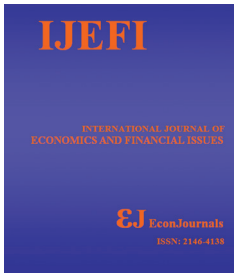

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Comparative Export Competitiveness of Green Beans and Instant Coffee: Evidence from Vietnam and China

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ABSTRACT

According to the types of two kinds of coffee products, which are green coffee (HS 0901.11) and instant coffee (HS 2101.11), this study will compare Vietnam's and China's export competitiveness from 2005 to 2023. Using trade performance indicators such as Revealed Comparative Advantage (RCA), Revealed Symmetric Comparative Advantage (RSCA) and Trade Balance Index (TBI); It can be known that their degrees of competitive advantage, export specialisation and the development trend of long-term competitiveness show considerable differences. According to the data presented above, it can be concluded that Vietnam has kept a strong comparative advantage in terms of green coffee export business; meanwhile, under the drive of enhanced processing capacity and upgraded value chains, its participation rate for instant coffee products has also increased continuously. On the other hand, China's imports continue to grow rapidly, and it is still in a phase where imports exceed exports; therefore, our competitiveness index has not yet turned positive, and there is no apparent export advantage. Based on the above results, it can be known that the two coffee industries have different development paths and provide empirical support for how structural factors and the direction of the domestic market affect the competitiveness of the industry.

Keywords: Coffee Export Competitiveness, Revealed Comparative Advantage, Revealed Symmetric Comparative Advantage, Trade Balance Index, Vietnam-China Comparison, Agricultural Trade Performance
JEL Classifications: F14, Q17, O13

1. INTRODUCTION

Coffee is one of the global agricultural products that cannot be missed for a long time, and its world coffee industrial chain is complex; in addition to planting and preliminary processing, it also involves deep processing and final consumption. In the so-called "Coffee Belt," many developing countries, such as Vietnam and Indonesia, are highly dependent on coffee exports for foreign exchange earnings and rural life (Peixoto et al., 2023).

After the implementation of the Đổi Mới reform, taking advantage of its own conditions such as a lower latitude and favourable agricultural policies in Vietnam, it has developed into the world's second-largest green coffee producer; Among them, Robusta accounts for more than 90% of the total output (Thang, 2022). In contrast, although China is a country with a long history of tea culture, it has recently become a rapidly developing coffee market. Yunnan Province is currently contributing about 98% of China's Arabica production (Zhang, 2020). These differences in natural Environment, production model, policy direction and consumer Scenario all provide a reasonable basis for comparing the export competitiveness of the two countries' coffee Industry.

In