas where labor and technology are both important. Of them, products that require a lot of labor exhibit the most evident growth and complementarity. There are still big variations between countries when it comes to technology-intensive products, but the complementarity of these products is getting better all the time. There is also still room to look into what the future might hold in the Western Balkans. Also, resource-intensive items don't have a lot of trade potential; therefore, both sides can look into alternative ways to work together, like investing or sharing technology, to make up for the lack of trade complementarity.

Table 13: Calculated results of TCI between China and 16 CEECs, 2023.

2023	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9
Albania	0.61	0.61	0.06	0.13	0.14	0.56	2.73	0.85	2.09	0.42
Bosnia Herzegovina	0.65	0.45	0.08	0.16	0.14	0.65	3.06	0.86	1.78	0.00
Bulgaria	0.43	0.31	0.30	0.13	0.27	0.70	2.00	1.09	1.47	0.29
Croatia	0.58	0.29	0.07	0.19	0.13	0.69	2.04	0.99	2.28	0.02
Czech Republic	0.26	0.14	0.07	0.07	0.06	0.61	1.91	1.80	2.03	0.02
Estonia	0.46	0.28	0.12	0.13	0.46	0.58	1.77	1.15	1.73	0.61
Hungary	0.28	0.11	0.07	0.12	0.09	0.78	1.73	1.69	1.48	0.02
Latvia	0.69	0.65	0.13	0.14	0.23	0.65	1.46	1.05	1.86	0.31
Lithuania	0.49	0.39	0.12	0.23	0.16	0.74	1.49	1.02	1.57	0.22
Montenegro	0.98	0.70	0.03	0.12	0.14	0.59	2.13	0.87	2.47	0.00
North Macedonia	0.44	0.20	0.07	0.15	0.16	0.68	4.11	0.88	1.22	0.02
Poland	0.38	0.16	0.10	0.11	0.15	0.74	1.96	1.31	2.38	0.14
Romania	0.45	0.17	0.09	0.10	0.06	0.72	2.22	1.38	1.84	0.08
Serbia	0.35	0.23	0.12	0.17	0.09	0.73	2.23	0.89	1.28	0.90
Slovakia	0.27	0.14	0.08	0.10	0.13	0.43	1.75	1.85	2.00	0.01
Slovenia	0.26	0.13	0.12	0.11	0.06	2.06	1.65	0.87	1.22	0.02

Source: Author's calculation based on UN Comtrade

3.5 Challenges of bilateral trade between China and CEECs.

Although trade cooperation between China and CEECs has achieved impressive results and has a prosperous development space, comprehensive cooperation between the two parties is still in its infancy. A lack of sufficient practical experience exists, and other factors still restrict the deepening of trade cooperation between the two parties.

3.5.1 Persistent trade surpluses from China constrain the trade potential.

Firstly, the share of China's imports from CEECs is generally low. In contrast to China's exports to the rest of the world, the country's share of exports to the CEECs is still relatively small, despite continuous growth. This is because China still lacks a sufficient understanding of CEECs, making it challenging to identify reasonable market entry points, thereby compressing the room for improving trade between the two parties. At the same time, China maintains a significant trade surplus with the CEECs. As shown in *Figure 6*, the surplus expanded from $8.63 billion in 2005 to $64.85 billion in 2023, with an average annual growth rate of 36%. The expansion of total trade volume between the two parties did not significantly reduce the share of trade surplus. It can be presumed that the surplus position cannot be reversed in a short period; China will likely maintain a surplus position with CEECs shortly.

Maintaining a high surplus for an extended period may limit the potential for trade cooperation between China and the CEECs to some degree.

3.5.2 Trade imbalances between countries and products hampered cooperation.

In addition, the imbalance in trade cooperation also creates resistance. Trade cooperation differs significantly between countries. Poland has long been China's top trade partner in the CEECs, with a total trade volume of approximately $42.03 billion in 2023, accounting for nearly 34% of China's total trade with the 16 CEECs. The imbalance of trade cooperation between countries is obvious. The varying development levels of each country in the CEE contributed to this imbalance in trade cooperation. The continuous improvement of the future "16+1" cooperation mechanism should prioritize the balanced development of inter-regional cooperation. Moreover, the trade structure is single, with the import and export of high-tech products accounting for 60% of the total trade volume in 2023. China has actively invested in the infrastructure development of CEECs and exported many high-end manufacturing products to promote trade cooperation with these countries. The imbalance in the trade commodity structure also hindered cooperation between China and the CEECs. The field of cooperation needs to be expanded.

3.5.3 Development disparities in CEECs pose challenges.

CEECs are quite different from each other in many ways. They have different geographical locations, population sizes, and land areas. Also, some countries in this region are economically developed, while others are less developed. CEECs also face political challenges. External factors affect their relationships with each other. These include changes in international relations. Internal factors also create problems. These factors include ethnic beliefs and historical conflicts. As a result, these countries do not always recognize each other politically. The countries have different political systems. This means they have different foreign policies. They still struggle with ethnic relations within their borders. Regional integration is also difficult for them. These challenges make cooperation more complex in the region. Those disparities in economic strength and political identity prevent CEECs from forming a unified strategic approach toward China, resulting in highly differentiated cooperation needs with China and creating obstacles to expanding trade areas between China and CEECs.

3.5.4 Protectionism hinders China-CEECs cooperation.

Additionally, global trade growth is decreasing due to the emergence of new trade protectionism, including localization requirements, government subsidies, and government procurement priorities, in conjunction with traditional trade protection measures such as tariff barriers, bans, and quotas. Most of the CEECs are member states of the European Union, they are more inclined to choose EU countries when carrying out foreign cooperation and give priority to trade within the EU. CEECs' policy orientations toward China are likely to shift as Western Europe starts to thrive again, which would also create considerable uncertainty for China's policy coordination and pose a significant barrier to China's continued expansion of trade cooperation with CEECs. Except that, major nations worldwide have expressed concern about the growing interactions between China and the CEECs in various disciplines as the "16+1" collaboration develops, and the BRI construction intensifies in the CEECs. Specific steps have been taken to restrict cooperation between China and the CEECs. For example, the United States has consistently bolstered its military and political ties with CEECs, which has hindered China's connectedness with CEECs and impeded trade and economic interactions between the two regions. In sum, interference is everywhere. It further increases the risks for Chinese enterprises to explore the CEE markets, thus bringing difficulties to the win-win development of trade cooperation between the two parties.

3.5.5 Infrastructure connectivity bottlenecks create difficulties.

Last but not least, although the level of connectivity between China and the CEECs has continued to improve with the implementation of the BRI, the lagging infrastructure level of the CEECs remains a key factor that hinders cooperation between China and the CEECs. Facility connectivity is the driving force for promoting international trade cooperation. It is impossible to achieve the rapid development of trade exchanges without adequate guarantees of facility connectivity. As the scale of trade between China and the CEECs expands, the existing stock of facilities in the CEECs can no longer meet the growing demand, and the rising resistance to the flow of factors within the CEECs has become a constraint for cooperation. It is a significant bottleneck that not only hinders the enthusiasm of both parties for interaction but also hinders the deepening of economic and trade cooperation between the two parties.

3.6 Summary of Chapter 3.

This chapter analyzes the current state of bilateral trade development between China and CEECs, finding that trade cooperation between the two sides is showing positive momentum, with trade volumes continuing to expand and a strong willingness to cooperate. However, the trade relationship between China and CEECs still has some problems. There are several main challenges that need to be solved. First, China has a large trade surplus with CEECs. This means China exports much more than it imports from these countries. CEECs have a low share of imports from China. This situation limits the growth of trade between the two sides. Second, the trade structure is too simple. High-tech products make up 60% of all trade. However, other important areas are not well developed. These include energy and agricultural products. This creates missed opportunities for both sides. Third, trade is not equally spread across the region. V4 countries account for over 70% of all trade volume. Other CEECs have much smaller trade shares. This creates regional imbalances. Fourth, outside factors create trade barriers. EU policies limit some cooperation. Major powers also interfere, for example, the involvement of the United States in military ties. Last but not least, poor infrastructure makes everything more expensive. Logistics costs are high in the region. This seriously affects supply chain connections between countries.

Despite these challenges, the “16+1” cooperation system has helped China and the CEECs’ trade flourish even throughout the global economic crisis and the COVID-19 pandemic. As the mechanism matures and develops further, it is expected to continue driving trade cooperation between the two sides. To further strengthen trade relations, China and CEECs should address trade imbalances, promote more balanced development among CEECs, achieve trade diversification, and explore new areas of cooperation.

4.0 THE ANALYSIS OF CHINA’S OFDI IN CEECS.

CEECs are an important geographic link for China to get to the European market. Their importance to the economy has also expanded a lot. Since China started its “going global” policy and the BRI, China’s ODFI has shown a “leapfrog” development pattern. Thus, CEECs stand out in China’s OFDI scene due to the steadily improving investment climate. The unstable state of the EU in recent years has also compelled CEECs to seek alternative paths. This chapter analyzes the current status of China’s OFDI in CEECs. It summarizes the development trends of the flows and stock of China’s OFDI and the evolution of investment destinations and sectors to provide reference and guidance for Chinese enterprises considering future investments in CEECs.

4.1 Overview of the scale of China’s OFDI in CEECs.

Investment cooperation between China and CEECs developed relatively late. The OFDI from China to CEECs only began to develop in the 21st century. However, China’s OFDI in CEECs is progressing rapidly, and its scale continues to expand. The expansion of China’s OFDI flow to CEECs has been mostly unpredictable, but it has gone up a lot in the last few years. The average yearly flow of OFDI from 2005 to 2012 was roughly $100 million, which is a tiny amount. The 2008 financial crisis had a big effect on it, as seen by the negative OFDI flow numbers from many destination countries in 2009. Implementing BRI has led to notable expansion since 2013 across multiple CEEC markets, with Hungary and the Czech Republic emerging as leading destinations and peak activity recorded in 2016, particularly the Czech Republic, which has received an exceptional $512 million inflow. This growth was primarily driven by energy and infrastructure projects in countries such as Serbia and Hungary. After 2018, due to stricter EU reviews and the impact of the COVID-19 pandemic, investment declined in some years. However, the investment in the CATL battery facility in Hungary, the Zijin mining M&A in Serbia, and several infrastructure projects, which made significant contributions, helped it bounce back nicely in 2023, with flows exceeding $1.44 billion. The stock of China's OFDI in CEECs also shows sustained expansion, rising from approximately $0.15 in 2005 to over $11.57 billion in 2023, with an average annual growth rate of 437.67%, reflecting the increasing strategic importance of CEECs in China's investment strategy in Europe.

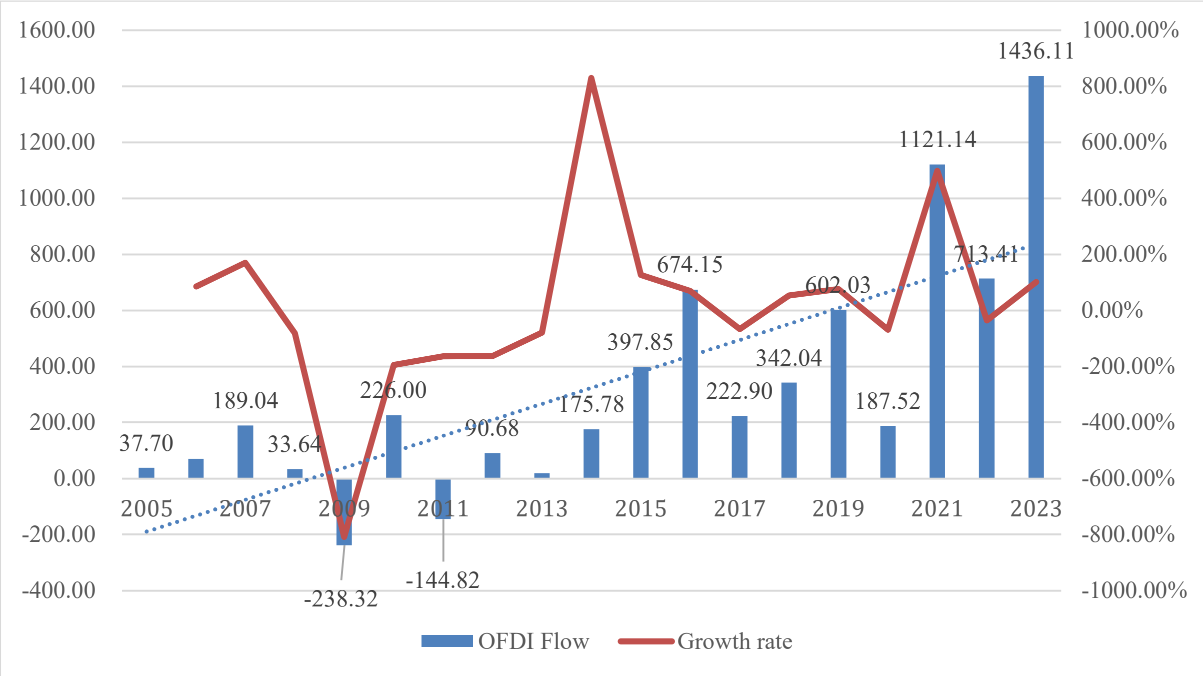
4.1.1 Analysis of China's OFDI flows in CEECs.

In recent years, the amount of OFDI in CEECs has steadily expanded, and the "16+1" cooperation mechanism has played a vital role in this growth. Specific investment data show that China's overall OFDI in CEECs has gone beyond a billion dollars. The introduction of the BRI has presented both opportunities and challenges to bilateral development and has been a key driver of OFDI in the region.

The evolution of China's direct investment flows to CEECs, as shown in *Figure 11*, exhibits complex fluctuations and stage-specific patterns. A unique investment logic and influencing factors characterize each stage. Significant swings occurred between 2005 and 2012, perfectly capturing new investment partnerships' errancy. Beginning at $69.96 million in 2006, the amount increased by 170% to $189.04 million in 2007, which was the top for that era. However, in 2008, it fell 82% to $33.64 million, and in 2009, it even hit an all-time low of $-238.32 million, primarily due to capital flight following the financial crisis. Despite a robust recovery in 2010, the numbers reverted to a negative level in 2011. The high sensitivity of early-stage investments is highlighted by this "rollercoaster-style" volatility, which reflects both an immature investment strategy lacking risk hedging mechanisms and a significant reliance on global financial conditions.

After 2013, investment activity began to exhibit predictable patterns as the BRI progressed. In 2014, investment shot up by an amazing 829%, going from a low of $18.91 million in 2013 to a high of $674.15 million in 2016. In 2017, it had a big correction of 67%, dropping to $222.90 million. This pullback pattern shows how investment projects tend to group together. There will always be a period of adjustment after a lot of big infrastructure projects are built in a short amount of time. Investment dropped sharply to $187.52 million in 2020, after growing quickly in 2018 and 2019. It passed a significant milestone in 2021 when it rose to $1121.14 million. After settling at $713.41 million in 2022, the year 2023 reached a new high of $1436.11 million. The variations during this time frame have shown clear cyclical patterns, which may be strongly related to the election cycles of host nations, such as the policy window brought about by several nations' changes in government leadership in 2021.

Figure 11: China's OFDI flows in CEECs from 2005 to 2023, Million USD.



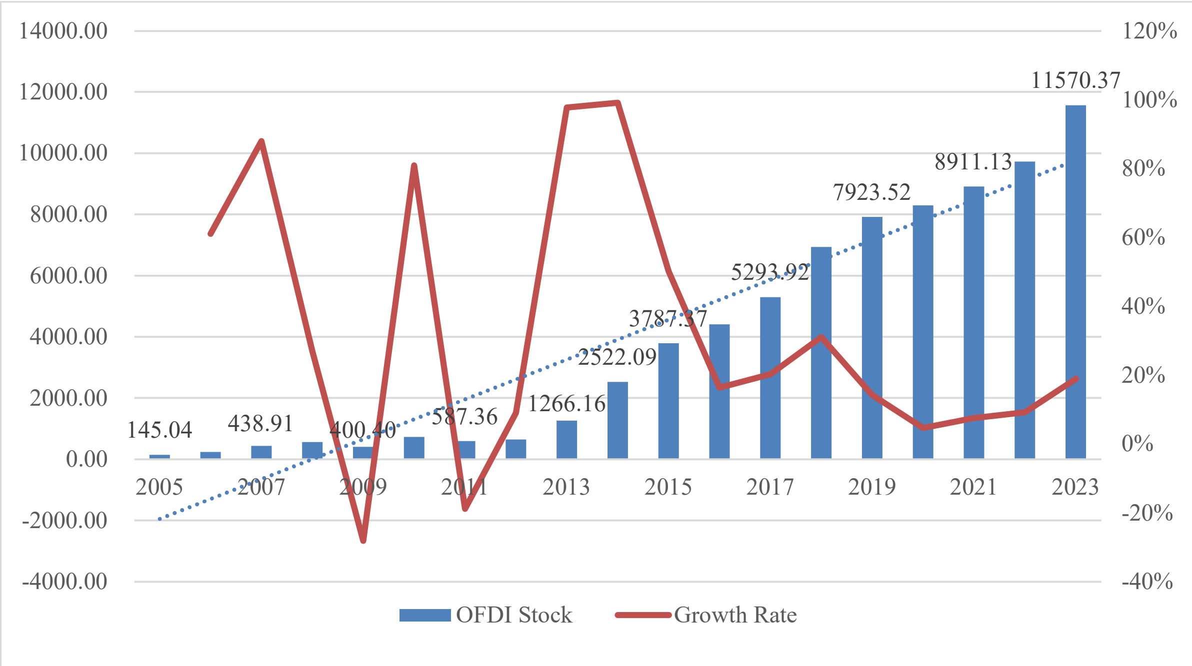
Source: Author's analysis of OECD FDI data from receivers, CEECs' national bank data, and China's OFDI data from MOFCOM.

4.1.2 Analysis of China's OFDI stocks in CEECs.

Figure 12 shows the important phased evolution features of China's OFDI stock in CEECs from 2005 to 2023. The first stage, from 2005 to 2012, had steady, progressive expansion with an average annual growth rate of about 49%. Most of the investments were made in larger economies like Poland, Romania, and Hungary. Chinese investors made comparatively cautious investment choices during this period, indicating that they were still in the exploratory stage of the CEE market.

Since the BRI was implemented in 2013, China's OFDI in CEECs has experienced the second phase of rapid expansion. In 2017, the stock size of China's OFDI in CEECs surpassed 5.29 billion US dollars, growing at an average annual rate of 145%. Two noteworthy aspects of this investment phase were its geographical diversification and upgrading of industry structure, with investment priorities gradually shifting toward new destinations and capital- and technology-intensive sectors. After 2018, however, investment growth slowed considerably, growing at an annual rate of less than 20%, a shift strongly associated with several structural factors. First, investment projects in several high-tech sectors were directly impacted by the EU's strengthened foreign investment review mechanism; second, the GVC restructuring has altered the position of CEECs within supply chains; third, geopolitical factors have become more significant, as evidenced by the U.S. "Clean Network Initiative"[7] restrictions on investments in Chinese 5G equipment.

Figure 12: China's OFDI stock in CEECs from 2005-2023, Million USD.



Source: Author's analysis of OECD FDI data from receivers, CEECs' national bank data, and China's OFDI data from MOFCOM.

China's direct investment in CEECs is likely to face a more complicated policy environment in the future. On the one hand, the costs of compliance will go up as the EU's investment evaluation processes get stronger. The EU's aims for cutting carbon emissions, on the other hand, could lead to new ways for countries to work together. It is best to take a different approach to investing, focusing on EU member states for R&D collaboration and green technology initiatives while also improving infrastructure connections with non-EU countries. Also, looking into ways for third parties to work together in the market with enterprises in Western Europe would be a good way to ease political worries. Overall, China's investment in

[7] The Clean Network Initiative, announced in 2020 during the Trump administration, represents a U.S.-led effort to build a coalition of "Clean Countries" committed to excluding Chinese telecommunications equipment from their 5G networks and digital infrastructure (U.S. Embassy Tbilisi, 2020).

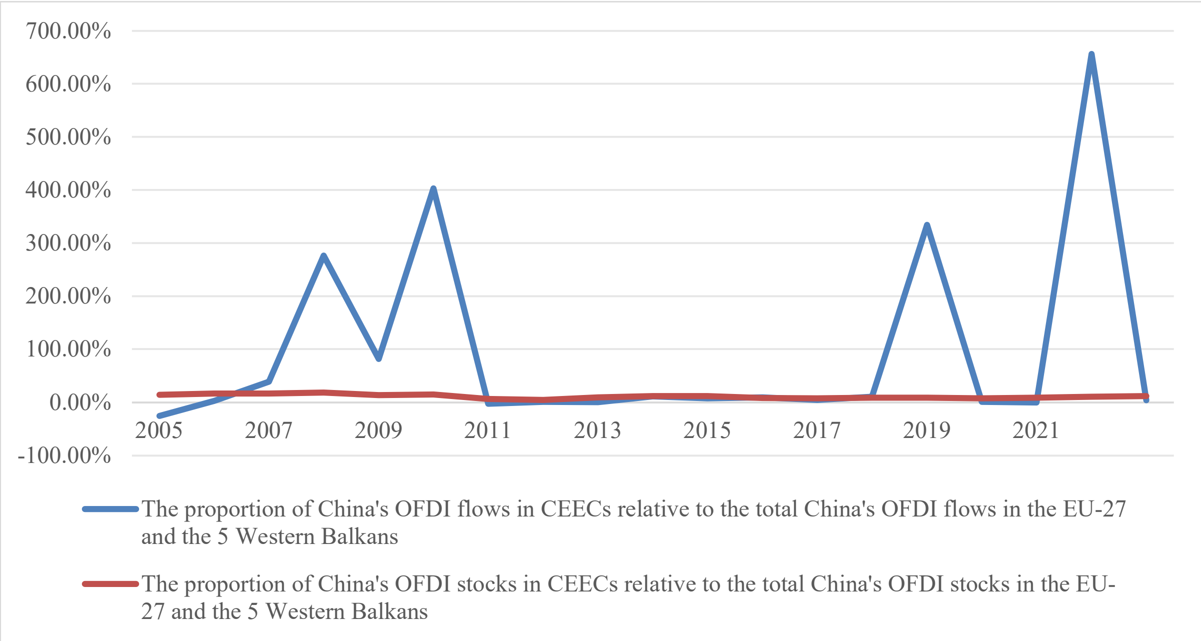
CEECs has entered a high-quality development phase that calls for a stronger focus on striking a balance between risk management and investment quality.

4.1.3 Scale analysis in comparison with the EU.

The proportion of China's OFDI in the CEECs in the aggregate value of China's OFDI in both the EU 27 member states and the 5 Western Balkans shows notable fluctuations and structural features, as shown in *Figure 13*.

The amount of China's OFDI flows changed a lot, going from -25.7% to an amazing 656.5%. The peak in 2022 could be because of big projects like the CATL battery factory in Hungary. On the other hand, the stock share has stayed between 4.7% and 18.3%, which shows that it is very steady. This big difference between flow and stock shows that investing in CEECs is "project driven". For example, big infrastructure and energy projects might cause short-term spikes in flow data, but it takes longer to turn these into long-term assets.

Figure 13: The share of China's OFDI flows & stocks in CEECs relative to total China's OFDI flows & stocks in EU-27 and 5 Western Balkans from 2005 to 2023.



Source: Author's analysis of OECD FDI data from receivers, CEECs' national bank data, and China's OFDI data from MOFCOM.

The scale ratio is relatively small from the perspective of China's OFDI proportion in the CEECs. Although China's OFDI flow ratio in CEECs has maintained fluctuating growth from 2005 to 2010, both the scale of China's OFDI flow and stocks in the CEECs remain a relatively small percentage of China's total OFDI in the EU 27 and 5 Western Balkans, and the ratio has shown a downward trend in recent years.

This suggests that China's OFDI in CEECs, whether in terms of flow or stock, still has considerable room for growth. However, it also reflects that China's OFDI in CEECs still faces some unfavorable factors that hinder its development. The BRI and the "16+1" cooperation mechanism require China to further enhance bilateral relations with CEECs, continuously deepen economic and trade cooperation between the two parties, and substantially improve the level and quality of China's OFDI in the CEE region.

4.2 The distribution of China's OFDI in CEECs.

China's OFDI in 16 CEECs covers a wide range of areas, such as building infrastructure, energy, manufacturing, banking, and agriculture. Building infrastructure is the most essential area of collaboration. Chinese businesses create roads, railroads, bridges, and ports all throughout the area. These initiatives are the most important parts of China-CEE partnerships. There are a lot of infrastructure projects going on right now in CEECs. They link up diverse areas and make transportation networks better. Energy cooperation is also very important to both sides. Chinese corporations spend considerably in electricity generation projects (Sohail, Zatullah, & Li, 2021). They also take part in advancements in renewable energy. Chinese investment in oil and gas infrastructure is substantial. CEE nations can diversify their energy sources with the aid of energy projects, reducing reliance on conventional sources. Cooperation in manufacturing continues to grow rapidly. Chinese businesses are heavily involved in the manufacturing of electronics. They invest in machine production, with a special interest in the automotive industry. Local workers are given jobs as a result of these manufacturing partnerships. They also provide CEE nations with cutting-edge technologies. The country distribution of China's direct investment in CEECs is highly concentrated as well, and policy direction has a significant impact on it. Hungary, Poland, Serbia, and the Czech Republic comprise the majority of the entire stock, and these nations are where the investment is primarily concentrated. Hungary is now the best place to invest in the CEECs since it has fair investment regulations and is in a good position. The stock market grew to an incredible $5.62 billion in 2023, thanks mostly to the emergence of large-scale manufacturing companies like CATL. This was due to an annual intake of $0.93 billion. Serbia, on the other hand, is a non-EU country with a comparatively relaxed investment policy. This makes Serbia a prominent target for Chinese infrastructure investment. This contrasts with the rigid EU OFDI assessment process. The flow of investments in 2023 was $0.46 billion, while the stock was $1.52 billion. This very focused distribution pattern shows how different the investment circumstances are in CEECs and how China is focusing on the BRI. The geographical and sectoral distribution of China’s OFDI in CEECs is examined in this part, along with how global supply chain dynamics, policy incentives, and other economic factors have impacted investment flows.

4.2.1 The distribution of China’s OFDI by countries.

Figure 14 illustrates the dynamic evolution of China’s geographical distribution of OFDI stock in CEECs. Overall, it exhibits a distinct core-to-periphery diffusion pattern. During the initial phase from 2005, Chinese investment covered only three major destinations, namely Poland, Romania, and Hungary, with a ratio of nearly 88% relative to China’s total OFDI stock in CEECs. This concentration reflects the sensitivity of early investments to market size and institutional environments, prioritizing EU member states with larger economies and more mature investment environments.

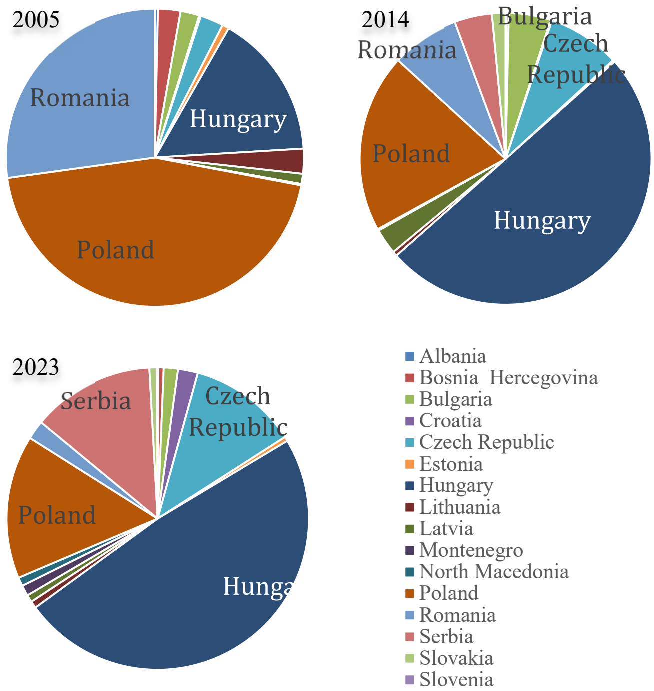
Until 2014, the investment coverage expanded rapidly to 6 major countries, accounting for nearly 95% of China’s total OFDI stock in CEECs. Several countries in the Western Balkans, such as Serbia and Montenegro, began to enter the investment landscape. The policy initiatives of the BRI drove this expansion and reflected the maturity of Chinese enterprises’ internationalization strategies. However, it is still centered on a small number of countries. The bulk of the OFDI stock is comprised of a limited number of countries, and other nations still have fewer investment stocks.

The distribution of China’s OFDI stock in CEECs shows a dispersion trend from 2020, which means the investment location structure has been significantly optimized. From 2020 to 2023, investment coverage will achieve full coverage of the 16 countries in CEECs, significantly improving the distribution balance. Hungary’s leading position, on the other hand, stays the same. The percentage of new markets like Serbia has grown quite quickly. The share of non-EU nations in the overall investment stock went up from 4.17% in 2014 to 15.82% in 2023. This shows that Chinese investors are changing how they invest to evade the EU’s stricter investment reviews.

The driving forces behind this geographical expansion stem from three main factors: first, the improved infrastructure connectivity within CEECs has lowered investment barriers; second, bilateral cooperation mechanisms, such as the “16+1” mechanism and BRI, provide institutional safeguards; third, the post-pandemic trend toward regionalization of supply chains has prompted Chinese companies to strengthen their presence in peripheral regions. As the

EU's "Global Gateway"[8] strategy is implemented, Chinese investment will likely shift further toward the Western Balkans, resulting in a more balanced, multi-centered distribution pattern.

Figure 14: Proportion of China's OFDI stock in CEECs.



Source: Author's analysis of OECD FDI position from receivers, CEECs national bank FDI inflow data, and China's OFDI data from MOFCOM.

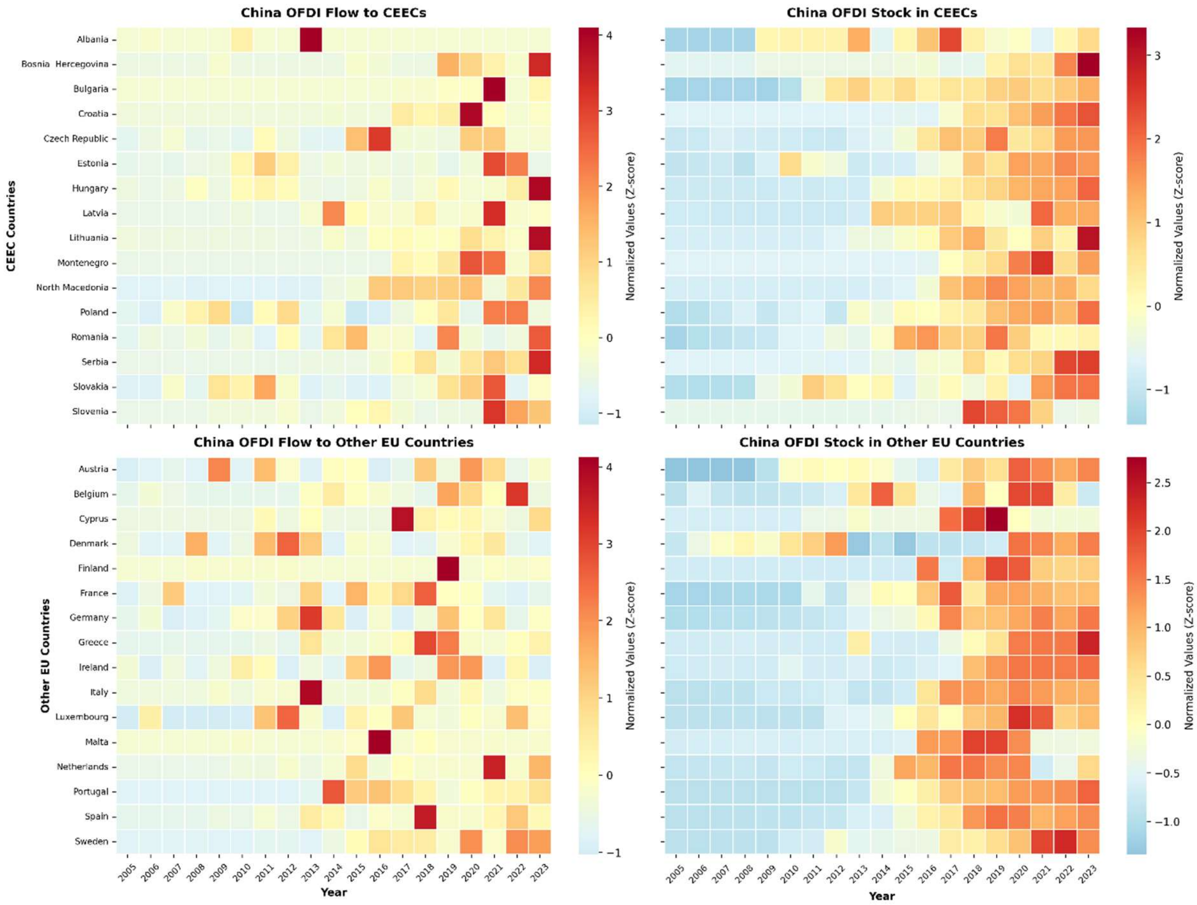
Figure 15 compares countries and areas with very different levels of investment in a more understandable way. It is presented by normalized values, which are calculated by standardizing OFDI data for each country based on its own historical mean and standard deviation. Negative numbers (blue color) show times when investments were below average, and positive values (red color) show periods when investments were above average. A normalized value of zero indicates investment levels at the nation's historical average. Regardless of absolute investment magnitudes, this methodology is especially beneficial for spotting relative investment surges or dips within the unique context of each nation.

The flow analysis shows China's investment in CEECs exhibits pronounced temporal clustering and strategic targeting. There is notable investment concentration in specific periods, with many CEEC countries showing intensely high normalized values (red color) during 2015-2023; Poland and Hungary make up the core investment zone, with normalized values that are

[8] The EU's Global Gateway initiative, announced in September 2021 and formally launched in December 2021, represents Europe's response to China's BRI and aims to narrow the global investment gap through a "Team Europe" approach (European Commission, 2021).

2–3 standard deviations higher than their historical means. This has created a clear "core to periphery" geographical pattern. This feature shows that China's judgments about where to invest in its regions are more impacted by diplomatic efforts and strategic partnerships than by market forces alone. The coordinated strategy is shown by the way that high-intensity investments clustered in countries like Montenegro, North Macedonia, and Bosnia and Herzegovina between 2016 and 2020.

Figure 15: The flows and stocks of China's OFDI in Europe: a comparison between CEECs and other EU countries (2005-2023).



Source: Author's analysis of OECD FDI position from receivers, CEECs national bank FDI inflow data, and China's OFDI data from MOFCOM.

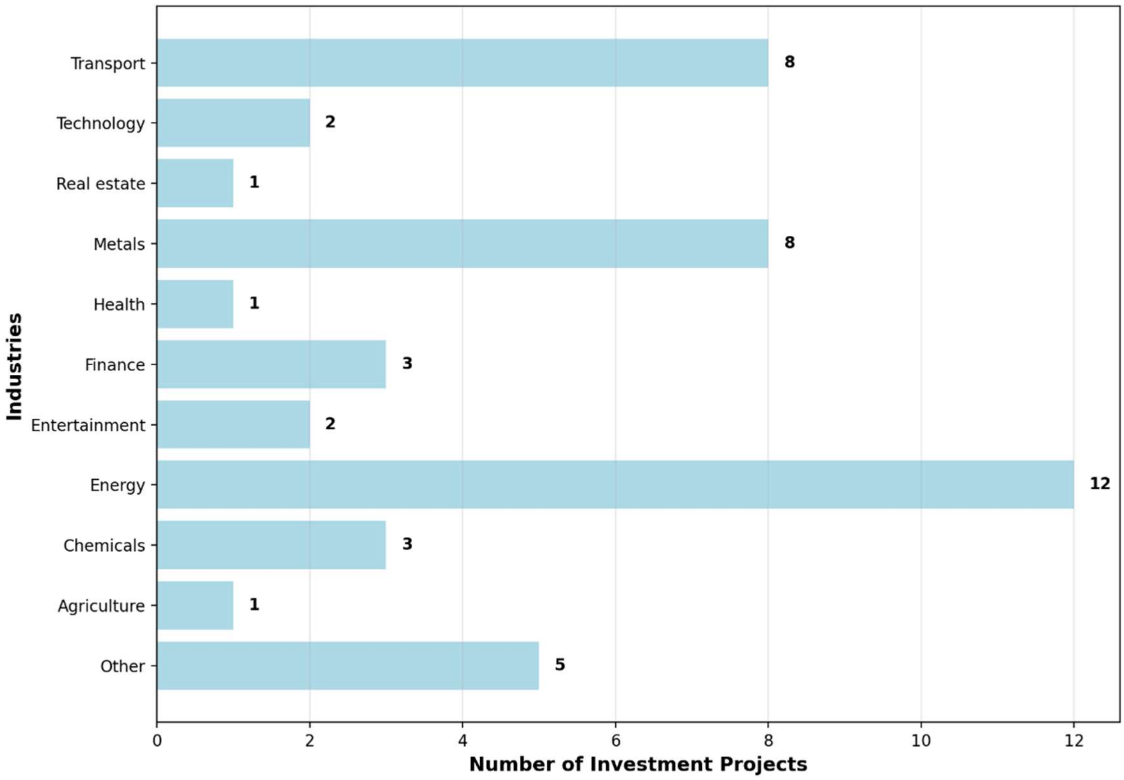
In contrast, China's OFDI flows to other EU countries display more moderate and gradual patterns. These nations have a more diversified temporal distribution of investments, with noteworthy activities occurring in various periods for different nations. This pattern points to a more market-based strategy, where investment decisions are based on the specific characteristics of each country, such as market potential and its regulatory framework.

The patterns of stock buildup in CEECs have been much worse between 2015 and 2023. For example, many nations have seen a lot of red coloring, and normalized values often reach 2-3 standard deviations above historical standards. Hungary, the Czech Republic, Poland, and Serbia are among of the countries with the strongest red areas. These countries have seen big relative gains in buying China's OFDI stocks. The patterns of investment growth in other EU countries are very similar to those in CEECs in terms of size. The post-2015 era exhibits an intense red color in countries such as Germany, Belgium, France, the Netherlands, and Italy, indicating that the relative growth rates of Chinese investment equities in these markets are similar to the sharp rises observed in CEEC nations. This parallel escalation implies that China's policy was a broad-based European growth strategy with tactical adjustments particular to the region.

4.2.2 The distribution of China's OFDI by industries.

As the economic support from major Western European economies to the CEECs has gradually weakened, the CEECs have increasingly turned their attention to attracting capital from China. Because of this, China's OFDI in CEECs is increasing quickly and is now a big part of the BRI. By looking at the distribution of investment industries, this section tries to get a clearer idea of China's strategic structure and investment preferences in the CEECs.

Figure 16: Distribution of Chinese Enterprises' OFDI in CEECs by Industry as of 2023



Source: Author's analysis based on data from China Global Investment Tracker (American Enterprise Institute (AEI), 2025)

Figure 16 shows that by 2023, China's investments in the CEECs covered a wide range of industries, showing a lot of diversity. The energy industry had the most projects, with 12. Sinomach's $970 million contract with Serbia's state utility Elektroprivreda Srbije to expand the TPP Kostolac coal-fired power plant was the largest energy investment. It not only represented the largest financial commitment in the energy sector but also demonstrated China's strategic focus on developing traditional power infrastructure in the Balkans. The chemical industry and the transportation industry both had eight projects. Other areas, such as metals, finance, and entertainment, also exhibit varying levels of investment dispersion.

The transportation industry has developed from exploration to strategic investment as the most important investment sector. The first investment of just $1.2 million in 2009 marked the beginning of cooperation in the transportation sector. This sector made a big leap forward in 2019, when yearly investment reached more than $11 million, after a small investment of $1 million in 2012. This growing trend reached its highest point in 2023, when an investment of $41.6 million not only set a new record for the industry but also made up 71% of the overall investment. This clearly shows how important infrastructure connectivity is to China-CEEC cooperation.

A large number of projects and long-term duration characterize the energy sector. Following the first investment peak of $11.7 million in 2015, the sector maintained a continuous nine-year investment record, with a cumulative total of 12 projects, leading all industries. Although the average investment per project is relatively limited (approximately $2.83 million), the stable investment pace reflects China's long-term commitment to energy security cooperation with CEECs. The second peak investment of $7.9 million in 2023 indicates that, under the "dual carbon" goal[9], energy cooperation is expanding from traditional fields toward clean energy.

The chemical industry exhibited a concentrated burst of investments in the early years. The sector finished all three investment projects in a short amount of time between 2010 and 2011. In 2011, a single investment of $19.2 million made up 91% of the total investment in the chemical industry. This investment model probably has to do with buying or building certain large-scale chemical projects, which then go into the operational phase after they are finished. It is important to note that there have been no new investments in this area since 2011. This is

[9] The "dual carbon" strategy, formally announced by Chinese President Xi Jinping in September 2020, commits China to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060 (Asia Society Policy Institute, 2022).

extremely different from how Chinese enterprises invest in businesses like transportation and energy.

Furthermore, the forecasts show that by 2025, the need for money to build transportation infrastructure in CEECs will be over 600 billion euros. This makes CEECs one of the most appealing markets for investors from China and other nations. Simultaneously, it will significantly facilitate industrial restructuring and upgrading in China to solve the overcapacity problem. It is foreseeable that in the upcoming years, Chinese investment in CEECs will further escalate, with a particular focus on the infrastructure sector.

4.3 Analysis of the motivations of China's OFDI in CEECs.

A number of different motivations, such as resource-seeking, market-seeking, strategic assets-seeking, and efficiency-seeking drives China's OFDI in CEECs. These reasons do not exist in isolation; in fact, they are interconnected and work together to shape how Chinese enterprises invest in the area.

CEECs, due to their geographical location and status as EU member states, have become an important steppingstone for Chinese companies entering the European market. Although the region has a nearly 120-million-person consumer market and substantial room for economic expansion, Chinese businesses can circumvent EU trade regulations, such as quotas and anti-dumping penalties, by setting up production bases in the CEE region. For example, Chinese electronics companies such as TCL, Hisense, and Changhong established television assembly plants in Poland, Hungary, and the Czech Republic in the early years to circumvent EU import restrictions on Chinese electronics products. (McCaleb & Szunomar, 2017). Additionally, the deep economic integration between CEECs and the EU enables Chinese companies to sell their products to Western European markets at lower costs, reflecting market-seeking motives.

A strategic asset-seeking move to acquire cutting-edge technology, create brand awareness, and establish distribution networks is also reflected in Chinese companies' direct investment in CEECs. Wanhua Chemical was able to get into the European polyurethane business and get the latest chemical production technologies by buying BorsodChem in Hungary. In the same way, LiuGong Machinery has become more competitive in the European market when it bought HSW Company's construction machinery business in Poland (Ramasamya & Yeung, 2020). CEECs also have solid industrial backgrounds in electronic engineering, machinery and equipment, and automobile manufacturing. Chinese businesses, hence, can swiftly fix their basic technical problems by forming joint ventures or doing mergers and acquisitions (M&A). Additionally, efficiency-seeking motivations are also quite important. Compared to Western Europe, the cost of labor is much lower in CEECs. While the skill levels are still high, which makes these places a great place for Chinese manufacturing companies who want to get the most out of their operations. For instance, wages for factory workers in Hungary and Poland are only 30–40% of what they are in Germany, but productivity is close to the EU average (McCaleb & Szunomár, 2017). Both Great Wall Motor's plant in Bulgaria and the research and development (R&D) center of Huawei in Poland utilize the region's highly skilled and reasonably priced labor pool. The attractiveness of CEECs as regional industrial centers is further increased by their well-developed infrastructure and lower logistics costs.

China's OFDI in CEECs is not primarily driven by resource-seeking FDI motives (Ramasamya & Yeung, 2020). The main reasons are as follows: First, CEECs are not usually places with a lot of minerals and energy resources. The EU's severe rules over the environment and resource development also make it harder for projects that focus on resources to work. So, instead of focusing on managing natural resources, China's investments in CEECs are mostly about improving the supply chain, getting into new markets, and acquiring new technologies. However, for example, the Romanian agricultural investments may be looking for resources, it is not the main goal of China's investments in the area.

4.4 Challenges of China's OFDI in CEECs.

Even though China's OFDI in CEECs has grown steadily and made progress, Chinese businesses still face a lot of problems when they want to explore and develop markets in this area. There are various reasons for these problems, such as differences in policy procedures, stages of development, and the complex interactions between economic and political influences both inside and beyond the region.

4.4.1 Political Risks.

Geopolitical tensions primarily drive political risks facing China's OFDI in CEECs. China's investments in CEECs are subject to the sway of prominent geopolitical players, including the EU, the US, and Russia (McCaleb & Szunomar, 2017). There is now greater pressure on regional European governments to reduce their reliance on Beijing due to the United States' growing focus on its rivalry with China. This pressure has taken many forms, from conditional aid packages that deter Chinese collaborations to diplomatic warnings against Chinese dominance. Several CEE countries have distanced themselves from China due to pressure from Washington and Brussels, particularly regarding 5G technology, strategic infrastructure ownership, and investment screening. Additionally, the EU has increasingly identified China as an economic competitor and systemic rival, leading to stricter investment controls and security reviews. Stricter investment restrictions and security evaluations have resulted from this, and the EU has strengthened its screening procedures for FDI to target Chinese acquisitions in vital industries, including sophisticated manufacturing, energy infrastructure, and telecommunications. The fact that regional responses are not coordinated makes things further worse. Even if the EU is putting pressure on them, certain countries, like Hungary and Serbia, nevertheless have strong commercial links with Beijing. Poland, the Czech Republic, and the Baltic states, on the other hand, have turned their attention to the West. These complicated geopolitical factors can make things unclear and hard for China's OFDI in the area.

4.4.2 Social Risks.

Chinese investments in CEECs face substantial obstacles due to social risks as well. Cultural backgrounds in China and CEECs are fundamentally different; hence, linguistic differences between China and CEECs generate communication and understanding gaps. In business conversations, misunderstandings are common and hinder the smooth operation of China's OFDI projects (McCaleb & Szunomar, 2017). The region's different rules and policies also make it hard for Chinese companies who want to invest there (Xie & Yin, 2023). Adapting to the different legal and regulatory standards in different countries can take a lot of time and money, which could affect how well Chinese OFDI ventures work and how successful they are. Public demonstrations pose an additional social risk. Sometimes, local communities are against Chinese infrastructure projects. A lot of this criticism is based on worries about the environment. Disputes between workers make societal tensions worse. Chinese employment practices may draw criticism from local workers. These disagreements can stop or delay investment plans outright.

4.4.3 Economic Risks.

Exchange rate fluctuations are a major hazard to Chinese investments. Most CEECs utilize either the Euro or their own currencies. The value of the Chinese yuan changes all the time compared to these currencies. Currency devaluation can greatly lower the profits on investments (Wang, Ergu, & Zai, 2023). Some CEECs may experience economic instability, changes in government policies, economic downturns, or social unrest, which can disrupt the normal operations of investment projects and even lead to the failure of bilateral investments. The domestic markets of individual CEE nations are relatively small. Poland, with a population of 38 million, is the largest market. A small market diminishes the economies of scale.

To address these challenges, Chinese companies investing in CEECs must adopt strategic approaches that consider the region's diverse economic, political, and social landscapes in order to develop a proper investment strategy.

4.4.4 Environmental Risks.

China's investments in CEECs face mounting environmental risks that threaten both project viability and China's regional reputation. The EU's strict climate commitments and goal of being carbon neutral by 2050 are becoming more and more at odds with the focus on traditional fossil fuel infrastructure, as seen in projects such as the $970 million TPP Kostolac coal-fired power plant expansion in Serbia (Euracoal, 2021). Additionally, growing environmental activism and public opposition to pollution-intensive projects in the region create regulatory uncertainties and potential delays, while the EU's proposed Carbon Border Adjustment Mechanism could impose additional costs on carbon-intensive Chinese investments. These environmental challenges, combined with rising Sino-skepticism partly driven by climate concerns, force Chinese investors to either pivot toward cleaner technologies or accept higher political and financial risks in their CEE energy portfolio.

4.5 Summary of Chapter 4.

For Chinese companies, the advantages in resources, location, and policies create huge investment space in CEE. However, the economic and political factors inside and outside the region also cause outbound investments to face certain uncertainties.

In recent years, under the framework of the BRI and the "16+1" cooperation mechanism, the economic and trade cooperation between China and CEECs has developed quickly. For example, China has established comprehensive strategic partnerships with Poland and Serbia and further refined exchanges and cooperation in various fields. As of 2018, Chinese enterprises have built a total of seven overseas economic and trade cooperation zones in CEECs, including two logistics cooperation parks and one industrial park in Hungary, one logistics cooperation park and one integrated industrial park in Serbia, and one industrial park, one logistics cooperation park in Romania and Poland, respectively. In 2019, Ningbo held the first China-CEE Expo, forming a strategic pattern of China-CEE development. However, the share of the CEE region in China's total OFDI is still low. Although China's direct investment in CEECs has been going up since the BRI started, going from $1.25 billion in 2013 to $5.44 billion in 2022, the proportion of China's OFDI in CEECs remains at a maximum of 0.186% compared with its total OFDI.

Given the current international political and economic situation, the prevalence of trade and investment protectionism in developed countries, and low global economic growth, China can focus on strengthening investment cooperation with CEE in the following areas in the coming years:

First, traditional infrastructure construction remains important for China's investment in CEE in the coming years. The relatively backward infrastructure is an important factor limiting the competitiveness of the CEE region. Traditional infrastructure is the carrier of the "connectivity cooperation platform". Traditional infrastructure is also one of the prerequisites for the mutual promotion of the domestic and foreign markets. China should work with CEECs, innovate investment and financing models, and use its advantages in infrastructure construction to promote regional cooperation.

Second, the digital economy and artificial intelligence are other important investment areas in the future. Currently, the digitalization level of CEECs is relatively low. Only Slovenia, the Czech Republic, and Estonia reach the EU average level. China is becoming increasingly mature and even at the forefront of the world in developing 5G technology, artificial intelligence, the Internet, and mobile payment. Relevant Chinese enterprises can strengthen their investment in the fields mentioned above in CEECs, especially in the fields of 5G, industrial Internet, and smart cities, to help the countries along the route to narrow the gap with developed countries.

Although China and CEECs have a high degree of economic and trade cooperation, they also face investment risks. From a social and economic perspective, CEECs have different national conditions and small markets, and there is a lack of coordinated economic development strategies at the regional level. From a political point of view, the EU, the US, and Russia might also have an impact on China's investments in CEECs. In short, CEECs are a great place for Chinese businesses to invest. But the status of the world economy and politics will have an effect on investments in CEECs.

5.0 IMPACT OF DIFFERENT OFDI MOTIVATIONS ON BILATERAL TRADE BETWEEN CHINA AND CEECS.

This chapter takes a comprehensive analytical approach. The analysis begins with a broader theoretical review of how different OFDI motivations affect trade flows between the investment country and the host country in various ways. The analysis recognizes that OFDI is not a monolithic phenomenon but rather encompasses distinct motivational drivers—including market-seeking, efficiency-seeking, resource-seeking, and strategic asset-seeking objectives—each of which creates different patterns of trade creation, trade diversion, and supply chain integration outcomes. The discussion then progressively narrows its focus to the specific case of China-CEEC economic cooperation, providing an initial verification of the theoretical framework before proceeding to a detailed empirical analysis. This initial study aims to confirm the relevance of broader FDI-trade theories within the China-CEEC framework and to set empirical expectations for the forthcoming detailed econometric analysis.

5.1 Trade effects of different OFDI motivations.

The OLI model, also known as the Eclectic Paradigm, was developed by Dunning to explain the internationalization of companies through FDI (Dunning, 1980). In 1993, Dunning further developed four different FDI motivations, namely market-seeking FDI, resource-seeking FDI, efficiency-seeking FDI, and strategic asset-seeking FDI, as an extension of the OLI model (Dunning, 1993).

5.1.1 Trade effect of resource-seeking OFDI.

Resource-seeking OFDI primarily refers to investments made to develop and acquire natural resources in the host country. Resource-seeking OFDI can be divided into two categories based on the parent company type. The first group includes parent companies that are resource development businesses, which means they make money by extracting natural resources like oil and natural gas. In most cases, the primary investment purpose of such parent companies in this sector is to pursue their interests and fulfill any social responsibilities they may have. The second type involves parent enterprises that are resource-utilizing, production-oriented companies, which utilize acquired resources for further production, such as steel companies seeking iron ore and other mineral resources. Such enterprises engage in OFDI to meet their own production needs and ensure a stable supply of resources for production, thereby pursuing vertical integration. Regardless of the specific scenario, OFDI will inevitably lead to increased imports.

On the other hand, resource-seeking OFDI will also impact exports. When the home country develops the natural resources of the host country, it is necessary to assess whether the host country possesses the necessary technical capabilities and can provide the required machinery and equipment. In reality, many countries rich in natural resources have relatively underdeveloped production infrastructure, especially some resource-rich developing countries. For resource-seeking OFDI in such countries, the parent company must possess the necessary technical capabilities to conduct preliminary resource exploration, extraction, processing, and smelting operations. This increases exports from the home country in related supporting machinery, equipment, components, patents, and technologies. Therefore, resource-seeking OFDI may also promote the growth of export volumes.

5.1.2 Trade effect of marketing-seeking OFDI.

In terms of market-seeking OFDI, when parent companies choose host countries for investment, the host countries may offer relatively low-cost production factors, such as lower labor wages and abundant raw materials; or the host countries may have a large market size, allowing parent companies to reduce transaction costs associated with transportation, trade barriers, or other non-trade barriers through investment in the host country, thereby expanding into new markets. The home country's import and export impact vary depending on the investment model.

From the home country's export perspective, when home firms engage in market-seeking OFDI, they establish subsidiaries or overseas branches in the host country. On the one hand, to pursue relatively lower-cost production factors or bypass trade barriers or other trade obstacles, the parent company may relocate the production stage of the enterprise to the host country or a third-party country. In such cases, the parent companies' exports of final products will no longer pass through the home country, leading to a decline in the home country's export volume. However, there is another possibility that the transfer of specific products by the parent enterprises to the host country may stimulate production in the host country. Imports from the home country may be required since the host nation lacks the requisite technological capability to supply the essential production machinery. Furthermore, as the local production scale of the multinational corporation increases, the demand for intermediate products also grows, thereby promoting the expansion of the home country's export scale. It is important to emphasize that this expansion alters the original trade structure of exports. On the other hand, if parent enterprises merely seek to expand into new markets by increasing product sales and market share in the host country without relocating production, this will also promote the expansion of the parent companies' export scale.

From the home country's import perspective, it has a similar impact to its effect on exports. Home country enterprises seek low-cost production factors in the host country to improve profit margins. For example, suppose the home country experiences rising labor wages and rapidly increasing labor costs. In that case, many industries may relocate their factories to countries with lower labor wages. Since the market demand for products in the home country is not affected by the relocation of production stages, this will inevitably increase imports of related products from the host country, thereby promoting the growth of the home country's import scale.

5.1.3 Trade effect of efficiency-seeking OFDI.

OFDI that seeks to optimize efficiency, with the goal of lowering production costs, securing cheaper factor endowments, and generating more revenue, could alter the way trade operates.

This kind of investment generally happens when the home country has trouble with its factor advantages and high production costs, which makes it less competitive. In such scenarios, investment tends to flow towards countries with significant factor endowments. Moreover, by leveraging the production advantages of each country or region, different production stages can be established, leading to reduced production costs and improved production efficiency. Efficiency-seeking OFDI brings an export complementary effect to the home country. When enterprises directly invest in the host country to establish factories and production bases, they need to replicate some production processes from the home country during the initial production period, requiring support from the home country. Therefore, they will import intermediate products, machinery, production equipment, and other goods from the home country. During production, they also need to import some raw materials and production supplies from the home country, thus driving the home country's exports and increasing its export scale. On the other hand, as enterprises continue to develop in the host country, their production scale and proficiency increase through learning and imitation. The products produced can not only meet the local market's needs but also be exported back to the home country. At this point, the produced goods will flow back to the home country, thereby increasing the home country's import trade scale.

5.1.4 Trade effect of strategic asset-seeking OFDI.

Strategic asset-seeking OFDI mostly involves parent firms that invest in other nations to get and use innovative technologies, experience, and managerial skills. This helps the parent companies improve their own technology and make them more competitive. Because of this, strategic asset-seeking OFDI commonly happens in industrialized countries that have superior technologies. It usually takes the form of mergers and acquisitions (M&A) of high-tech enterprises or the establishment of joint R&D centers to break through technological barriers in the host country, obtain advanced management and technical experience, and cultivate the core competitiveness of branded products.

On the one hand, new technologies make it easier for parent companies to produce, make their products more technologically advanced, and make their products more competitive in international markets, thereby promoting exports. On the other hand, home country enterprises can promote the inflow of high-tech product trade with developed countries, and subsequently obtain related technological spillovers, thereby enhancing their technological capabilities. This approach can stimulate increased imports.

In practice, OFDI rarely involves a single motivation. More often, multiple investment motives complement and reinforce one another. For example, market-seeking investment may simultaneously pursue efficiency gains. While resource-seeking projects often incorporate strategic asset elements. This incentive complementarity leads to complicated trade effects that cannot be predicted by looking at each motivation alone. The overall effects of OFDI on trade depend on how strong the different motivations are, the differences between the home and host nations, and how investment projects change over time. From a broad point of view, OFDI can either help bilateral trade flows between two countries grow or cause trade to go to other countries. The consequences will be different for different industries, time periods, and country pairs.

5.2 Trade effect of different China's OFDI motivations in CEECs.

This section analyzes the practical application of the established theoretical framework regarding the distinct trade effects generated by various OFDI motivations within the China-CEEC economic relationship. The practical examination provides concrete evidence of how theoretical FDI-trade relationships operate in practice, while highlighting the regional heterogeneity that will inform the subsequent econometric analysis.

5.2.1 Trade effect of China's resource-seeking OFDI in CEECs.

In terms of resource-seeking OFDI, China's OFDI in CEECs mainly flows into energy, coal, and other fields. China has abundant natural resources compared with CEECs. However, China has a larger population, so the per capita resource possession is relatively lower. Romania, Poland, Serbia, and Bosnia and Herzegovina have large coal reserves. Albania has the second-largest copper reserves in Europe. Therefore, resource-seeking OFDI is also one of the motivations for Chinese enterprises to invest directly in CEECs. And China has advanced exploration instruments and equipment technologies, so China's exports of related machinery and equipment to CEECs will increase, and the export of related parts and components will also be promoted to improve exploration efficiency. All in all, the resource-seeking OFDI has promoted China's import of resource-based manufactured products from CEECs. However, in the current stage, both parties focus more on natural resource exploration stage, so related exploration machines, mining equipment, and intermediate products are exported more from China to CEECs. It results in an increase in exports of related exploration and mining production equipment and intermediate products, consequently increasing the share of medium and high-tech value-added products (Éltető & Szunomár, 2015).

5.2.2 Trade effect of China's market-seeking OFDI in CEECs.

Because of the "16+1" cooperation mechanism and the comparatively high degree of economic development and stable investment environment in some of the CEECs, an increasing number of businesses began to investigate the market in the region. As a result, market-seeking OFDI has also grown progressively (McCaleb & Szunomar, 2017). Poland, as the country with the largest economy in the CEECs, reached a GDP of 811.2 billion in 2023. In addition, a total population of nearly 37 million makes Poland the only country in the CEE region with a population exceeding 30 million, and the market population that can be reached from east to west is as high as 200 million. The significant economic size, strong economic development trend, and large population base not only give Poland a market capacity superior to other CEECs but also provide it with significant potential for developing market demand, making Poland an ideal destination for attracting China's market-seeking OFDI. Romania, which is a representative of growing countries in the CEE region, has also seen its economy grow quickly in the last few years. Romania's domestic economic gross value reached $351 billion in 2023, up 4.6% from the year before and the most among CEECs. This shows that the country's economy has a good chance of growing. Its population of nearly 20 million provides a solid market foundation. Chinese companies are increasingly investing in building local factories to meet market demand requirements. China's exports of machinery, equipment, and electromechanical products have gone up because of the influx of large-scale infrastructure investment and the transfer of industries with excess production capacity. This has also opened the door for the growth of new industries and those with more advanced technology. This good trend is likely to continue, which will help China change and improve its industries even more.

5.2.3 Trade effect of China's efficiency-seeking OFDI in CEECs.

Most countries in the CEECs are developed. They have more extensive experience in market operations and corporate management, and they also possess leading advantages in specific technological research and development. At the same time, while pursuing to improve the efficiency of operations, companies are also further reshaping their' industrial chains, taking advantage of complementary industries in CEECs to initiate vertically integrated investments. Ultimately, China's industrial structure can be optimized, thereby further optimizing the trade structure. Efficiency-seeking OFDI promotes the improvement of management levels in China's related industries. It also pays more attention to innovation and R&D, promotes China's industrial upgrading and bilateral exchange of mid- and high-tech products, further optimizing the trade structure.

5.2.4 Trade effect of China's strategic assets seeking OFDI in CEECs.

Finally, China's OFDI in CEECs is focused on getting advanced technology and improving its competitiveness through M&A or setting up subsidiaries. This incentive focuses on areas that use a lot of technology and where CEECs have comparative advantages over their competitors. Strategic asset acquisition promotes imports of technology-intensive products from CEECs while enhancing Chinese firms' capabilities to export sophisticated products to global markets. The dual effect of technology imports and enhanced export competitiveness contributes to bilateral trade expansion and structural upgrading.

China's OFDI in CEECs stems from varied motivations, differing significantly across economic sectors and individual countries. Crucially, these diverse investment drivers typically trade complementary effects rather than trade substitution effects. This investment also affects the way that two countries trade with each other, making it easier for them to trade more valuable goods. Overall, the CEECs have different levels of economic growth, national institutions, and resource availability, which leads to different patterns of investment and trade consequences between countries.

5.3 Summary of Chapter 5.

This chapter establishes the theoretical foundation for understanding how different OFDI motivations generate distinct bilateral trade effects. Building upon Dunning's OLI paradigm and motivation typology, the analysis demonstrates that resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking investments create different patterns of trade creation, trade diversion, and supply chain integration. The application of this theoretical framework to China-CEEC economic cooperation reveals the complexity and diversity of investment motivations operating simultaneously in this relationship. Chinese OFDI in CEECs encompasses all theoretical motivations. The analysis demonstrates that most OFDI motivations create trade complementarity effects, supporting bilateral trade expansion while contributing to structural upgrading toward higher value-added products. Regional heterogeneity across CEECs creates differentiated patterns of investment attraction and trade development, providing empirical context for subsequent econometric analysis of how specific investment patterns influence bilateral trade relationships under different policy frameworks.

6.0 EXAMINATION OF THE IMPACT OF CHINA'S OFDI ON BILATERAL TRADE WITH CEECS BASED ON THE KNOWLEDGE CAPITAL MODEL.

This chapter aims to develop statistical models that capture the heterogeneous effects of different investment motivations. The statistical models will incorporate the specific institutional and policy contexts of China-CEEC cooperation. Through systematic hypothesis testing using panel data regression analysis grounded in the Knowledge Capital framework, the study transitions from theoretical possibility to empirical verification, quantifying the actual trade effects of different Chinese investment patterns and assessing the role of policy interventions, such as the BRI, in modifying these fundamental economic relationships.

6.1 From theoretical OFDI Motivations to practical investment patterns.

To bridge the gap between theoretical OFDI motivations and empirical analysis, it is essential to understand how Dunning's four motivational drivers translate into the practical horizontal and vertical investment patterns defined by the Knowledge Capital model.

6.1.1 Market-seeking OFDI aligns with the horizontal OFDI pattern.

China's market-seeking OFDI in CEECs demonstrates a strong alignment with horizontal investment patterns from the Knowledge Capital model framework. Chinese multinational enterprises typically replicate their core business activities across multiple CEEC markets to serve local and regional demand, establishing similar production or service facilities in different countries while adapting to local market conditions and maintaining their fundamental business model. This horizontal expansion strategy serves the primary purpose of accessing and serving local markets, bypassing trade barriers, and establishing proximity to customers, which aligns perfectly with market-seeking motivations as firms seek to penetrate the European market through multiple entry points in the CEECs region. For instance, Chinese automotive manufacturers establish assembly plants in multiple countries to serve different regional markets within the EU. In contrast, Chinese horizontal FDI in CEECs often serves as a mechanism to avoid potential trade restrictions and establish closer relationships with European consumers and business partners, consistent with traditional horizontal FDI theory from the Knowledge Capital framework.

6.1.2 Efficiency-seeking OFDI corresponds to the vertical OFDI pattern.

Efficiency-seeking motivations in China's OFDI correspond closely with vertical investment patterns, where Chinese multinational enterprises integrate different stages of their production processes across the CEECs region to optimize costs and efficiency. Chinese firms establish different production stages in various CEEC countries based on comparative advantages, with labor-intensive assembly operations located in countries with lower labor costs. At the same time, technology-intensive components are produced in countries with more skilled labor forces. This vertical FDI pattern allows Chinese MNEs to optimize their GVCs by positioning different production stages in locations where they can be performed most efficiently, creating an integrated production network across the CEECs region that serves the broader global market. The cost-minimization strategy inherent in vertical FDI enables Chinese firms to minimize overall production costs by exploiting factor cost differences across CEEC countries while maintaining coordinated production processes, perfectly aligning with the Knowledge

Capital model's emphasis on factor endowment exploitation and geographic specialization for efficiency gains.

6.1.3 Resource-seeking OFDI creates the vertical OFDI pattern.

Resource-seeking Chinese OFDI in CEECs demonstrates a strong association with vertical investment structures as well. Firms seek to integrate natural resource extraction and processing into their GVCs through backward vertical integration strategies. Chinese companies involved in resource-seeking investment often create vertical linkages by obtaining raw material supplies through direct investments in the mining, energy, or agricultural sectors. This results in vertical investment patterns, where extracted resources are directed back to China or other phases of the global production network. Beyond simple extraction, Chinese resource-seeking investment often involves establishing processing facilities in host countries, creating multi-stage vertical operations that add value to raw materials before export. In contrast, the substantial infrastructure development required for resource projects (transportation, storage, and processing facilities) creates additional vertical linkages that support core resource extraction activities while serving broader economic development objectives.

6.1.4 Strategic asset-seeking OFDI generates a hybrid OFDI pattern.

Strategic asset-seeking motivations generate the most complex investment patterns. It usually combines the elements of both horizontal and vertical structures, thereby transcending traditional categorical distinctions within the Knowledge Capital framework. When seeking technological assets or market knowledge, Chinese firms may establish horizontal operations, such as marketing subsidiaries, across multiple countries in the CEEC region. While simultaneously engaging in asset-augmenting vertical integration by acquiring suppliers or distributors to gain access to specialized capabilities, established customer relationships, or critical technologies that enhance overall value chain competitiveness. The complexity of strategic asset acquisitions means they may create both horizontal patterns when acquired technologies are replicated across multiple markets and vertical patterns when acquired capabilities are integrated into specific stages of the production process, resulting in hybrid investment structures that adapt to the specific nature of the assets being acquired and their integration into Chinese firms' global strategic objectives.

6.2 Hypothesis development.

Based on the literature review of the existing research on the related topic, this dissertation will first conduct a regression analysis model, which is developed on the classical Knowledge

Capital model, in order to examine the relationship between China's OFDI and bilateral trade performance between China and CEECs.

Hypothesis 1: BRI participation promotes horizontal OFDI in CEECs and restrains vertical OFDI in CEECs, leading to enhanced bilateral export flows from China to CEECs while moderating import growth from CEECs to China.

This hypothesis is supported theoretically by BRI architecture, especially its emphasis on infrastructure development. BRI promotes market integration and trade facilitation through connectivity-enhancing projects, with the ultimate goal of expanding market access. This infrastructure-focused approach naturally aligns with and promotes horizontal OFDI motivations, as improved transportation networks, communication systems, and logistics capabilities reduce the transaction costs associated with market-seeking investment while simultaneously making these markets more attractive and accessible to Chinese firms.

The study in Chapters 3 and 4 demonstrates that China's trade and OFDI performance vary significantly among different country groups due to varying economic structures, institutional frameworks, and development levels. It becomes necessary to examine the regional impacts by dividing the 16 CEECs into different groups to capture this heterogeneity in BRI-investment relationships. By categorizing the 16 CEECs into four subregions, this dissertation could elucidate the principal structural disparities that affect their advantages from Chinese investment and the BRI policies. This classification method is founded on three principal dimensions: institutional framework, economic development level, and market characteristics. These three variables collectively determine each nation's ability to absorb and effectively utilize Chinese investment. *Table 14* is a summary of how the subregion is classified.

Table 14: Classification of subregions

Groups	Countries
Central EU	Czech Republic, Hungary, Poland, Slovakia, Slovenia
Baltics EU	Estonia, Latvia, Lithuania
Balkan EU	Bulgaria, Croatia, Romania
Balkan non_EU	Albania, Bosnia Herzegovina, Montenegro, North Macedonia, Serbia

Source: Author's construction

The Central European group comprises the V4 nations and Slovenia, representing the most economically developed region within the CEECs. The Baltic states—Estonia, Latvia, and Lithuania—constitute a distinct category owing to their unique economic attributes and limited market dimensions. The group of EU Balkan countries includes Bulgaria, Croatia, and

Romania, which became new member states from 2007 to 2013. Although these countries gain advantages from the EU's institutional framework, they continue to undergo institutional integration and economic convergence with the EU's established member states. Non-EU Balkan nations, comprising Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia, are classified according to their common institutional limitations and developmental obstacles. These countries do not follow the EU's rules and regulations, hence their rules and norms for governance are different from those of EU member states.

Hypothesis 2: BRI creates regional specialization in investment types, with Central EU group attracting more horizontal OFDI while Balkan EU group benefit from vertical OFDI, leading to differentiated trade patterns where Central EU countries experience enhanced Chinese exports, Balkan EU countries show increased Chinese imports, Baltic EU countries demonstrate limited trade effects, and Balkan non-EU countries face constrained bilateral trade growth due to institutional barriers.

Hypothesis 2 emerges from the interplay between BRI implementation and the distinct economic profiles of CEEC subgroups. Central EU countries—with their high-income levels, large markets, and advanced institutions—naturally attract market-seeking horizontal OFDI investment. Participation in the BRI further amplifies these advantages by offering enhanced connectivity and policy support for investments aimed at market access. The Balkan EU group leverages a unique dual advantage within the BRI: EU institutional benefits coupled with competitive costs. This positions them as prime destinations for Chinese vertical OFDI seeking efficiency gains. Enhanced BRI connectivity strengthens this dynamic, ultimately producing specialized regional trade flows.

6.3 Model establishment.

The Knowledge-Capital model was gradually refined after the empirical tests in 2001. Markusen et al. emphasize that one of the fundamental differences in MNC theory is the difference between the two types of MNCs. Furthermore, this proposition has been proved by Carr, Markusen & Maskus, 2001. Carr, Markusen & Maskus, 2001 found that the main objective of horizontal MNCs is to capture the host country's market to expand their sales channels, while the main objective of vertical MNCs is to take advantage of the factor endowments of the host country for export to improve competitiveness (Carr, Markusen, & Maskus, 2001). Brainard (1993) proposes a measure of vertical OFDI by using the quantity of products exported by foreign affiliates to the home country as the quantity of vertical OFDI (Brainard, 1993). Feenstra (2004) states that the dependent variable of horizontal OFDI should be the sales in the host market, and the dependent variable of vertical OFDI should be the export volume of the MNC's subsidiaries (Feenstra, 2004). Carr, Markusen & Maskus (2001) use a panel model of the overseas production activities of U.S. multinationals from 1986 to 1994 to do the test and is one of the earliest research projects to examine the knowledge capital model (Carr, Markusen, & Maskus, 2001). It became the benchmark paradigm for subsequent tests and applications of the knowledge capital model. Review research on knowledge capital models by different scholars. Most of them are based on data from developed countries, for example, the United States, and the research results support the horizontal MNC investment model.

The knowledge capital model proposed by Carr, Markusen & Maskus (2001) is expressed as:

$$\begin{aligned} Real\ Sales_{ij} = B_0 + B_1 * (GDP\ SUM) + B_2 * (GDP\ Difference\ Squared) + B_3 \\ * (Skill\ Difference) + B_4 * [(GDP\ Difference) * (Skill\ Difference)] \\ + B_5 * (Investment\ Cost\ Host) + B_6 * (Trade\ Cost\ Host) + B_7 \\ * [(Trade\ Cost\ Host) * (Skill\ Difference\ Square)] + B_8 \\ * (Trade\ Cost\ Parent) + B_9 * (Distance) \end{aligned}$$

$$GDP\ SUM = GDP_i + GDP_j$$

$$GDP\ Difference = GDP_i - GDP_j$$

$$GDP\ Difference\ Squared = \left(GDP_i - GDP_j\right)^2$$

$$Skill\ Difference = Skill_i - Skill_j$$

Where $Real\ Sales_{ij}$ denotes the sales of subsidiaries/branches of the parent company in country i in host country j. Parent company is located in country I, while the subsidiaries are located in country j.

The current model primarily examines why and where companies choose to invest, rather than how those investments impact trade between two parties. The model performs well in predicting investment flows based on national factors, including national economic size, differences in factor costs, investment cost and trade costs. However, it does not clearly explain how these different patterns of investments affect trade performance between the home country and the host countries.

6.3.1 Developing the empirical model using Knowledge Capital framework.

Our research enhances this original Knowledge Capital Model in significant ways to examine the impact of various forms of Chinese OFDI on trade outcomes with CEECs. Initially, we modify the theoretical framework by considering investment as an explanatory variable, rather than a dependent variable, which enables us to analyze the trade substitution and trade complementarity impacts of current OFDI stocks. Secondly, we implement the horizontal and vertical OFDI distinction by formulating interaction variables that encapsulate market-seeking investment (LnOFDI × LnGDP_CEECs) and efficiency-seeking investment (LnOFDI × LnWages_CEECS), facilitating empirical examination of the impact of these diverse investment motivations on trade flows. Thirdly, we include in regional differences and policy variables that the original model does not take into account. We do this because we know that institutional frameworks and regional policies can have a big impact on how investment-trade interactions change over time.

This expansion enables us to evaluate whether the theoretical predictions from the Knowledge Capital Model regarding investment motives manifest as observable discrepancies in trade results. Our methodology preserves the model's fundamental insight that multinational enterprises possess distinct strategic objectives when investing internationally, while redirecting the analytical emphasis from forecasting investment location decisions to understanding how these strategic variances generate disparate trade effects across diverse host countries and policy contexts. Based on this, we create our models as below:

Model A: Baseline test with the impact of overall OFDI stock on total trade, export and import respectively.

$$LnTrade_{jt} = \beta_0 + \beta_1 LnOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 1: Model A1

$$LnExport_{jt} = \beta_0 + \beta_1 LnOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 2: Model A2

$$LnImport_{jt} = \beta_0 + \beta_1 LnOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 3: Model A3

Model B: Horizontal OFDI tests the impact of HOFDI on total trade, export and import respectively through the interaction variable with host countries' market size.

$$LnTrade_{jt} = \beta_0 + \beta_1 HOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 4: Model B1

$$LnExport_{jt} = \beta_0 + \beta_1 HOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 5: Model B2

$$LnImport_{jt} = \beta_0 + \beta_1 HOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 6: Model B3

Model C: Vertical OFDI tests the impact of VOFDI on total trade, export and import respectively through the interaction variable with host countries' labor wage.

$$LnTrade_{jt} = \beta_0 + \beta_1 VOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 7: Model C1

$$LnExport_{jt} = \beta_0 + \beta_1 VOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 8: Model C2

$$LnImport_{jt} = \beta_0 + \beta_1 VOFDI_{jt} + \beta_2 RD_{jt} + \beta_3 PCI_{jt} + \beta_4 Tariff_j + \beta_5 BRI\ Central\ EU + \beta_6 BRI\ Baltics\ EU + \beta_7 BRI\ Balkan\ EU + \beta_8 BRI\ Balkan\ nonEU + \alpha_t + \varepsilon_{jt}$$

Equation 9: Model C3

This approach allows us to examine both the horizontal and vertical motivations of Chinese OFDI while accounting for the unique impact of the BRI. By employing panel data techniques, we can control for unobserved heterogeneity across countries and time, providing a more robust analysis of the determinants of Chinese OFDI in the context of the KC model.

6.3.2 Explanation of variables.

Dependent variables:

The dependent variable in this dissertation is:

$LnTrade_{jt}$, refers to the natural logarithm of China's total trade with country j in year t, which includes both exports and imports. This variable can show how OFDI has changed the overall economic relationship between China and 16 CEECs.

$LnExport_{jt}$, refers to the natural logarithm of China's export trade volume to economy j in year t. Through the measurement of OFDI's impact on export trade, the penetration of China into CEECs and competitiveness can be observed.

$LnImport_{jt}$, refers to the natural logarithm of China's import trade volume from economy j in year t. The impact of OFDI on import reflects whether CEECs can pursue economic growth by increasing exports to large Chinese Market.

<u>*Core independent variables:*</u>

$LnOFDI_{jt}$, reflects the natural logarithm value of China's OFDI stock in country j in year t, which captures the long-term investment relationship between China and CEECs.

$HOFDI_{jt}$, reflects the interaction variable of natural logarithm value of China's OFDI stock in country j in year t multiplier with the natural logarithm of country j's GDP in year t, offering references to investment motivated by serving local markets. In other words, as the reference of the impact of market-seeking/horizontal OFDI.

$VOFDI_{jt}$, is the interaction variable of the natural logarithm value of China's OFDI stock in country j in year t, multiplied by the natural logarithm of labor wages in country j in year t, which is used as an evaluator of investment driven by cost minimization and operational efficiency, meaning to examine the efficiency-seeking/vertical OFDI.

<u>*Control Variables:*</u>

RD_{jt} means the difference in research and development expenditure as % of GDP between China and CEECs in year t. It measures how technology and innovation capacity gap affect trade relations.

PCI_{jt}, the Productive Capacities Index (PCI) builds on UNCTAD's conceptual and analytical foundations. It measures the level of productive capacities in three pillars: "productive resources, entrepreneurial capabilities, and production linkages, which together determine a country's ability to produce goods and services and to foster growth and development. It quantifies the structural quality of country j's production system and reveals the systemic cost barriers that investors may face. A lower score correlates with a greater additional cost needed to surmount the obstacles, as this dissertation employs the PCI to represent the investment costs in CEE nations over the past years.

$Tariff_{jt}$ demonstrates the import tariff level of country j in year t. This dissertation uses the simple average tariff rate of the Most-Favored-Nation (MFN) as a measure of trade costs when weighted average tariff data is not available for recent years because of statistical delays, informal trade disruptions, or international organizations taking too long to process the data. This is a practical choice because the data is not easy to get and comes in on time. The main reason is that this indication gives a quick reference point for a country's legal tariff levels. Still, it is important to recognize that this choice has some drawbacks: if we cannot balance things based on actual import volumes, it usually will end up overestimating the real trade costs.

Policy Variable with regional effects:

Previous empirical studies have shown several times that China's OFDI and trade links are very different in different parts of the nation and with different groups of countries. Researchers have shown that different sub-regions of CEECs have reacted very differently to China's economic policies. Pavlićević (2019) notes that the economic ties between China and the V4 countries are different from those with Balkan countries since the markets are of different sizes, the institutions are set up differently, and the countries have different development goals (Pavlićević, 2019). Evidence from Turcsányi (2020) suggests that, despite their geographical proximity to other CEECs, the Baltic states maintain unique economic ties with China, primarily due to their smaller market size, advanced digitalization, and strong integration with Nordic economies (Turcsányi, 2020). Consequently, a direct evaluation of the comprehensive effects of the BRI on all 16 CEECs cannot produce precise or significant outcomes. This dissertation addresses the difficulty of providing precise policy insights by incorporating regional effects into the assessment of the BRI's impact through the creation of interaction variables for different sub-regional groups.

BRI_{jt} is the dummy variable, which equals 1 when country j has signed a Memorandum of Understanding on Cooperation under the Belt and Road Initiative (MoU) and maintain its' involvement in BRI. Otherwise, it will be 0.

$BRI\ Central\ EU$ represents a value of 1 when corresponding countries in the Central EU group have signed a MoU and maintain involvement in year t. Otherwise, it will be 0.

$BRI\ Baltics\ EU$, the same logic, assigning a value of 1 to the corresponding countries in the Baltic EU group that have signed a MoU and maintain involvement. In any other case, the value will be 0.

$BRI\ Balkan\ EU$, similarly, when Bulgaria, Croatia, and Romania have signed a MoU and maintain their participation in year t, the value will be 1.

$BRI\ Balkan\ nonEU$ applied by the same rules that the value will be 1 when those countries in the group signed a MoU and kept their participation.

<u>Other Variables:</u>

α_t, is the time effect.

ε_{jt}, is the time-varying perturbation term.

The summarized definition of variables is presented in *Table 15*, with corresponding data sources. It shows that the bilateral trade data comes from the UN Commodity Trade Statistics Database (UN Comtrade), the OFDI data comes from a combined source, consists of OECD database, MOFCOM, and National bank data. The R&D and tariff data are sourced from the World Bank Database, while the Product Complexity Index comes from UNCTAD. The BRI participation variables are constructed based on information from the Green Finance and Development Center.

Table 15: Summarized definition of all variables.

<table>
<tr><th>Variable Name</th><th>Value</th><th>Source</th></tr>
<tr><td>$LnTrade_{jt}$</td><td>natural logarithm value of total trade</td><td rowspan="3">UN Comtrade Database</td></tr>
<tr><td>$LnExport_{jt}$</td><td>natural logarithm value of export trade</td></tr>
<tr><td>$LnImport_{jt}$</td><td>natural logarithm value of import trade</td></tr>
<tr><td>$LnOFDI_{jt}$</td><td>natural logarithm value of total OFDI stock</td><td>Combined collection of OECD, MOFCOM, National bank data</td></tr>
<tr><td>$HOFDI_{jt}$</td><td>natural logarithm value of total OFDI stock * natural logarithm value of host country GDP</td><td rowspan="2">Author’s construction based on combined OECD, MOFCOM, National bank data</td></tr>
<tr><td>$VOFDI_{jt}$</td><td>natural logarithm value of total OFDI stock * natural logarithm value of host country labor wage</td></tr>
<tr><td>RD_{jt}</td><td>R&D as % of GDP China - R&D as % of GDP CEECs</td><td>World Bank Database</td></tr>
<tr><td>PCI_{jt}</td><td>Direct Value</td><td>UNCTAD</td></tr>
<tr><td>$Tariff_{jt}$</td><td>Direct Value</td><td>World Bank Database</td></tr>
<tr><td>$BRI\ Central\ EU$</td><td rowspan="4">Active BRI MoU = 1, else = 0</td><td rowspan="4">Author’s construction based on Green Finance and development center</td></tr>
<tr><td>$BRI\ Baltics\ EU$</td></tr>
<tr><td>$BRI\ Balkan\ EU$</td></tr>
<tr><td>$BRI\ Balkan\ nonEU$</td></tr>
</table>

Source: Author’s construction

The reliability and validity of the database are ensured by using established global databases, such as the UN Comtrade, UNCTAD, World Bank database, and OECD databased, and official governmental sources for example, MOFCOM data and national banks of CEECs. The variables for BRI participation are sourced from publicly available official government announcements and policy documents, ensuring an accurate evaluation of formal engagement in the initiative. The open data sources feature also make sure that there will not be any confidential issues; therefore, this research can be used for both commercial and non-commercial purposes without any ethical concerns. The replicability of this dissertation is enhanced by the exclusive use of publicly available secondary data sources. Other researchers could download the same statistics used in a similar analysis. However, some limitations exist, as database providers may update historical data over time, and the multi-source approach for OFDI variables requires access to several different databases to replicate the data construction process fully.

6.3.3 Expected signs of each variable.

The expectation of how each variable will affect trade in different patterns of OFDI is shown in *Table 16*, *17*, and *18*.

The baseline, total OFDI test, is expected to exhibit a positive sign across all trade models, as shown in *Table 16*, establishing the fundamental investment-trade complementarity relationship that underlies both research hypotheses, which is consistent with findings from our theoretical examination.

Table 16: Expected signs of each variable for Model A.

	Total	Export	Import
OFDI	+	+	+
RD	-	-	-
PCI	+	+	+
Tariff	-	-	-
bri_central_eu	+	+	+
bri_baltics_eu	+	+	+
bri_balkan_eu	+	+	+
bri_balkan_non_eu	+	+	+

Source: Author's construction

The BRI regional dummy variables in Model A show the basic effects of BRI participation on bilateral trade flows. This is the first step in figuring out how regional cooperation improves overall investment-trade relationships. All sub-regions in the CEECs will have a positive impact on this baseline model, as membership in the BRI facilitates easier trade among countries, regardless of the type of investment or region they are in. This universal positive expectation stems from the core BRI mechanisms that benefit all participating countries through infrastructure development, policy coordination, financial cooperation, and diplomatic engagement.

The HOFDI test shows different expected signs for different trade directions (*Table 17*). For the export model, HOFDI is expected to have a stronger positive effect than other types of investment. On the other hand, for the import model, HOFDI is expected to have a weaker effect or even a negative effect, which remains unknown. This is because market-seeking investment has limited incentives for reverse procurement from the host country, mainly creating a one-way value chain from China to CEECs and focusing on meeting local needs rather than developing export production capacity.

Table 17: Expected signs of each variable for Model B.

	Total	Export	Import
HOFDI	+	++	
RD	-	-	-
PCI	+	+	+
Tariff	-	-	-
bri_central_eu	+	++	+
bri_baltics_eu			
bri_balkan_eu	+	+	+
bri_balkan_non_eu	-	-	-

Source: Author's construction

The BRI regional dummy variables in Model B show how different areas react to investment incentives that are meant to attract businesses under the BRI framework. This model shows that BRI Central EU has the most positive effects, especially on export equations. This is because the combination of large domestic markets, EU membership benefits, and BRI-enhanced infrastructure makes it the best place for Chinese companies that want to enter new markets. BRI Baltics EU is thought to be unimportant because small domestic markets make it less appealing for large-scale market-seeking investment. BRI Balkan EU has some positive effects because these countries have some market opportunities, since EU membership still provides valuable market access advantages. BRI Balkan non-EU has weak positive effects because market access issues and institutional uncertainties make market-seeking investment less effective. Non-EU status also means that these countries can't be effective platforms for broader European market penetration, even though they might have a lower cost. BRI Balkan non-EU exhibits negative effects in Model B because these countries are fundamentally unsuited for market-seeking investment strategies, and BRI's focus on promoting horizontal OFDI actually works against their natural comparative advantages. Albania, Bosnia

Herzegovina, Montenegro, North Macedonia, and Serbia possess small domestic markets that cannot support large-scale market-seeking operations, lack EU membership, which severely limits their utility as platforms for broader European market access, and face institutional barriers that make them unsuitable for serving as regional headquarters or distribution centers for Chinese firms targeting European consumers.

The VOFDI model demonstrates the expected positive sign with total trade, which aligns with the theoretical examination as well (*Table 18*). For export models, VOFDI is expected to show a moderate positive effect, as efficiency-seeking investment creates demand for Chinese intermediate goods and machinery while facilitating technology transfer that requires Chinese equipment and know-how. For import models, VOFDI should theoretically show a strong positive effect since vertical OFDI typically produces goods for the Chinese market and creates cost-efficient sourcing opportunities, leading to reverse flows of processed goods to China.

Table 18: Expected signs of each variable for Model C.

	Total	Export	Import
VOFDI	+	+	++
RD	-	-	-
PCI	+	+	+
Tariff	-	-	-
bri_central_eu	+	+	+
bri_baltics_eu			
bri_balkan_eu	+	+	++
bri_balkan_non_eu	+		

Source: Author's construction

The BRI regional dummy variables in Model C demonstrate how different regions benefit from efficiency-seeking investment opportunities under the BRI framework. BRI Central EU shows moderate positive effects in this model, weaker than in Model B, because higher labor costs and a focus on domestic market serving make these countries less attractive destinations for efficiency-seeking investment compared to their strong advantages in market-seeking contexts. BRI Baltics EU continues to exhibit insignificance, as these countries lack both the scale and comparative advantages necessary for significant efficiency-seeking investment. BRI Balkan EU demonstrates its strongest positive effects in this model, particularly for import equations. These countries become integrated into Chinese value chains through efficiency-seeking investment, generating substantial reverse trade flows back to China. BRI Balkan non-EU shows mixed or uncertain effects because while these countries offer significant cost advantages that should attract efficiency-seeking investment, institutional barriers, including complex regulatory frameworks, limited EU market access, and political uncertainties, create substantial obstacles that may outweigh cost benefits, making the net effect on vertical investment and associated trade flows ambiguous and heavily dependent on successful institutional reforms and infrastructure completion.

In terms of control variables, the RD, which measures the difference in technology between China and CEECs by looking at the gaps in R&D spending as a percentage of GDP, always has a negative expected sign in all models. This negative relationship happens because bigger differences in technology make things incompatible, which slows down the investment hence put negative effects on trade. All of the models have a negative sign for the tariff variable because higher tariffs make it more expensive to trade between two countries. Higher tariffs make Chinese goods more expensive in CEEC markets, which makes them less competitive with goods from other countries or the US. Higher tariffs also make CEEC goods less appealing to China because of retaliatory or reciprocal tariff structures. The PCI shows positive signs for all models, since higher PCI values mean lower investment costs and better business environments.

6.4 Result of Empirical test.

A descriptive analysis is conducted on the collected data, and the specific results are presented in *Table 19*, which includes the mean, standard deviation, maximum, and minimum values for each variable.

Descriptive statistics make clear several important features of the dataset used in this dissertation. The trade variable represents the logarithmic values of bilateral trade flows between China and 16 CEE nations, indicating that China maintains a trade surplus with the region, as export values (mean = 20.78) exceed import values (mean = 19.40).

The three OFDI indicators demonstrate markedly different scales due to variations in construction methods, each reflecting distinct dimensions of OFDI patterns. The traditional OFDI stock, with a mean of 17.09, serves as a benchmark logarithmic measure of OFDI stock. In contrast, the constructed variables HOFDI (mean = 423.04) and VOFDI (mean = 117.66) integrate host country market size and labor wage level characteristics. This approach allows for a comprehensive examination of different FDI theoretical motivations, yielding robust empirical evidence for various investment norms.

Control variables show significant differences. For example, R&D investment gaps range from -0.65 to 2.65. This means that some CEECs sometimes spend more on R&D than China. Meanwhile, tariff rates in CEECs are generally low, with an average rate of only 5.69%.

Table 19: Variable descriptive analysis.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	SD	Min	Max
Total	301	21.0860	1.5766	17.2531	24.4896
Export	301	20.7811	1.6048	16.7896	24.3651
Import	301	19.3999	1.8417	13.5207	22.7657
OFDI	283	17.0856	2.5064	11.9954	22.4501
HOFDI	283	423.0406	77.1504	275.3351	585.7086
VOFDI	283	117.6550	20.7701	72.1520	163.4602
RD	304	1.1226	0.6359	-0.6485	2.6500
PCI	298	52.4252	5.2513	39.7000	61.2000
Tariff	294	5.6887	1.1400	3.5000	15.9200
bri_central_eu	304	0.1480	0.3557	0.0000	1.0000
bri_baltics_eu	304	0.0329	0.1787	0.0000	1.0000
bri_balkan_eu	304	0.0691	0.2540	0.0000	1.0000
bri_balkan_non_eu	304	0.1612	0.3683	0.0000	1.0000

Source: Stata output.

This dissertation also grouped the BRI participation variable by region to show how the effects differ between country groups. The findings indicate that about 41% of the data comes from BRI countries. Within this, the Central EU group (14.8%) and non-EU Balkan countries (16.1%) were the largest groups. In conclusion, the data shows good variation across all variables. Importantly, there are no extreme outliers. The sample size ranges from 283 to 304 observations, indicating high data quality. Therefore, the following econometric analysis should be reliable.

6.4.1 Total OFDI test --- Model A.

At first, an OLS regression analysis was used to look at the overall relationship between the variables. Traditional OLS regression analysis finds factors that have a statistically significant association with the dependent variable, which makes it easier to check the model specification. The OLS regression results (*Table 20*) indicate a significant and strong relationship between China's OFDI and bilateral trade with CEECs among total trade, export and import.

OFDI exhibits a significant effect on imports (coefficient = 0.499), indicating that China's OFDI has a notable impact on its imports from CEEC countries. This suggests that OFDI enables Chinese companies to source products, materials, or components from host nations. China's OFDI has a significant influence on exports, albeit to a lesser degree (coefficient =

0.298). The performance of control variables meets expectations, with the R&D gap consistently demonstrating an adverse effect on all trade indicators, while tariff rates diminish trade flows. As expected, BRI has quite different effects in different areas. The Central EU group has a substantial positive effect, with a value of 0.778. But the non-EU Balkan group has a strong negative effect, with a value of -0.900. The models demonstrate considerable explanatory power, as evidenced by R-squared values ranging from 0.669 to 0.738, in conjunction with a highly significant F-statistic.

Table 20: OLS regression results.

	(1) Total	(2) Export	(3) Import
OFDI	0.327***	0.298***	0.499***
	(11.093)	(9.941)	(12.993)
RD	-0.291*	-0.320**	-0.346*
	(-1.910)	(-2.072)	(-1.740)
PCI	0.065***	0.088***	-0.007
	(3.734)	(4.969)	(-0.301)
Tariff	-0.181***	-0.205***	-0.139**
	(-3.863)	(-4.323)	(-2.289)
bri_central_eu	0.778***	0.650***	0.910***
	(4.496)	(3.701)	(4.034)
bri_baltics_eu	-0.690**	-0.685**	-0.504
	(-2.447)	(-2.393)	(-1.373)
bri_balkan_eu	0.150	0.125	0.192
	(0.707)	(0.580)	(0.692)
bri_balkan_non_eu	-0.900***	-0.874***	-0.786***
	(-5.033)	(-4.818)	(-3.377)
_cons	13.508***	12.704***	12.452***
	(13.831)	(12.819)	(9.788)
N	274	274	274
R2	0.738	0.736	0.669
F	93.122	92.481	67.060

Source: Stata output

The preliminary results are promising. However, it is important to run a variant inflation factor (VIF) test after the OLS regression. This is because the regression uses several related economic indicators， including OFDI, R&D gap, PCI, and tariffs. These variables might measure similar economic ideas. Therefore, they could cause multicollinearity problems. The VIF test confirms that the observed high statistical significance in the results is genuine and not artificially inflated by concerns about multicollinearity.

The VIF test is followed, and the result is shown in *Table 21*. The VIF test results strongly confirm that there is no multicollinearity issue in the model specification. All variables have VIF values well below the critical threshold of 10, indicating minimal correlation among these variables. The average VIF of 1.95 is entirely within an acceptable range, providing strong evidence to eliminate any concerns about multicollinearity. These findings provide stronger validation of the reliability of the initial OLS regression results compared to the initial assessment. The VIF test shows that the strong link between OFDI and trade flows is real and not just a result of correlations between the explanatory variables. We could understand the coefficient for each variable as its own effect on trade between the two countries, without having to worry about confusing correlations.

Table 21: VIF test results

Variable	**VIF**	**1/VIF**	**Collinearity Diagnosis**
OFDI	2.14	0.467238	Acceptable (<5)
RD	3.24	0.308956	Acceptable (<5)
PCI	3.34	0.299133	Acceptable (<5)
Tariffs	1.17	0.855658	Acceptable (<5)
bri_central_eu	1.63	0.612859	Acceptable (<5)
bri_baltics_eu	1.11	0.901634	Acceptable (<5)
bri_balkan_eu	1.27	0.787191	Acceptable (<5)
bri_balkan_non_eu	1.68	0.596318	Acceptable (<5)
Mean VIF	**1.95**		**No severe multicollinearity**

Note: VIF > 10 indicates serious multicollinearity (Belsley, Kuh, & Welsch, 1980).

Source: Stata output

After confirming that the level of multicollinearity was acceptable through the VIF test, this dissertation employed the high-dimensional fixed effects (HDFE) regression method to address several key econometric issues that could not be resolved using standard OLS estimation. It incorporates year fixed effects (αt) to control for time-varying global factors that affect all countries simultaneously, such as international economic cycles, commodity price fluctuations, and global policy changes, which may bias estimates of the OFDI-trade relationship. HDFE regression is recommended for use with complex panel data due to its capability to handle multiple fixed effects. Also, it gives reliable coefficient estimates, as confirmed by the VIF testing process.

Following the validation of the VIF test, the planned HDFE regression was conducted, with the results presented in Table 6.9. This analysis was combined with a baseline test using only

OFDI stock as the explanatory variable and a complete model test that included all other control variables and policy dummy variables. It employs the *reghdfe* command to control for year fixed effects while examining the relationships between Chinese OFDI and bilateral trade flows with CEECs.

The regression results in *Table 22* demonstrate strong overall model performance across all specifications. The R-squared values range from 0.688 to 0.750 in the complete model, indicating that the models explain 68.8% of the variation in import trade flow, 74.9% in export trade flow, and 75% of the variation in total trade flows. The F-statistics are consistently high (80.56 for total trade, 82.19 for exports, and 50.76 for imports) with all models showing Prob > F = 0.0000, confirming the overall statistical validity and strong significance of all model specifications. The within R-squared values (0.7229, 0.7269, and 0.6218) demonstrate that the models effectively capture variation within the panel structure after controlling for year fixed effects. The results confirm robust and significant relationships between Chinese OFDI and all trade measures.

Table 22: HDFE regression results for Model A.

	(1) Total	(2) Total	(3) Export	(4) Export	(5) Import	(6) Import
OFDI	0.500***	0.328***	0.491***	0.301***	0.581***	0.488***
	(14.276)	(10.563)	(13.333)	(9.536)	(15.591)	(12.103)
RD		-0.338*		-0.353**		-0.502**
		(-1.911)		(-1.971)		(-2.189)
PCI		0.060***		0.084***		-0.020
		(3.248)		(4.459)		(-0.819)
Tariff		-0.179***		-0.211***		-0.119*
		(-3.542)		(-4.096)		(-1.809)
bri_central_eu		0.947***		0.787***		1.046***
		(4.125)		(3.376)		(3.513)
bri_baltics_eu		-0.448		-0.462		-0.285
		(-1.369)		(-1.389)		(-0.671)
bri_balkan_eu		0.302		0.239		0.380
		(1.189)		(0.927)		(1.153)
bri_balkan_non_eu		-0.752***		-0.753***		-0.661**
		(-3.439)		(-3.388)		(-2.329)
_cons	12.589***	13.735***	12.424***	12.881***	9.513***	13.331***
	(20.913)	(12.419)	(19.596)	(11.470)	(14.828)	(9.290)
N	274	274	274	274	274	274
R^2	0.500	0.750	0.459	0.749	0.578	0.688
F	203.797	80.562	177.764	82.192	243.078	50.763

Source: Stata output

OFDI coefficients are highly significant across all specifications with p-values of 0.000, demonstrating the strongest effects for imports (coefficient = 0.488, t = 12.10, p = 0.000), followed by total trade (coefficient = 0.328, t = 10.56, p = 0.000), and exports (coefficient = 0.301, t = 9.54, p = 0.000). The consistently high t-statistics and zero p-values provide robust statistical evidence for the reliability of these core relationships, indicating significance well beyond the 1% level. Contrary to common concerns that Chinese investment creates trade deficits for host countries, these results suggest that Chinese OFDI helps improve CEEC trade balances with China by generating more Chinese import demand than export competition.

The difference in R&D investment as a percentage of GDP between the two countries exhibits a negative coefficient across all trade indicators, with varying levels of statistical significance. For total trade (coefficient = -0.338, p = 0.057), the effect is marginally significant at the 10% level; for exports (coefficient = -0.353, p = 0.050), the effect just reaches the 5% significance threshold. The import indicator shows the strongest R&D effect (coefficient = -0.502, p = 0.030), reaching statistical significance at the 5% level. This suggests that the larger technological gap between China and CEECS reduces bilateral trade flows, with the most significant impact on import relations. This suggests that China is more likely to engage in import activities in regions with similar technological levels. PCI shows highly significant positive effects on total trade (coefficient = 0.060, p = 0.001) and exports (coefficient = 0.084, p = 0.000), but a negative though non-significant effect on imports (coefficient = -0.020, p = 0.414). It reflects that CEEC countries with higher PCI, meaning lower investment cost, tend to receive more Chinese exports, reflecting enhanced economic complementarity and trade facilitation capabilities. Tariff rates are consistently negative and statistically significant across total trade (coefficient = -0.179, p = 0.000) and exports (coefficient = -0.211, p = 0.000), with a marginally significant effect on imports (coefficient = -0.119, p = 0.072). These results confirm that trade barriers reduce bilateral economic flows as expected from trade theory.

The BRI participation effects reveal striking regional heterogeneity across different CEEC subgroups. Central EU countries demonstrate the most successful BRI outcomes, showing highly significant positive effects across all trade measures: total trade (coefficient = 0.947, p = 0.000), exports (coefficient = 0.787, p = 0.001), and imports (coefficient = 1.046, p = 0.001), with these large coefficients suggesting BRI participation increased trade by approximately 95-105% for these countries. In sharp contrast, Balkan non-EU countries show significant negative BRI effects across all measures: total trade (coefficient = -0.752, p = 0.001), exports (coefficient = -0.753, p = 0.001), and imports (coefficient = -0.661, p = 0.021), suggesting institutional or structural barriers are so severe than expected that limit BRI effectiveness in non-EU contexts. Meanwhile, Baltic EU countries show negative coefficients across all specifications but with non-significant p-values (0.172 for total trade, 0.166 for exports, 0.503 for imports). This suggests, small economies, such as Baltic states, may be experiencing negative net effects because BRI infrastructure projects are scaled for larger trade volumes that these countries cannot generate, making the participation costs exceed benefits. In contrast, Balkan EU countries show positive but non-significant effects (p-values of 0.236, 0.355, and 0.250, respectively), indicating heterogeneous and statistically uncertain BRI impacts across these different institutional and geographic contexts.

The HDFE results show smaller but more reliable coefficient estimates compared to the earlier OLS results. This suggests that controlling fixed effects remove some upward bias in the OLS estimates, providing more conservative and credible effect sizes. The persistence of high statistical significance after controlling for time effects strengthens confidence in the causal interpretation of the results.

6.4.2 Horizontal OFDI test --- Model B.

This section proceeds directly with HDFE regression for Model B (HOFDI). Model B uses the same control variables (RD, PCI, Tariff) and BRI dummy variables as Model A, but it substitutes HOFDI (OFDI × ln GDP) for the original OFDI variable. Since the multicollinearity relationships between control variables remain unchanged and HOFDI is a constructed variable derived from the already-tested OFDI measure, the previously conducted VIF test results remain valid for assessing potential multicollinearity concerns.

Model B performs exceptionally well overall (*Table 23*). Its horizontal OFDI specification explains bilateral trade flows more effectively than Model A. The R-squared values confirm this: 0.8135 (total trade), 0.8087 (exports), and 0.7500 (imports). This shows that the models account for 75% to 81% of the variation in trade flows. These R-squared values are notably higher than Model A, suggesting that the market-size weighted HOFDI measure better captures the underlying trade-investment relationships. The F-statistics are consistently high (118.34 for total trade, 117.66 for exports, and 71.05 for imports) with all models showing Prob > F = 0.0000, confirming the overall statistical validity and strong significance of all model specifications. The within R-squared values (0.7931, 0.7921, and 0.6971) demonstrate that the models effectively capture variation within the panel structure after controlling for year fixed effects.

The HOFDI test results reveal exceptionally robust relationships across all trade measures, with the coefficients showing remarkably high statistical significance. For total trade (coefficient = 0.013, t = 15.27, p = 0.000), exports (coefficient = 0.012, t = 14.03, p = 0.000), and imports (coefficient = 0.018, t = 15.63, p = 0.000), all relationships are highly significant, well beyond the 1% level. The pattern shows that horizontal OFDI has the most substantial impact on imports (0.018), followed by total trade (0.013) and exports (0.012). This suggests that market-seeking Chinese investment, when weighted by host country market size, primarily facilitates

China's imports from CEEC countries, potentially indicating that larger markets attract Chinese investment that then sources products back to China, while also promoting bilateral trade overall.

Table 23: HDFE regression results for Model B.

	(1) Total	(2) Total	(3) Export	(4) Export	(5) Import	(6) Import
H_OFDI	0.018***	0.013***	0.018***	0.012***	0.020***	0.018***
	(20.633)	(15.269)	(19.195)	(14.034)	(20.707)	(15.628)
RD		-0.440***		-0.461***		-0.593***
		(-2.883)		(-2.948)		(-2.893)
PCI		0.032*		0.055***		-0.049**
		(1.948)		(3.288)		(-2.249)
Tariff		-0.206***		-0.239***		-0.140**
		(-4.725)		(-5.351)		(-2.396)
bri_central_eu		0.657***		0.498**		0.717***
		(3.272)		(2.419)		(2.658)
bri_baltics_eu		-0.240		-0.257		-0.036
		(-0.846)		(-0.884)		(-0.095)
bri_balkan_eu		0.170		0.106		0.233
		(0.772)		(0.472)		(0.789)
bri_balkan_non_eu		-0.583***		-0.597***		-0.412
		(-3.089)		(-3.085)		(-1.625)
_cons	13.545***	15.546***	13.283***	14.603***	11.019***	15.754***
	(36.424)	(16.067)	(33.420)	(14.722)	(26.742)	(12.118)
N	274	274	274	274	274	274
R^2	0.663	0.814	0.624	0.809	0.693	0.750
F	425.736	118.341	368.450	117.656	428.765	71.050

Source: Stata output

The gaps between R&D levels demonstrate consistently significant negative effects across all specifications, with stronger statistical significance than in Model A. For total trade (coefficient = -0.440, p = 0.004), exports (coefficient = -0.461, p = 0.004), and imports (coefficient = -0.593, p = 0.004), all effects reach significance at the 1% level. This suggests that substantial technological gaps between China and the CEECs substantially reduce bilateral trade flows, with the strongest negative impact on import relationships. These significant adverse effects in the HOFDI specification suggest that technological compatibility remains crucial for market-seeking investment success, as larger R&D gaps may limit the effectiveness of Chinese investment even in the CEE markets. PCI shows mixed significance patterns across trade measures. For total trade, the effect is marginally significant (coefficient = 0.032, p = 0.053), while for exports it reaches high significance (coefficient = 0.055, p = 0.001). However, for imports, PCI shows a significant negative effect (coefficient = -0.049, p = 0.025). It indicates that CEEC countries with higher PCI tend to receive more Chinese exports, as higher PCI reflects lower investment costs and better business environments that attract market-seeking Chinese investment. Conversely, the negative import effect suggests that countries with higher

PCI may develop competitive domestic industries that substitute for Chinese imports, creating this asymmetric trade pattern in the horizontal OFDI framework. Tariff rates consistently demonstrate strong negative effects across all trade measures, as predicted: total trade (coefficient = -0.206, p = 0.000), exports (coefficient = -0.239, p = 0.000), and imports (coefficient = -0.140, p = 0.017).

The effects of BRI participation in Model B demonstrate comparable, albeit slightly diminished, regional patterns relative to Model A. The Central EU group continues to show highly significant positive effects across all trade measures: total trade (coefficient = 0.657, p = 0.001), exports (coefficient = 0.498, p = 0.016), and imports (coefficient = 0.717, p = 0.008), which perfectly match expectations with very strong positive effects, especially for exports. This confirms these countries' optimal positioning for market-seeking investment under BRI framework. The Balkan non-EU group maintains significant negative BRI effects: total trade (coefficient = -0.583, p = 0.002), exports (coefficient = -0.597, p = 0.002), and imports (coefficient = -0.412, p = 0.105), with the import effect becoming nonsignificant, which perfectly confirms our theoretical prediction. These countries are fundamentally unsuited for market-seeking investment, and BRI's horizontal OFDI promotion creates severe misallocation effects that reduce trade efficiency. The Baltic EU and Balkan EU groups consistently show insignificant results across all models. Their p-values (ranging from 0.377 to 0.925) indicate that BRI impacts in these regions lack statistical significance, even after including market-seeking investment factors.

The HOFDI approach captures market-seeking investment behavior more effectively, as evidenced by the stronger model fit and highly significant relationships. While both models show similar directional effects, Model B suggests that the market size of CEEC significantly influences Chinese investment decisions, and this market-seeking behavior creates stronger and more predictable trade relationships than traditional OFDI measures alone.

6.4.3 Vertical OFDI Test --- Model C.

Building upon the analysis of horizontal OFDI in Model B, the study now examines Model C, which focuses on vertical OFDI patterns by employing VOFDI (OFDI × ln wages) to capture efficiency-seeking investment behavior. Lower wages in host countries drive efficiency-seeking VOFDI by Chinese investors. This wage advantage motivates cost-reduction strategies, such as accessing cheaper labor, lowering production expenses, or building cost-efficient supply chains. This specification tests whether Chinese investment decisions are motivated by wage cost advantages in host countries, representing a fundamentally different investment rationale compared to the market-seeking behavior analyzed in Model B.

Table 24: HDFE regression results for Model C.

	(1) Total	(2) Total	(3) Export	(4) Export	(5) Import	(6) Import
V_OFDI	0.073***	0.046***	0.074***	0.042***	0.076***	0.066***
	(19.060)	(9.667)	(18.519)	(8.794)	(16.552)	(10.301)
RD		0.023		-0.023		0.040
		(0.133)		(-0.127)		(0.171)
PCI		0.062***		0.085***		-0.012
		(3.210)		(4.385)		(-0.456)
Tariff		-0.132**		-0.167***		-0.042
		(-2.582)		(-3.243)		(-0.624)
bri_central_eu		1.068***		0.897***		1.258***
		(4.572)		(3.802)		(4.038)
bri_baltics_eu		-0.406		-0.422		-0.246
		(-1.204)		(-1.240)		(-0.547)
bri_balkan_eu		0.524**		0.443*		0.717**
		(2.028)		(1.695)		(2.077)
bri_balkan_non_eu		-0.477**		-0.500**		-0.261
		(-2.126)		(-2.207)		(-0.870)
_cons	12.505***	13.043***	12.109***	12.247***	10.459***	12.308***
	(27.409)	(11.507)	(25.519)	(10.698)	(19.092)	(8.136)
N	274	274	274	274	274	274
R^2	0.629	0.737	0.608	0.738	0.603	0.652
F	363.301	74.928	342.969	77.640	273.973	42.387

Source: Stata output

Model C achieves solid yet comparatively weaker results than Model B (R^2: 0.7370 total trade, 0.7382 exports, 0.6522 imports). As *Table 24* shows, it underperforms both Model A and B, implying that the VOFDI approach explains less variation in trade-investment dynamics than traditional or market-seeking frameworks. This lower explanatory power may reflect the fact that efficiency-seeking investment represents a more specialized and narrow investment motive compared to market-seeking behavior, as wage considerations alone may not fully capture the complexity of China-CEEC economic relationships. However, it should be noted that some VOFDI may also serve as a strategic entry point for better access to local markets, where Chinese firms initially invest based on cost considerations but subsequently leverage these investments to penetrate local and regional markets, creating a hybrid investment motivation that combines elements of efficiency-seeking and market-seeking. The F-statistics remain significant (74.93 for total trade, 77.64 for exports, and 42.39 for imports) with all models showing Prob > F = 0.0000, confirming overall statistical validity. The within R-squared values (0.7082, 0.7155, and 0.5786) demonstrate reasonable but diminished explanatory power within the panel structure after controlling for year fixed effects.

The VOFDI results reveal significant yet distinct patterns across trade measures, with VOFDI coefficients demonstrating high statistical significance. For total trade (coefficient = 0.046, t = 9.67, p = 0.000), exports (coefficient = 0.042, t = 8.79, p = 0.000), and imports (coefficient =

0.066, t = 10.30, p = 0.000), all relationships are highly significant, well beyond the 1% level. VOFDI shows the strongest impact on imports (0.066), followed by total trade (0.046) and exports (0.042). This pattern suggests that efficiency-seeking OFDI primarily facilitates China's imports from CEEC countries, potentially indicating that Chinese firms invest in these countries to source intermediate products, components, or raw materials for export back to China, while having a more modest effect on Chinese exports to these markets.

The impact of the technology gaps, as expressed by differences in R&D investment levels, shows dramatically different patterns in Model C compared to previous models, with non-significant effects across all trade measures. For total trade (coefficient = 0.023, p = 0.895), exports (coefficient = -0.023, p = 0.899), and imports (coefficient = 0.040, p = 0.864), all effects are statistically insignificant. Efficiency-seeking Chinese investment reduces the relevance of technological gaps for trade outcomes—the investment logic shifts from technological complementarity toward cost-driven advantages. Furthermore, under VOFDI, significant R&D gaps do not preclude technology transfer: Chinese firms relocate production capabilities to host countries, enabling CEECs to manufacture intermediate goods for re-import to China. This transfer mechanism explains VOFDI's distinct role in promoting intermediate imports from CEECs—it builds local production capacity irrespective of initial technological disparities. PCI demonstrates significant positive effects for total trade (coefficient = 0.062, p = 0.002) and exports (coefficient = 0.085, p = 0.000), but shows a non-significant negative effect for imports (coefficient = -0.012, p = 0.649). The PCI effects in the VOFDI framework suggest that countries with lower investment costs continue to attract Chinese exports, but the import relationship becomes insignificant. The tariff rate consistently shows significant negative effects for total trade (coefficient = -0.132, p = 0.010) and exports (coefficient = -0.167, p = 0.001), while the import effect becomes non-significant (coefficient = -0.042, p = 0.534). This pattern suggests that trade barriers continue to hinder bilateral trade relationships, particularly for exports; however, their impact on import flows is mitigated when Chinese investment is seeking to optimize its supply chain system.

The BRI participation effects in Model C reveal interesting regional variations that differ from those in both Model A and Model B. Central EU group maintain highly significant positive effects across all trade measures: total trade (coefficient = 1.068, p = 0.000), exports (coefficient = 0.897, p = 0.000), and imports (coefficient = 1.258, p = 0.000), with coefficient magnitudes that are larger than those observed in Model B, suggesting that Central EU countries successfully attract both horizontal and vertical OFDI in reality, not presents only the market-seeking purpose. Notably, Balkan EU countries exhibit significant positive BRI effects in this specification: total trade (coefficient = 0.524, $p = 0.044$), exports (coefficient = 0.443, $p = 0.091$), and imports (coefficient = 0.717, $p = 0.039$), which contrasts with their non-significant effects in previous models, provides meaningful statistical support for the theoretical prediction that these countries benefit from vertical OFDI. The growing importance of the Balkan EU group for efficiency-seeking FDI stems from three advantages: First, their competitive wages, relative to Central EU states, combined with full EU regulatory standards, offer Chinese investors cost efficiency within stable institutions. Second, sectoral strengths in manufacturing or resources align with the operational needs of Chinese firms. Third, their strategic location enables cost-effective access to both EU and regional markets. Balkan non-EU countries continue to show significant adverse effects for total trade (coefficient = -0.477, $p = 0.035$) and exports (coefficient = -0.500, $p = 0.028$), but the import effect becomes non-significant (coefficient = -0.261, $p = 0.385$). This strong statistical evidence confirms again that institutional barriers systematically prevent these countries from capitalizing on their natural efficiency-seeking investment advantages, with the significance levels indicating this is a robust rather than random pattern. Baltic EU countries remain non-significant across all specifications, with p-values ranging from 0.216 to 0.585, meaning vertical OFDI promotion has no meaningful systematic impact on these countries.

Model C offers substantial explanations for efficiency-seeking investment behavior that complement the market-seeking patterns observed in Model B. While Model C shows lower overall explanatory power than Model B (74% vs. 81% for total trade), it reveals that efficiency-seeking motivations create different trade patterns, with stronger import effects and reduced significance of technological factors. The emergence of significant BRI effects for Balkan EU countries in Model C suggests that efficiency-seeking Chinese OFDI may be particularly beneficial for these middle-income European countries that can offer competitive advantages while maintaining EU institutional frameworks. The non-significance of R&D gaps in Model C contrasts sharply with Models A and B, indicating that efficiency-seeking investment operates through different channels than overall or market-seeking OFDI.

The three OFDI specifications demonstrate varying explanatory power, with Model B showing superior performance (R^2 = 75-81%), followed by Model A (R^2 = 69-75%), and Model C showing the lowest but still substantial explanatory power (R^2 = 65-74%). This ranking suggests that market-seeking investment behavior, weighted by host country market size, best captures China-CEEC trade relationships. At the same time, wage-based efficiency-seeking motives represent a more specialized investment channel.

6.5 Summary of Chapter 6.

This chapter assesses the empirical evidence supporting the key hypotheses derived from the Knowledge Capital model framework. The three-model regression analysis provides comprehensive evidence to assess whether the proposed relationships between BRI participation, different types of Chinese OFDI, and bilateral trade patterns hold in the China-CEEC context.

Empirical results offer partial support for Hypothesis 1. While Model B substantially outperforms Model C (R^2: 75-81% vs. 65-74%), indicating BRI more effectively enhances market-seeking than efficiency-seeking investment, other evidence remains inconclusive. This supports the first part of the hypothesis regarding differential promotion of investment types. However, the predicted trade effects are not fully confirmed. Contrary to the hypothesis, both horizontal and vertical OFDI specifications indicate that Chinese investment has a stronger effect on promoting China's imports from CEECs than on its exports to CEECs. Model B shows import effects (0.018) slightly higher than total trade (0.013) and exports (0.012), while Model C demonstrates even stronger import effects (0.066) compared to exports (0.042). This suggests that even market-seeking Chinese investment has supply chain integration effects rather than simply promoting exports.

The observation that BRI effects vary significantly across different regional specifications within the CEEC group suggests that the aggregate analysis in Hypothesis 1 may mask important heterogeneous patterns. At the same time, empirical tests strongly support Hypothesis 2 is fully supported, with the Central EU group consistently showing positive and highly significant BRI effects across all three models (p = 0.000-0.001), with coefficients ranging from 0.498 to 1.258. The most substantial effects are observed in Model C, actually contradicting the prediction that they would specialize in horizontal OFDI. However, they demonstrate strong performance across all three investment types, confirming their attractive position for Chinese investment. The Balkan EU group perfectly validates the specialization prediction. These countries show non-significant effects in Models A and B but become significant in Model C: total trade (coefficient = 0.524, $p = 0.044$), exports (coefficient = 0.443, $p = 0.091$), and imports (coefficient = 0.717, $p = 0.039$). This finding confirms that BRI benefits for the Balkan EU group are specifically realized through efficiency-seeking investment. The Baltic EU group confirms the limited effects prediction. These countries show non-significant BRI effects across all three models, with p-values consistently above 0.16, validating the hypothesis of limited trade effects. The Balkan non-EU group strongly supports the prediction of institutional barriers. These countries consistently demonstrate adverse and significant BRI effects across Models A and B, as evidenced by total trade (coefficient = -0.583 to -0.752, p = 0.001-0.002), confirming constrained bilateral trade growth due to institutional limitations. While Hypothesis 2 correctly predicted that different regions would show different trade patterns, the empirical analysis confirms the core theoretical framework but requires two critical refinements: First, investment specialization proves more complex than hypothesized, with a combined investment motivation rather than just one. Second, trade patterns consistently favor supply chain integration over market access. Across all regions and investment types, OFDI primarily boosts imports rather than exports. This indicates China's OFDI in CEECs fundamentally serves to embed these economies into China's supply chain optimization—regardless of investment motivation. While robust evidence supports regional specialization, the investment-type differential hypothesis requires adjustment to account for the universal dominance of supply-chain integration.

7.0 POLICY RECOMMENDATIONS.

The policy recommendation framework this chapter offers is grounded in a comprehensive theoretical examination and rigorous empirical statistical testing of China-CEEC economic relationships. It provides robust evidence-based policy recommendations to enhance bilateral trade cooperation by combining theoretical analysis of OFDI motivations, trade patterns, and regional integration effects with empirical HDFE regression analysis of 274 observations across 16 CEECs over multiple years. The empirical statistical tests reveal significant OFDI-trade complementarity, with regression coefficients indicating that Chinese OFDI has more substantial positive effects on generating imports from CEECs than on exports to CEECs, providing a pathway to address the growing trade surplus China maintains with CEECs, despite increasing bilateral trade volumes. VOFDI regression result shows significant positive effects across all trade measures, offering opportunities for both volume expansion and structural upgrading as well. Additionally, regional heterogeneity in BRI effectiveness is observed. These statistically significant results can contribute to creating targeted policy interventions that leverage the differential effects of market-seeking versus efficiency-seeking investments to address trade imbalance issues, upgrade bilateral trade toward higher-value products and services and substantially increase overall trade volumes through strategic investment deployment across the 16 CEEC countries.

7.1 OFDI strategies for ameliorated trade balance.

China's growing trade surplus with CEECs necessitates a strategic deployment of OFDI, prioritizing investments that promote imports over those that promote exports. Based on the regression results showing that horizontal OFDI has significant positive effects on trade flows, with the most substantial impact on imports (0.0182), followed by total trade (0.0132), then exports (0.0125), China should strategically enhance its market-seeking investment patterns to maximize import generation from CEECs while serving local markets and creating complementary trade flows.

Market-seeking OFDI aimed at maximizing imports should focus on CEECs with high GDP though the method of establishing Chinese manufacturing and service operations that can serve both local markets and broader EU access, focusing on consumer goods, automotive, electronics, and services sectors where Chinese firms can leverage their technological capabilities and cost advantages to capture market share while creating platforms for importing Chinese components and intermediate goods. Concurrently, the government should guide Chinese multinational corporations (MNCs) to implement a "reverse supply chain" strategy and develop local supplier networks. It helps in creating the export of finished products and components back to China, thereby creating two-way trade flows to address the current trade surplus issue. The development of local supplier networks should be systematically implemented by establishing procurement offices in CEECs. A dedicated team needs to be organized to identify, train, and certify local suppliers to meet China's quality standards and technical specifications; Develop a comprehensive supplier development plan covering technology transfer, equipment supply, and management training to ensure that the companies in CEECs can produce components and intermediate products that meet Chinese market demands. Gradually implement localization requirements to increase the proportion of local procurement inputs in their operations, thereby creating stable demand for local suppliers.

For example, Chinese agricultural processing and food companies could develop comprehensive agricultural value chains in CEECs by investing horizontally in food processing facilities, cold storage infrastructure, and distribution networks. These networks should be capable of managing traditional CEEC agricultural products, including grains, dairy, meat, fruits, and vegetables, for export to China. Additionally, providing modern agricultural technology, equipment, and expertise will enhance productivity and quality standards, thereby creating substantial opportunities for China to increase imports of agricultural products that meet food security needs while mitigating the overall trade surplus.

A vertical pattern, efficiency-seeking, OFDI should focus on establishing production facilities in CEECs, primarily to produce goods for the Chinese market rather than local sales. Chinese MNCs should target labor-intensive manufacturing operations with clear regional differentiation based on comparative labor cost advantages, prioritizing Balkan countries (both EU and non-EU) where lower labor costs and proximity to European supply chains create optimal conditions for cost-effective production facilities that can supply Chinese domestic markets while providing substantial employment and technology transfer opportunities to host countries, particularly in sectors such as textiles, light manufacturing, food processing, and assembly operations where Balkan comparative advantages can be maximized. Central EU countries with higher labor costs should receive technology-intensive vertical investments that leverage their skilled workforce, advanced infrastructure, and EU market access for sophisticated manufacturing operations producing high-value components, precision instruments, and technology-intensive products that justify higher labor costs through superior quality and innovation capabilities. The Baltic states should focus on specialized vertical investments that capitalize on their digital economy expertise and logistics advantages, establishing technology services operations, software development centers, and high-value logistics and distribution facilities that serve China-Europe trade flows, while leveraging regional strengths in fintech and digital innovation. Additionally, China should implement "import commitment" requirements for OFDI projects where Chinese companies receiving government support for CEEC investments must meet specific targets for importing goods and services from their host countries, creating systematic incentives for investment patterns that contribute to trade balance improvement while ensuring that OFDI serves broader strategic economic objectives rather than simply facilitating Chinese market expansion abroad.

7.2 OFDI strategies for improved trade structure.

The negative impact of R&D gaps on trade flows, combined with Trade Complementarity Index (TCI) analysis in Chapter 3, revealing strong sectoral complementarities, indicates that China should deploy OFDI strategies that systematically upgrade bilateral trade toward high-value, complementary sectors while leveraging existing comparative advantages across different SITC categories. High-complementarity sector targeting should prioritize OFDI in sectors where TCI values exceed 1.5, particularly SITC 6 (manufactured goods), where most CEECs show consistent complementarity above 2.0, SITC 7 (machinery and transport equipment), where countries like North Macedonia, Romania, and several Balkan countries demonstrate values above 2.5, and SITC 8 (miscellaneous manufactured articles), where multiple countries show strong complementarity, indicating significant potential for Chinese companies to establish manufacturing operations that serve both local and export markets. At the same time, China is promoting the import of specialized components and finished products from the CEECs.

Innovation-focused horizontal OFDI should establish Chinese research and development centers, innovation hubs, and technology transfer facilities in CEECs that combine Chinese digital technology, automation, and manufacturing expertise with CEEC strengths in precision engineering and specialized manufacturing, particularly focusing on sectors with high TCI values, creating joint innovation platforms that serve local and regional markets while generating sustained high-technology trade flows. Progressive value chain upgrading should implement a phased approach by sectors that begin with OFDI in current high-complementarity sectors but incorporate systematic technology transfer and capability building programs, moving from basic manufacturing in SITC 6 and 8 categories toward more sophisticated production in SITC 7 (machinery), while developing emerging complementarity in SITC 0 (food and live animals) and SITC 1 (beverages and tobacco) through agricultural processing and food technology investments that can capitalize on growing complementarity trends observed in countries like Albania and Montenegro.

Furthermore, China should implement complementarity-responsive investment strategies that adjust OFDI sector focus based on country-specific TCI patterns, with countries showing strong machinery complementarity receiving technology-intensive manufacturing investments, countries with growing food sector complementarity receiving agricultural processing and food technology investments, and countries with diversified complementarity patterns receiving integrated investment portfolios that span multiple sectors, while incorporating systematic monitoring of TCI evolution to ensure OFDI strategies remain aligned with changing complementarity patterns and emerging opportunities for enhanced trade structure optimization.

The efficiency-seeking OFDI with the purpose of cost arbitrage optimization should strategically allocate vertical investments across CEECs based on comparative wage advantages and productive capacity, with higher labor-intensive operations in lower-wage countries and more technology-intensive operations in higher-wage countries with better infrastructure and skills, creating diversified production networks that maximize efficiency while distributing economic benefits across the region. Furthermore, a vertical OFDI strategy should incorporate local content development programs that gradually increase the proportion of locally sourced inputs in CEEC-based production operations, building local supplier capabilities while maintaining cost advantages and establishing quality control and technology transfer mechanisms that ensure CEEC-produced goods meet Chinese market standards while contributing to local industrial upgrading and long-term economic development.

7.3 OFDI strategies for enhanced trade volume.

The strong positive coefficients for both horizontal and vertical FDI across all trade measures demonstrate that strategic OFDI deployment can effectively drive substantial trade volume expansion through coordinated investment programs that maximize the complementarity between different investment patterns and their collective impact on bilateral economic relationships.

Comprehensive horizontal FDI expansion should establish Chinese companies as major market participants in CEEC economies through large-scale investments in consumer goods manufacturing, automotive production, electronics assembly, and services sectors that create substantial local operations requiring ongoing imports of Chinese components, technology, and expertise while generating significant local sales that support sustained business relationships and long-term market presence, with particular focus on Central EU countries where regression results show the strongest positive BRI effects and highest potential for market-seeking investment success. Strategic vertical FDI scaling should create extensive production networks across multiple CEEC countries that leverage regional comparative advantages in labor costs, skill levels, and geographic positioning to establish integrated supply chains serving both Chinese and European markets, with coordination mechanisms that ensure different country operations complement rather than compete while maximizing overall production efficiency and trade flow generation.

Infrastructure-supporting OFDI should prioritize investments in transportation, logistics, telecommunications, and financial services that directly facilitate increased trade flows by reducing transaction costs, improving connectivity, and providing essential business services, including Chinese-funded port development projects, rail and highway infrastructure, digital communication networks, and banking and financial services facilities that create the physical and institutional foundation for sustained trade volume expansion. In conclusion, China should focus on investment quality, sustainability, and mutual benefit achievement that supports long-term economic cooperation and development goals for both Chinese and CEEC participants in these enhanced economic relationships.

7.4 Risk management strategies for OFDI.

Effective OFDI deployment requires comprehensive risk management strategies that address the political, social, economic and environmental challenges currently facing China-CEEC cooperation. Improved risk mitigation directly enhances OFDI effectiveness, subsequently generating stronger positive impacts on trade balance, structure, and volume objectives.

To lower political risk, there should be regular high-level diplomatic talks to deal with worries about Chinese investment before they turn into policy restrictions. There should also be clear investment review processes to show that China is committed to fair competition and following the rules. Finally, China should work with EU institutions in a planned way to make sure that China-CEECs cooperation fits in with the larger goals of EU integration while still keeping the independence of bilateral relations.

Stakeholders must be fully involved in social risk management. This includes setting up community liaison offices to keep information exchange with local communities, unions, and civil society organizations; making hiring policies clear that prioritize hiring locals while offering competitive wages and working conditions; and creating comprehensive training and technology transfer programs that help local workers and communities in real ways.

To reduce economic risk, a diversified strategy should be used. This means spreading assets across different countries, industries, and types of investments to reduce concentration risk while keeping strategic consistency and complementarity.

Chinese investors should develop robust hedging mechanisms, including currency hedging tools to mitigate exchange rate fluctuations between the RMB, the euro, and the local currencies of CEECs; commodity price hedging for resource-intensive investments; and comprehensive insurance to mitigate political and economic instability, while providing stability for long-term investment planning and operations.

Additionally, China MNCs should move from fossil fuel investments toward leveraging their global leadership in renewable energy and clean technology. Chinese investors should actively implement EU environmental standards and Green Deal compliance measures, reallocating capital from coal projects such as TPP Kostolac to solar, wind, energy storage, and circular economy initiatives that support the carbon neutrality objectives of host countries. Moreover, forming strategic partnerships with European companies, conducting comprehensive Environmental Impact Assessments, and engaging early with local stakeholders can help Chinese firms reduce political risks while positioning China as a green technology provider rather than a traditional energy developer, ultimately ensuring long-term project viability in an increasingly environmentally conscious European market.

7.5 Other strategies to enhance trade cooperation.

In the face of trade cooperation constraints caused by differences in market access standards, on the one hand, China should review and promote the development of domestic technology with EU standards and the breakthrough of technical barriers in the CEE markets. On the other hand, China should also speed up the improvement of the commodity certification system, take full use of the China-CEECs Expo, the CEECs Specialty Commodities Pavilion, and other platforms to explore the specific demand, promote access in a targeted manner, and provide strong support to break through customs clearance bottlenecks and improve the trade imbalance between the two sides.

It is also important to support initiatives that make commerce easier. In his research, Zuokui (2021) stressed how important it is for governments to promise to make it easier to trade goods in and out of their countries. This promise includes cutting tariffs, getting rid of non-tariff obstacles, making trade procedures easier, and creating a trade climate that is open and easy to understand. These kinds of steps can help bring in both domestic and foreign businesses to do business with each other (Zuokui, 2021). CEECs and China should work together to make trade easier and get rid of trade barriers. Encouraging e-commerce and digital trade can make trading faster and easier. Businesses can benefit from a better trade environment by making customs clearing, inspection, and quarantine processes more efficient and offering trade services that are faster and easier to use.

It is also very important to improve trade promotion systems in order to boost trade between the two countries. CEECs should set up and improve ways to promote trade, making it easier for things like trade fairs, exhibitions, and business matchmaking meetings to happen. These efforts would help businesses from CEECs, and China work together and trade with each other. It is also important to improve communication and cooperation between business partners by making it easier for trade delegations from both sides to meet.

8.0 CONCLUSION.

The main question of this dissertation is to examine how different FDI motives in CEECs affect the bilateral trade performance between China and CEECs. We proposed two hypotheses for testing the research questions:

Hypothesis 1: BRI participation promotes horizontal OFDI in CEECs and restrains vertical OFDI in CEECs, leading to enhanced bilateral export flows from China to CEECs while moderating import growth from CEECs to China.

Hypothesis 2: BRI creates regional specialization in investment types, with Central EU group attracting more horizontal OFDI while Balkan EU group benefit from vertical OFDI, leading to differentiated trade patterns where Central EU countries experience enhanced Chinese exports, Balkan EU countries show increased Chinese imports, Baltic EU countries demonstrate limited trade effects, and Balkan non-EU countries face constrained bilateral trade growth due to institutional barriers.

The empirical test results show that Hypothesis 1 is partially supported, and Hypothesis 2 is fully supported.

With the evidence that Model B shows consistently positive and significant coefficients (0.0124-0.0182, all $p<0.001$), supporting Hypothesis 1's prediction that BRI promotes horizontal OFDI. While the Model C results demonstrate larger positive coefficients (0.0423-0.0656, all $p<0.001$), contradicting Hypothesis 1's expectation that BRI restrains vertical OFDI. From the perspective of regional disparities, Central EU Group shows strong positive coefficients across all models (0.6572-1.2584, mostly $p<0.001$), strongly supporting Hypothesis 2's prediction that Central EU countries attract more horizontal OFDI and experience enhanced Chinese exports. The consistently high significance levels confirm the Central EU's preferential position in China's BRI strategy. The Balkan EU group perfectly validates the specialization prediction. These countries show non-significant effects in Models A and B but become significant in Model C: total trade (coefficient = 0.524, $p = 0.044$), exports (coefficient = 0.443, $p = 0.091$), and imports (coefficient = 0.717, $p = 0.039$). This finding confirms that BRI benefits for the Balkan EU group are specifically realized through efficiency-seeking investment. Predominantly negative coefficients (-0.2403 to -0.4619) with low statistical significance, strongly supporting Hypothesis 2's prediction of limited trade effects for Baltic countries under the BRI framework. Consistently negative and often significant coefficients (-0.2607 to -0.7521), strongly confirming Hypothesis 2's prediction of constrained bilateral trade growth due to institutional barriers. This provides robust evidence for the importance of the institutional framework in BRI effectiveness.

Since the establishment of the China-CEECs cooperation mechanism, all parties have achieved fruitful cooperation guided by the principles of mutual benefits and win-win outcomes. This collaboration has played a significant and positive role in advancing the high-quality development of the BRI and fostering the construction of a community with a shared future for humankind. This dissertation employs the empirical analysis method, utilizing data from 2005 to 2023 concerning China's relationship with CEECs.

This dissertation builds on the modified classic knowledge capital model by applying horizontal and vertical OFDI as explanatory variables to look at how different OFDI incentives affect trade outcomes. It highlights the positive impact of OFDI in CEECs on bilateral trade. Reinforcing OFDI in CEECs will inject new vitality into the development of bilateral trade, ultimately promoting economic growth for both China and the CEECs. Through deepened investment cooperation, the two sides can achieve broader and more diversified trade collaboration, thus creating economic growth and employment prospects for both regions.

Given the fact that China's OFDI has different impacts depending on its type. Therefore, China needs more innovative ways to manage its investments abroad. These methods should strike a balance between market-seeking and efficiency-seeking investments. This balance must consider each country's unique characteristics, market conditions, and trade objectives.

Country-specific OFDI allocation should optimize investment portfolios based on both empirical evidence and TCI patterns, with high-GDP Central EU countries receiving complementarity-focused horizontal investments in SITC 6 (manufactured goods) and SITC 7 (machinery) where TCI values consistently exceed 2.0, medium-GDP countries receiving diversified investments that combine high-complementarity manufacturing with emerging sectors like SITC 0 (food processing) where TCI is growing, and lower-GDP Balkan countries receiving targeted vertical investments in sectors showing strong complementarity such as machinery and miscellaneous manufactures while building capacity in emerging complementary sectors. Dynamic portfolio rebalancing mechanisms should continuously adjust investment allocation based on TCI evolution and trade flow performance data, increasing investments in sectors where complementarity is strengthening (such as food and beverages in Albania and Montenegro), maintaining focus on consistently high-complementarity sectors like manufactured goods and machinery, and exploring opportunities in sectors where complementarity is emerging or could be developed through strategic OFDI deployment and technology transfer initiatives. Sectoral synergy maximization should ensure that OFDI investments across different SITC categories reinforce each other, with machinery investments (SITC 7) providing equipment for manufactured goods production (SITC 6), manufactured goods operations creating demand for miscellaneous manufactured articles (SITC 8), and emerging food processing investments (SITC 0-1) benefiting from machinery and manufactured goods capabilities, while maintaining strategic focus on sectors with highest complementarity potential for sustainable trade structure upgrading and volume expansion through coordinated cross-sectoral investment planning and implementation.

Investment complementarity optimization should ensure that horizontal and vertical investments reinforce each other by creating synergies where market-seeking investments generate demand for products from efficiency-seeking investments, efficiency-seeking investments provide cost-effective inputs for market-seeking operations, and both patterns contribute to comprehensive value chains that maximize trade flow generation while supporting sustainable economic development in both China and CEEC countries. Furthermore, portfolio management needs to include risk diversification strategies that spread investments across different countries and sectors, and investment strategies to lower the risk of political, economic, and regulatory problems while maximizing opportunities for trade flow improvement and long-term success through collaboration.

8.1 Future Directions.

The current approach of this dissertation combines the results of statistical models with TCI to formulate policy recommendations. However, they do not really look at investment-trade relationships from a sectoral trading point of view. This methodological approach thus means that policy insights are based on broad patterns rather than a deep understanding of the specific ways that OFDI and BRI policies work in different industries. Therefore, future research could break down the analysis by sector and product category to find out which industries really drive the observed investment-trade relationships beyond what aggregate complementarity measures suggest. This detailed method would show if the effects of BRI are indeed focused on certain sectors, like infrastructure, manufacturing, or services, or if the apparent overall effects are hiding various and possibly opposing effects in different sectors.

Additionally, the empirical results also show that China's OFDI in CEECs is driven by strong reasons for integrating supply chains, not just market-seeking or efficiency-seeking goals. The strong positive effects seen in both horizontal and vertical OFDI models, especially the strong effects on imports in vertical OFDI specifications, suggest that Chinese companies are strategically placing CEECs operations as important parts of larger global value chains (GVCs) instead of as separate investments that serve a market or cut costs. Future studies should create detailed frameworks that clearly show how global value chain integration works. This would help us better understand how Chinese OFDI and BRI participation change CEECs' roles in international production networks. Future analysis could look at how Chinese investment helps CEECs move from simple assembly to more complex manufacturing and service jobs within GVCs. It could also look at the specific value chain segments where Chinese companies combine CEECs capabilities and how BRI infrastructure development improves connectivity between different parts of Chinese-led production networks. The value chain view could also help CEECs come up with ways to get the most out of Chinese investment by finding ways to get higher-value-added activities, building up the skills of domestic suppliers so they can work with Chinese production networks, and using improvements in BRI connectivity to reach bigger regional and global markets beyond just bilateral trade with China.

List of Footnotes

[1] Deng Xiaoping announced China's Reform and Opening Up policy (gǎi gé kāi fang/改革开放) in 1978. It changed China's economy and government from a centrally planned economy to a market-oriented one.

[2] China's "Going Global" (zǒu chū qù, 走出去) strategy represents a fundamental shift in China's economic strategy from domestic focus to international expansion, encouraging Chinese state-owned enterprises and private companies to pursue overseas investments for market access, strategic assets, technology acquisition, and energy and mineral resources (Vendryes, 2012)

[3] Statement on the website of the Ministry of Foreign Affairs of Estonia and Latvia (2022.08.11)

[4] These measures include establishing a $10 billion special credit line, which consists of a proportion of preferential loans primarily for infrastructure, high-tech, and green economy cooperation projects, and establishing the China-Central and Eastern Europe Investment Cooperation Fund, and so on.

[5] Cournot competition: an economic model that usually occurs under monopoly or oligopoly conditions. The general premise of the model is that an oligopoly will have a higher output and lower prices than a monopoly, but lower output and higher prices than perfect competition.

[6] The US-China semiconductor conflict, also known as the "US-China chip war", got worse in October 2022 when the Biden administration put strict export controls on advanced semiconductor technology to China (Gupta, Borges, & Palazzi, 2024).

[7] The Clean Network Initiative, announced in 2020 during the Trump administration, represents a U.S.-led effort to build a coalition of "Clean Countries" committed to excluding Chinese telecommunications equipment from their 5G networks and digital infrastructure (U.S. Embassy Tbilisi, 2020).

[8] The EU's Global Gateway initiative, announced in September 2021 and formally launched in December 2021, represents Europe's response to China's BRI and aims to narrow the global investment gap through a "Team Europe" approach (European Commission, 2021).

[9] The "dual carbon" strategy, formally announced by Chinese President Xi Jinping in September 2020, commits China to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060 (Asia Society Policy Institute, 2022).

Acknowledgement

I took a quick review of my last 5 years, and this educational journey has changed my life significantly. This journey has been full of challenges and discoveries, and I have grown not only academically but also intellectually and personally. As I get ready to mark an end to this chapter of my academic life, I want to thank everyone who has helped me along the way, and for the great experience I've had.

First, I want to thank my supervisor, Professor Szunomár Ágnes, from the bottom of my heart for all the help, guidance, and support she has given me during this research journey. Her knowledgeable feedback and academic knowledge have been very helpful in shaping this dissertation. I am also very grateful to my evaluators, Dr. Tamás Attila Matura and Professor György Csáki, for their helpful comments that made this work much better. I extend my sincere appreciation to my evaluators, Associate Professor Tamás Attila Matura and Professor György Csáki. Their thorough reviews and constructive feedback significantly strengthened the quality and rigor of this work. I am also equally grateful to my committee members—Professor Nagy Sándor Gyula, Assistant Professor Szijártó Norbert, and Assistant Professor Kollárik Ferenc—for taking the time to participate in my draft defense. Their suggestions have also improved the dissertation's analytical depth and methodological soundness.

I want to thank my family as well, from the bottom of my heart for their support and faith in my abilities, which helped me get through the tough times of my doctoral studies. Finally, I want to thank my research fellows and friends for both the intellectual stimulation and the emotional support they gave me during this hard but rewarding time.

List of References

Akamatsu, K. (1962). A HISTORICAL PATTERN OF ECONOMIC GROWTH IN DEVELOPING COUNTRIES. *Journal of Developing Economies*, pp. 1, 3-25. doi:doi.org/10.1111/j.1746-1049.1962.tb01020.x

Alam, A., Ma, J., Hussain, I., & Fazal, R. (2023). An analysis of the impact of China's macroeconomic performance on its trade partners: Evidence based on the GVAR model. *PLoS ONE*, 18(1): e0275859. doi:https://doi.org/10.1371/journal.pone.0275859

American Enterprise Institute (AEI). (2025). *American Enterprise Institute*. Retrieved 08 2025, from China Global Investment Tracker: https://www.aei.org/china-global-investment-tracker/

Asia Society Policy Institute. (2022). *China's course to cabon neutrality*. Retrieved 08 2025, from Asia Society Policy Institute: https://asiasociety.org/policy-institute/china-climate-introduction-weaving-chinas-climate-policy-tapestry

Balassa, B. (1965). Trade Liberalization and Revealed Comparative Advantage. *The Manchester School of Economic and Social Studies*, 33, 99-123. doi:https://doi.org/10.1111/j.1467-9957.1965.tb00050.x

Baldwin, R., & Venables, A. J. (2015). Trade policy and industrialisation when backward and forward linkages matter. *Research in Economics*, pp. 69(2), 123-131. doi:10.1016/j.rie.2015.02.008

Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity.* Wiley & Sons, Inc. .

Bergstrand, J. H. (2007). A Knowlegde-and-Physical-Capital Model of International Trade Flows, Foreign Direct Investment, and Multinational Enterprises. *Journal of International Economics*, 73(2), 278-308. doi:doi.org/10.1016/j.jinteco.2007.03.004

Bhagwati, J. N., Brecher, R. A., Dinopoulos, E., & Srinivasan, T. (1987). Quid pro quo foreign investment and welfare: A political-economy-theoretic model. *Journal of Development Economics*, pp. 27(1-2), 127-138. doi:doi.org/10.1016/0304-3878(87)90010-1

Bhowmik, R., Zhu, Y., & Gao, K. (2021). An analysis of trade cooperation: Central region in China and ASEAN. *PLoS ONE*, 6(12): e0261270. doi:https://doi.org/10.1371/journal.pone.0261270

Blomström, M., & Kokko, A. (1998). Multinational Corporations and Spillovers. *Journal of Economic Surveys*, pp. vol. 12(3), pages 247-277. doi:DOI: 10.1111/1467-6419.00056

Blonigen, B. A., & Piger, J. (2014). Determinants of foreign direct investment. *The Canadian Journal of Economics*, pp. 47(3), 775-812. doi:doi.org/10.1111/caje.12091

Brainard, S. L. (1993). A simple theory of multinational corporations and trade with a trade-off between proximity and concentration. *National Bureau of Economic Research, Inc.*, NBER Working Papers 4269.

Brainard, S. L. (1997). An Empirical Assessment of the Proximity-Concentration Trade-off Between Multinational Sales and Trade. *The American Economic Review*, 87(4), 520-544.

Buckley, P. J., & Casson, M. (1976). *The Future of the Multinational Enterprise.* Palgrave Macmillan London.

Carr, D. L., Markusen, J. R., & Maskus, K. E. (2001). Estimating the Knowledge-Capital Model of the Multinational Enterprise. *The American Economic Review*, 91(3), 693–708.

Chan, Z. T., & Meunier, S. (2022). Behind the screen: Understanding national support for a foreign investment screening mechanism in the European Union. *The review of international organizations*, pp. 17(3): 513-541. doi:doi:10.2139/ssrn.3726973

Chen, X., & Yang, C. (2017). An Quantitative Analysis on China-CEEC Economic and Trade Cooperation. *The Review of International Affairs*, 1167, 65-87.

Chiappini, R. (2011). FDI and trade: A Granger causality analysis in a heterogeneous panel. *Economics Bulletin*, pp. 31(4), pp.2975-2985.

Coase, R. H. (1937, 11). The Nature of the Firm. *Economica*, pp. 4(16), 386-405. doi:doi.org/10.1111/j.1468-0335.1937.tb00002.x

Dunning, J. H. (1980). Toward an Eclectic Theory of International Production: Some Empirical Tests. *Journal of International Business Studies*, 11, 9–31. doi:doi.org/10.1057/palgrave.jibs.8490593

Dunning, J. H. (1993). *Multinational Enterprises and the Global Economy.* New York: Addison Wesley.

Dunning, J. H. (1998). Location and the Multinational Enterprise: A Neglected Factor? *Journal of International Business Studies*, pp. 29, 45–66. doi:doi.org/10.1057/palgrave.jibs.8490024

Eaton, J., & Tamura, A. (1996). *Japanese and US exports and investment as conduits of growth.* NBER Working Paper.

Eaton, J., & Tamura, A. (1994). Bilateralism and Regionalism in Japanese and U.S. Trade and Direct Foreign Investment Patterns. *Journal of the Japanese and International Economies*, pp. 8(4), 478-510. doi:doi.org/10.1006/jjie.1994.1025

Egger, P., & Pfaffermayr, M. (2004). The impact of bilateral investment treaties on foreign direct investment. *Journal of Comparative Economics*, pp. 32(4), 788-804.

Éltető, A., & Szunomár, Á. (2015). Chinese investment and trade strengthening ties with Central and Eastern Europe. *International Academic Conferences* . International Institute of Social and Economic Sciences.

Euracoal. (2021). *powering transition in Europe: country profiles*. Retrieved from Euracoal: https://euracoal.eu/info/country-profiles/serbia-8/

European Commission. (2021). *European Commission*. Retrieved from Global Gateway: up to €300 billion for the European Union's strategy to boost sustainable links around the world: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/stronger-europe-world/global-gateway_en

Feenstra, R. C. (2004). *Advanced International Trade: Theory and Evidence.* Princeton University Press.

Feenstra, R. C., & Hanson, G. H. (1995). *Foreign Investment, Outsourcing and Relative Wages.* NBER Working Paper No. w5121.

Feenstra, R. C., & Hanson, G. H. (1997). Foreign direct investment and relative wages: Evidence from Mexico's maquiladoras. *Journal of International Economics*, pp. Volume 42, Issues 3–4, Pages 371-393.

Feenstra, R. C., & Hanson, G. H. (2000). *Productivity Measurement and the Impact of Trade and Technology on Wages: Estimates for the U.S., 1972-1990.* NBER Working Paper No. w6052.

Feenstra, R. C., & Hanson, G. H. (2001). *Global Production Sharing and Rising Inequality: A Survey of Trade and Wages.* NBER Working Paper No. w8372.

Filippaios, F., & Papanastassiou, M. (2008). US Outward Foreign Direct Investment in the European Union and the Implementation of the Single Market: Empirical Evidence from a Cohesive Framework. *Journal of Commom Market Studies*, pp. 46(5), 969-1000. doi:doi.org/10.1111/j.1468-5965.2008.00826.x

Gereffi, G. (1999). A Commodity Chains Framework for Analyzing Global Industries. *Institute of Development Studies*, pp. 8 (12), 1-9.

Gereffi, G., & Korzeniewicz, M. (1993). *Commodity Chains and Global Capitalism.* Praeger.

Gereffi, G., Humphrey, J., Kaplinsky, R., & Sturgeon, T. (2001). Introduction: Globalisation, Value Chains and Development. *IDS Bulletin*, pp. 32(3) pp. 1–8.

Goldberg, L. S., & Klein, M. W. (1998). *Foreign Direct Investment, Trade and Real Exchange Rate Linkages in Developing Countries.* NBER Working Paper.

Grubel, H., & Lloyd, P. J. (1975). *Intra-industry trade: the theory and measurement of international trade in differentiated products.* London: Macmillan.

Grubert, H., & Mutti, J. (1991). Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making. *The Review of Economics and Statistics*, pp. 73(2), 285-293. doi:doi.org/10.2307/2109519

Gupta, K., Borges, C., & Palazzi, A. L. (2024). *Collateral Damage: The Domestic Impact of U.S. Semiconductor Export Controls*. Retrieved from Center for Strategic & International Studies (CSIS): https://www.csis.org/analysis/collateral-damage-domestic-impact-us-semiconductor-export-controls

Head, K., & Ries, J. (2001). Overseas Investment and Firm Exports. *Review of International Economics*, pp. 9(1), 108-122. doi:doi.org/10.1111/1467-9396.00267

Head, K., & Ries, J. (2003). Heterogeneity and the FDI versus export decision of Japanese manufacturers. *Journal of the Japanese and International Economies*, pp. 17(4), 448-467.

Helpman, E. (1984). Simple Theory of International Trade with Multinational Corporations. *Journal of Political Economy*, 92(3), 451-471.

Helpman, E., Melitz, M. J., & Yeaple, S. R. (2004). Export versus FDI with Heterogeneous Firms. *American Economic Review*, 94(1), 300-316.

Hymer, S. H. (1960). The international operations of national firms, a study of direct foreign investment. *The MIT Press*.

Inhwan, J. (2008). Is Japanese FDI a Substitute for or a Complement to Trade in Asia? *Graduate School of Economics and Management*.

Ishida, K. (1994). Japan's Foreign Direct Investment in East Asia: Its Influence on Recipient Countries and Japan's Trade Structure. *RBA Annual Conference Volume.* Reserve Bank of Australia.

Jaklič, A., Obloj, K., Svetličič, M., & Kronegger, L. (2020). Evolution of Central and Eastern Europe related international business research. *Journal of Business Research*, pp. 108, 421-434. doi:doi.org/10.1016/j.jbusres.2019.06.046

Jovičić, E., Stevanović, S., & Beraha, I. (2020). Serbia-China bilateral trade relations: major challenges and opportunities. *Economic Analysis: Applied Research in Emerging Markets*, pp. 53(2), 133-144. doi:doi.org/10.28934/ea.20.53.2.pp133-144

Keller, W., & Yeaple, S. R. (2013). The Gravity of Knowledge. *American Economic Review*, 103(4), 1414-1444. doi:10.1257/aer.103.4.1414

Kindleberger, C. P. (1969). *American Business Abroad : Six Lectures on Direct Investment Paperback.* Yale University Press.

Kizeková, A. (2021). Chinas engagements with Central and Eastern Europe: costs and benefits in the era of the Belt and Road Initiative. In J. C. Liow, H. Liu, & G. Xue, *Research Handbook on the Belt and Road Initiative* (pp. 323–331). Edward Elgar Publishing.

Kogut, B. (1985). Designing Global Strategies: Comparative and Competitive Value-Added Chains. *Sloan Management Review*, pp. 26(4), 15-28. doi:doi.org/10.1002/tie.5060280105

Kogut, B., & Chang, S. J. (1991). Technological Capabilities and Japanese Foreign Direct Investment in the United States. *The Review of Economics and Statistics*, pp. 73(3), 401-413. doi:doi.org/10.2307/2109564

Kohlhagen, S. W. (1977). Exchange Rate Changes, Profitability, and Direct Foreign Investment. *Southern Economic Journal*, pp. 44(1), 43-52. doi:doi.org/10.2307/1057298

Kojima, K. (1978). *Direct foreign investment: A Japanese model of multinational business operations.* London: Croom Helm Ltd.

Lall, S. (1983). *The New Multinationals: The Spread of Third World Enterprises.* Wiley.

Lall, S. (2000). Technological Change and Industrialization in the Asian Newly Industrializing Economies: Achievements and Challenges. In S. Lall, *Competitiveness, Technology and Skills.* Cheltenham, U.K. and Northampton, Mass.: Eglar.

Latorre, M. C., & Hosoe, N. (2016). The role of Japanese FDI in China. *Journal of Policy Modeling*, pp. 38(2), 226-241. doi:doi.org/10.1016/j.jpolmod.2016.02.003

Lipsey, R. E., & Weiss, M. Y. (1981). Foreign Production and Exports in Manufacturing Industries. *The Review of Economics and Statistics*, pp. 63(4), 488-494. doi:doi.org/10.2307/1935843

Lipsey, R. E., & Weiss, M. Y. (1984). Foreign Production and Exports of Individual Firms. *The Review of Economics and Statistics*, 66(2): 304-308. doi:https://doi.org/10.2307/1925832•

Lipsey, R. E., Ramstetter, E. D., & Blomstrom, M. (2000). *Outward FDI and Parent Exports and Employment: Japan, the United States, and Sweden.* Stockholm School of Economics. SSE/EFI Working Paper Series in Economics and Finance 369.

Liu, H., Jiang, J., Zhang, L., & Chen, X. (2018). OFDI Agglomeration and Chinese Firm Location Decisions under the "Belt and Road" Initiative. *Sustainability*, 10(11), 4060. doi:https://doi.org/10.3390/su10114060

Markusen, J. R. (1983). Factor Movements and Commodity Trade as Complements. *Journal of International Economics*, 14(3/4), 341-356.

Markusen, J. R. (1984). Multinationals, Multi-plant Economies, and the Grains from Trade. *Journal of International Economies*, 16(3-4): 205-226. doi:doi.org/10.1016/S0022-1996(84)80001-X

Markusen, J. R. (1997). Trade versus Investment Liberalization. *NBER Working Paper*, 6231.

Markusen, J. R. (2002). Multinational Firms and the Theory of International Trade. *MIT Press*.

Markusen, J. R., Venables, A. J., Konan, D. E., & Zhang, K. H. (1996). A Unified Treatment of Horizontal Direct Investment, Vertical Direct Investment, and the Pattern of Trade in Goods and Services. *NBER Working Paper*. doi:10.3386/w5696

Matura, T. (2019). China–CEE Trade, Investment and Politics. *Europe-Asia Studies*, 71(3), 388-407. doi:https://doi.org/10.1080/09668136.2019.1571166

McBride, J., Berman, N., & Chatzky, A. (2023, 2 2). *China's Massive Belt and Road Initiative*. Retrieved from Council on Foreign Relations : https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative

McCaleb, A., & Szunomar, A. (2017). Chinese foreign direct investment in central and eastern Europe: an institutional perspective. In J. Drahokoupil, *Chinese investment in Europe: corporate strategies and labour relations* (pp. pp.121-140). European Trade Union Institute.

McKinnon, R. I. (1973). *Money and Capital in Economic Development.* Washington: The Brookings Institution.

Mirela, P., & Voica, M. C. (2017). The relation between foreign direct investments and some economic indicators: The case of Romanian economy. *Theoretical and Applied Economics*, pp. 2(611)), 267-280.

Mudambi, R. (2008). Location, control and innovation in knowledge-intensive industries. *Journal of Economic Geography*, pp. 8(5), 699–725. doi:doi.org/10.1093/jeg/lbn024

Mudambi, R., & Puck, J. (2016). A Global Value Chain Analysis of the 'Regional Strategy' Perspective. *Journal of Management Studies*, pp. 53(6), 1076-1093. doi:doi.org/10.1111/joms.12189

Mundell, R. A. (1957, June). International Trade and Factor Mobility. *The American Economic Review*, pp. 47(3), 321-335.

Nakamura, S.-y., & Oyama, T. (1998). *The Determinants of Foreign Direct Investment from Japan and the United States to East Asian Countries, and the Linkage between FDI and Trade.* Bank of Japan.

National Bureau of Statistic of China. (2021). *2020 Statistical Bulletin of China's Outward Foreign Direct Investment.* China Commerce and Trade Press.

Nayak, D., & Choudhury, R. N. (2014, 3). A selective review of foreign direct investment theories. *ARTNeT Working Paper Series, No. 143*.

NBC NEWS. (2010, Jan 10). *China overtakes Germany as biggest exporter*. Retrieved from NBC News: https://www.nbcnews.com/id/wbna34793064

Neven, D., & Siotis, G. (1993, June). Foreign Direct Investment in the European Community: Some Policy Issues. *Oxford Review of Economic Policy*, pp. 9(2):72-93. doi:0.1093/oxrep/9.2.72

Neven, D., & Siotis, G. (1996). Technology Sourcing and FDI in the EC: An Empirical Evaluation. *International Journal of Industrial Organization*, pp. 14(5), 543-560. doi:doi.org/10.1016/0167-7187(95)00510-2

Ohlin, B. (1934). Interregional and International Trade. *The Economic Journal*, pp. 44 (173), Pages 95–102. doi:doi.org/10.2307/2224730

Parker, J. (2013, Feb 12). *China's Total Goods Trade Surpassed U.S in 2012*. Retrieved from The Diplomat: https://thediplomat.com/2013/02/chinas-total-goods-trade-surpassed-u-s-in-2012/

Pavitt, K. (1984). Sectoral patterns of technical change: Towards a taxonomy and a theory. *Research Policy*, 13(6): 343-373. doi:https://doi.org/10.1016/0048-7333(84)90018-0

Pavlićević, D. (2019). Structural power and the China-EU-Western Balkans triangular relations. *Asia Europe Journal*, 17, 453–468. doi:https://doi.org/10.1007/s10308-019-00566-y

Peng, H.-R., Tan, X., Managi, S., & Taghizadeh-Hesary, F. (2022). Club convergence in energy efficiency of Belt and Road Initiative countries: The role of China's outward foreign direct investment. *Energy Policy*, p. 168(C). doi:10.1016/j.enpol.2022.113139

Petri, P. A. (1994, Dec). The regional clustering of Foreign Direct Investment and Trade. *Transnational Corporations*, pp. 3(3), 1-24.

Poelhekke, S., & Ploeg, F. v. (2013). Do Natural Resources Attract Nonresource FDI? *The Review of Economics and Statistics*, pp. 95 (3): 1047–1065. doi:doi.org/10.1162/REST_a_00292

Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance.* Free Press.

Porter, M. E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal*, pp. 12(S2), 95-117. doi:doi.org/10.1002/smj.4250121008

Priem, R. L., & Swink, M. (2012). A Demand-side Perspective on Supply Chain Management. *Journal of Supply Chain Management*, pp. 48(2), 7-13. doi:doi.org/10.1111/j.1745-493X.2012.03264.xCitations: 129

Ramasamya, B., & Yeung, M. (2020). China's outward foreign direct investment (OFDI) to developing countries: the case of Central and Eastern Europe (CEE). *Journal of the Asia Pacific Economy*, 27(1): 124-146. doi:https://doi.org/10.1080/13547860.2020.1790182

Ricardo, D. (1817). *On the Principles of Political Economy and Taxation.* John Murray.

Saud, S., Chen, S., Haseeb, A., Khan, K., & Imran, M. (2019). The nexus between financial development, income level, and environment in Central and Eastern European Countries: a perspective on Belt and Road Initiative. *Environmental Science and Pollution Research*, pp. 26, 16053–16075.

Schmitz, A., & Helmberger, P. (1970). Factor Mobility and International Trade: The Case of Complementarity. *American Economic Review*, pp. 60(4), 761-767.

Shaw, E. S. (1973). *Financial Deepening in Economic Development.* New York: Oxford University Press.

Shuyan, L., & Fabuš, M. (2019). Study on the spatial distribution of China's Outward Foreign Direct Investment in EU and its influencing factors. *Entrepreneurship and Sustainability Issues*, pp. 6(3), 1280-1296. doi:10.9770/jesi.2019.6.3(16)

Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations.* London: W. Strahan and T. Cadell.

Sohail, H. M., Zatullah, M., & Li, Z. (2021). Effect of Foreign Direct Investment on Bilateral Trade: Experience From Asian Emerging Economies. *Sage Open*, p. 11(4). doi:doi.org/10.1177/2158244021105448

Stanojevic, S., Qiu, B., & Chen, J. (2021). A Study on Trade between China and Central and Eastern European Countries: Does the 16+1 Cooperation Lead to Significant Trade

Creation? *Eastern European Economics*, 59(4), 295-316. doi:https://doi.org/10.1080/00128775.2021.1928518

Sutherland, D., Anderson, J., Bailey, N., & Alon, I. (2020). Policy, institutional fragility, and Chinese outward foreign direct investment: An empirical examination of the Belt and Road Initiative. *Journal of International Business Policy*, pp. 3(3), 249-272. doi:10.1057/s42214-020-00056-8

Swenson, D. L. (2004). Foreign Investment and the Mediation of Trade Flows. *Review of International Economics*, pp. 12(4), 609-629. doi:doi.org/10.1111/j.1467-9396.2004.00470.x

Szunomár, Á., Völgyi, K., & Matura, T. (2014). Chinese investments and financial engagement in Hungary. *IWE Working Papers 208*.

Tang, D. (2020). Have export compositions influenced economic growth of the European Union countries in Central and Eastern Europe? *The European Journal of Applied Economics*, 17(1):80-103. doi:10.5937/EJAE17-23638

Tansuchat, R., Nimsai, S., & Piboonrungroj, P. (2016). Exploring Opportunities and Threats in Logistics and Supply Chain Management of Thai Fruits to India. *International Journal of Supply Chain Management*, pp. 5(2), 150-157. doi:doi.org/10.59160/ijscm.v5i2.1174

Turcsányi, R. Q. (2020). China and the Frustrated Region: Central and Eastern Europe's Repeating Troubles with Great Powers. *China Report*, 56(1), 60-77. doi:https://doi.org/10.1177/0009445519895626

U.S. Embassy Tbilisi. (2020). *U.S. Embassy in Georgia*. Retrieved from Expanded Clean Network Initiative Safeguards Data: https://ge.usembassy.gov/expanded-clean-network-initiative-safeguards-data/

UNIDO. (2002). *Industrial Development Report 2002/2003.* United Nations Industrial Development Organization.

Vendryes, T. (2012). Chinese firms "going out": An economic dynamic with political significance. *China Perspectives, 1*, 67-68. doi:https://doi.org/10.4000/chinaperspectives.5822

Vernon, R. (1966). International Investment and International Trade in the Product Cycle. *Quarterly Journal of Economics*, 80 (2): 190–207. doi:10.2307/1880689

Völgyi, K., & Lukács, E. (2021). Chinese and Indian FDI in Hungary and the role of Eastern Opening policy. *Asia Europe Journal*, pp. 19(2), 167–187. doi:10.1007/s10308-020-00592-1

Wang, H., Ergu, D., & Zai, W. (2023). Effect of Chinese Currency Appreciation on Investments in Renewable Energy Projects in Countries along the Belt and Road. *Sustainability*, 15(3):1784. doi:DOI:10.3390/su15031784

Wells, L. (1983). *Third World Multinationals: The Rise of Foreign Investments from Developing Countries.* The MIT Press.

Wu, Y., & Chen, C. (2021). The Impact of China's Outward Foreign Direct Investment on Trade Intensity with Belt and Road Countries. *Emerging Markets Finance and Trade*, pp. 57(6), 1773-1792. doi:doi.org/10.1080/1540496X.2019.1646124

Wu, Z., Hou, G., & Xin, B. (2020). Has the Belt and Road Initiative Brought New Opportunities to Countries Along the Routes to Participate in Global Value Chains? *Sage Open*, p. 10(1). doi:doi.org/10.1177/2158244020902088

Xie, Q., & Yin, H. (2023). Institutional Differences and the Choice of Outward Foreign Direct Investment Mode under the "Belt and Road" Initiative: Experience Analysis Based on China's Manufacturing Enterprises. *Sustainability*, pp. 15(9), 7201. doi:doi.org/10.3390/su15097201

Yamawaki, H. (2004). The determinants of geographic configuration of value chain activities: Foreign multinational enterprises in Japanese manufacturing. *International Economics and Economic Policy*, pp. 1, pages 195–213. doi:doi.org/10.1007/s10368-004-0014-9

Yeaple, S. R. (2003). The Role of Skill Endowments in the Structure of U.S. Outward Foreign Dircet Investment. *The Review of Economies and Statistics*, 85(3), 726-734.

Yu, H. (2016). Motivation behind China's 'One Belt, One Road' Initiatives and Establishment of the Asian Infrastructure Investment Bank. *Journal of Contemporary China*, pp. 26(105), 353-368. doi:doi.org/10.1080/10670564.2016.1245894

Zeng, K., & Li, X. (2019). Geopolitics, Nationalism, and Foreign Direct Investment: Perceptions of the China Threat and American Public Attitudes toward Chinese FDI. *The Chinese Journal of International Politics*, pp. 12(4), 495–518. doi:doi.org/10.1093/cjip/poz016

Zuokui, L. (2021). History and prospects of cooperation between China and countries in Central and Eastern Europe. *The Review of International Affairs*, 72(1181): 43-54.

Appendix

Appendix_1

China's total import from 16 CEECs from 2007 to 2022, million USD.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Albania	7.04	12.84	66.34	88.26	64.32	147.57	155.37	142.72	234.84	189.32	127.86	128.60	196.22	108.04	102.72	81.12	164.45	186.30	180.41
Bosnia Herzegovina	103.41	120.10	27.29	6.61	13.56	17.60	29.89	23.30	20.88	37.24	53.73	43.55	57.25	77.40	76.88	72.68	137.64	122.71	82.85
Bulgaria	89.12	81.85	158.00	216.78	141.00	323.00	459.98	840.16	956.74	984.86	748.31	590.11	969.18	1,146.43	1,164.14	1,370.98	1,798.53	1,271.67	1,575.36
Croatia	43.83	55.03	67.63	67.84	74.86	50.89	79.53	74.51	104.27	100.66	111.79	161.44	183.08	212.00	144.98	137.59	339.90	158.67	137.04
Czech Republic	371.78	516.70	830.80	1,002.70	1,131.85	1,727.99	2,319.00	2,406.88	2,614.92	2,986.69	2,780.45	2,951.54	3,695.71	4,399.05	4,628.21	5,133.53	6,052.66	5,419.43	5,224.32
Estonia	57.67	284.98	89.86	88.69	79.33	181.91	205.42	135.75	199.58	225.50	234.96	211.79	260.34	245.19	298.72	281.40	281.46	301.37	345.35
Hungary	365.53	699.31	1,210.08	1,382.20	1,466.43	2,197.69	2,452.22	2,323.10	2,715.15	3,259.90	2,875.55	3,464.23	4,077.22	4,342.07	3,745.02	4,282.90	5,570.20	5,049.30	4,729.25
Latvia	8.56	13.72	21.50	18.01	26.00	39.06	63.44	68.83	99.16	146.91	144.59	132.20	177.24	213.05	195.69	200.39	239.09	375.37	271.96
Lithuania	11.48	15.60	19.69	29.13	38.11	42.15	87.61	89.50	124.79	157.49	138.78	164.01	255.15	330.04	436.50	487.61	433.47	90.92	134.54
Montenegro	-	-	1.35	2.13	0.74	3.06	12.06	21.46	16.14	53.56	24.27	32.58	66.40	41.74	43.31	57.38	11.33	47.21	40.59
North Macedonia	12.65	2.87	9.83	13.28	24.09	91.76	154.31	139.61	107.97	90.58	132.70	46.71	86.69	48.34	147.06	227.13	365.94	178.97	193.73
Poland	557.32	667.12	1,112.25	1,394.43	1,504.76	1,696.61	2,047.98	1,997.77	2,231.80	2,934.74	2,741.95	2,537.72	3,353.51	3,645.37	3,941.49	4,320.38	5,541.44	5,059.65	4,859.00
Romania	292.31	230.91	281.47	359.90	433.10	755.27	947.05	979.78	1,207.50	1,520.67	1,294.95	1,455.22	1,824.32	2,167.85	2,325.65	2,638.40	3,507.36	3,074.65	2,822.18
Serbia	-	6.98	13.12	12.28	28.64	55.12	77.89	101.57	180.13	112.74	133.74	162.69	211.58	223.87	360.61	498.18	983.53	1,375.03	1,652.44
Slovakia	183.02	336.40	735.33	983.73	897.39	1,790.56	3,457.35	3,655.23	3,458.16	3,376.08	2,237.32	2,410.17	2,584.96	5,245.62	5,968.78	6,431.08	7,547.22	7,709.70	7,233.95
Slovenia	57.24	94.90	110.55	131.56	126.47	176.57	202.04	256.03	302.80	331.46	289.51	436.86	495.35	591.02	516.47	508.68	631.74	589.50	498.95

Source: Author's analysis of UN Comtrade Data

Appendix_2

China's total export to 16 CEECs from 2005 to 2023, million USD.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Albania	83.21	66.06	89.98	196.11	207.86	199.28	281.48	343.90	324.60	378.27	430.19	506.54	454.03	539.91	601.09	571.22	584.37	704.08	1,093.96
Bosnia Herzegovina	19.57	24.08	54.45	72.83	35.66	37.59	41.43	46.71	91.33	283.98	59.98	64.03	78.82	109.72	115.16	120.10	136.37	185.28	278.84
Bulgaria	441.64	1,782.82	818.66	1,124.84	596.05	660.91	1,005.62	1,054.60	1,116.98	1,178.06	1,043.26	1,055.55	1,169.05	1,440.25	1,554.79	1,547.03	2,299.93	2,852.00	2,645.86
Croatia	573.66	878.39	1,540.86	1,741.99	1,118.52	1,343.73	1,540.93	1,299.89	1,389.94	1,027.33	985.56	1,016.75	1,159.64	1,327.16	1,396.82	1,566.72	1,954.13	2,265.54	2,396.05
Czech Republic	1,667.41	2,365.83	4,134.95	5,497.48	5,023.77	7,121.52	7,669.41	6,323.55	6,837.79	7,992.90	8,226.13	8,058.52	8,792.97	11,909.58	12,973.04	13,737.63	15,088.00	18,227.39	16,288.33
Estonia	311.43	456.03	584.83	588.13	362.30	676.74	1,130.85	1,233.67	1,109.82	1,146.10	953.29	963.64	1,006.35	1,031.51	922.32	863.88	1,007.04	946.57	824.86
Hungary	2,493.49	3,287.29	5,016.63	6,096.85	5,343.60	6,518.31	6,806.02	5,737.96	5,692.28	5,764.17	5,197.45	5,422.69	6,049.35	6,540.21	6,472.86	7,403.70	10,116.14	10,472.66	9,795.31
Latvia	281.70	439.40	686.14	848.98	452.30	794.16	1,192.95	1,312.71	1,374.27	1,316.70	1,022.51	1,062.37	1,148.24	1,166.09	1,093.59	1,052.33	1,142.17	1,025.34	987.92
Lithuania	360.71	555.86	802.94	1,059.98	655.71	982.34	1,335.10	1,630.88	1,686.18	1,658.29	1,210.90	1,290.94	1,600.27	1,762.95	1,697.64	1,807.60	2,187.20	1,789.75	1,959.34
Montenegro	-	-	53.63	86.60	76.82	71.08	89.98	145.76	86.38	157.07	134.15	108.33	132.46	178.10	113.82	113.16	95.76	219.02	182.26
North Macedonia	21.50	28.24	75.59	70.72	56.01	52.78	91.81	88.75	63.48	76.66	86.53	90.05	78.04	105.74	134.83	156.79	222.18	234.93	281.98
Poland	2,595.44	4,006.17	6,554.79	9,040.37	7,561.77	9,438.31	10,939.55	12,386.66	12,574.87	14,256.80	14,344.87	15,094.07	17,873.05	20,876.21	23,880.11	26,730.66	36,291.07	38,163.11	37,167.37
Romania	1,369.26	6,085.42	2,099.52	2,889.92	2,377.29	3,004.46	3,453.78	2,797.19	2,822.54	3,223.18	3,162.24	3,447.67	3,777.96	4,507.11	4,573.44	5,126.38	6,651.77	7,397.19	7,733.12
Serbia	-	300.17	363.99	492.52	308.32	345.02	396.35	412.88	431.91	424.56	415.10	431.32	545.64	728.30	1,032.97	1,624.34	2,230.88	2,176.82	2,699.23
Slovakia	308.36	577.28	1,470.69	1,966.04	1,399.01	1,958.48	2,512.60	2,423.05	3,084.44	2,828.50	2,794.47	2,861.36	2,729.48	2,535.85	2,923.82	3,031.51	4,539.09	4,435.77	4,300.50
Slovenia	265.57	446.44	701.45	964.21	770.10	1,385.67	1,675.37	1,566.64	1,832.81	1,991.94	2,091.73	2,269.43	2,886.93	4,424.23	3,411.52	3,452.19	5,297.62	6,861.23	6,198.15

Source: Author's analysis of UN Comtrade Data

Appendix_3

China's OFDI flow in 16 CEECs from 2005 to 2023, Million USD

Time period	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Albania	0.00	0.01	0.00	0.00	0.00	0.08	0.00	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bosnia Hercegovina	0.00	0.00	0.00	0.00	1.51	0.06	0.04	0.06	0.00	0.00	1.62	0.85	0.00	0.00	12.19	8.58	4.82	1.63	23.11
Bulgaria	1.72	0.00	0.00	0.00	-2.43	16.29	53.90	54.17	20.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Croatia	0.00	0.00	1.20	0.00	0.26	0.03	0.05	0.05	0.00	3.55	0.00	0.22	31.84	22.39	28.69	154.46	15.15	5.22	10.86
Czech Republic	11.33	36.56	63.95	-19.22	-26.61	12.34	-117.97	43.79	7.77	-4.09	277.06	512.02	-59.59	-54.98	39.91	-246.99	253.45	66.30	-70.43
Estonia	0.74	-3.70	-1.08	4.12	6.38	29.92	-58.06	34.02	-3.92	9.59	-7.03	-8.87	5.71	10.07	-1.60	9.45	116.76	-94.39	3.72
Hungary	-24.15	0.93	17.02	-104.99	-12.48	138.07	-176.16	133.72	19.05	0.79	22.79	80.87	17.02	58.12	147.73	58.56	74.78	208.65	930.44
Lithuania	0.00	0.00	0.00	C ..	0.00	1.33	0.00	0.00	3.98	33.17	7.77	4.42	4.51	10.62	3.36	4.56	48.49	-4.21	5.41
Latvia	0.71	0.23	-0.33	-0.23	0.36	-0.26	0.47	-0.08	0.32	-1.73	0.46	2.30	2.85	-2.20	2.21	-6.13	4.02	-1.88	19.94
Montenegro	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.65	12.72	22.66	67.25	59.09	-6.79	26.96
North Macedonia	0.18	0.37	-1.11	-0.09	0.55	0.24	0.25	-0.03	-0.11	-5.13	6.79	29.15	29.45	27.16	28.42	-31.60	-6.42	20.42	-42.79
Poland	44.30	25.80	93.40	139.60	-191.70	0.40	115.97	-190.96	-43.10	83.95	4.51	21.30	67.47	108.27	164.87	51.29	317.03	317.88	-70.45
Romania	2.87	9.63	6.80	11.98	5.29	10.84	0.30	25.41	2.17	42.25	63.32	15.88	15.86	1.57	84.11	13.10	5.13	11.59	98.79
Serbia	0.00	0.00	0.00	0.00	0.00	2.10	0.21	2.10	11.50	11.69	7.63	30.79	79.21	153.41	33.60	139.31	205.76	159.39	458.48
Slovak Republic	0.00	0.00	9.42	2.18	-20.84	15.89	34.79	-9.00	0.00	-2.70	0.00	0.00	6.39	-7.60	22.00	-26.62	48.64	1.40	10.06
Slovenia	0.00	0.12	-0.22	0.30	1.39	-1.33	1.39	-2.57	0.00	1.53	4.77	6.19	2.18	0.20	-0.93	-0.58	-28.95	17.76	14.22

Data Dexscription	Representing Color
OECD, BMD4	
OECD, BMD3	
National Bank	
MOFCOM	

Source: Author's collection of 2005-2023 China's OFDI flow in 16 CEECs from OCED, national banks, and MOFCOM

Appendix_4

China's OFDI stock in 16 CEECs from 2005 to 2023, Million USD

Time period	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Albania	0.50	0.51	0.51	0.51	4.35	4.43	4.43	4.43	7.03	-2.43	4.35	6.32	9.59	4.58	3.37	3.68	2.27	4.27	5.53
Bosnia Hercegovina	3.51	3.51	3.51	3.51	5.92	5.98	6.01	6.07	6.13	6.13	7.75	8.60	4.34	4.34	16.70	22.86	21.22	40.46	65.93
Bulgaria	2.99	4.74	4.74	4.74	2.31	18.60	72.56	126.74	149.85	118.50	138.37	112.79	129.28	127.67	148.06	154.74	138.29	155.40	177.24
Croatia	0.23	0.26	0.25	0.90	1.19	1.68	1.78	1.94	2.31	3.39	6.50	4.52	41.46	111.78	104.27	146.24	178.99	217.07	245.95
Czech Republic	3.70	32.99	116.36	75.79	53.84	59.37	-17.17	-5.22	135.72	204.01	370.70	794.26	1100.92	1011.96	1500.75	770.25	919.53	1335.84	1350.17
Estonia	1.06	-2.63	-4.12	0.00	6.63	36.34	-18.76	15.83	3.97	5.64	5.99	13.66	18.43	41.00	34.23	51.76	50.70	56.89	53.60
Hungary	22.88	25.78	34.17	41.63	13.40	133.49	-36.59	72.59	92.63	1268.47	1953.00	1949.31	2271.65	2965.84	3271.90	4022.36	4372.14	4429.41	5622.86
Lithuania	3.93	3.93	3.93	3.93	3.93	3.93	3.93	6.97	12.48	12.48	17.84	21.68	40.51	47.34	30.09	20.13	38.86	25.98	85.11
Latvia	1.61	2.31	0.57	0.57	0.54	0.54	0.54	0.54	4.14	72.85	69.68	69.57	74.36	43.51	30.33	27.00	117.79	88.16	90.61
Montenegro	0.00	0.00	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	4.43	39.45	62.86	85.09	153.08	206.01	84.38	132.99
North Macedonia	0.20	0.20	0.20	0.20	0.20	1.34	1.70	1.78	1.42	-3.82	11.17	38.73	132.02	151.88	177.04	160.10	141.93	146.07	106.97
Poland	65.00	96.10	203.50	336.10	188.70	303.70	358.75	195.51	641.07	501.95	746.20	719.26	868.64	944.22	1299.21	1448.22	1526.36	1360.81	1778.40
Romania	39.43	65.63	72.88	85.66	93.34	124.95	125.83	161.09	145.13	191.37	364.80	391.50	310.07	304.62	428.27	313.16	220.11	220.22	234.69
Serbia	0.00	0.00	2.00	2.00	2.68	2.81	24.45	1.72	30.62	104.90	72.40	231.27	214.91	682.08	387.46	648.52	713.99	1470.31	1518.60
Slovak Republic	0.00	0.00	0.19	1.19	21.61	26.72	59.59	51.45	34.74	38.04	15.02	26.75	36.07	25.10	41.17	16.25	76.72	88.03	87.72
Slovenia	0.00	0.16	-0.11	0.19	1.44	0.00	0.00	-1.32	-1.38	0.31	3.27	11.76	2.21	408.10	365.58	331.46	186.22	2.01	14.01

Data Dexscription	Representing Color
OECD, BMD4	
OECD, BMD3	
National Bank	
MOFCOM	

Source: Author's collection of 2005-2023 China's OFDI Stock in 17 CEECs from OCED, national banks, and MOFCOM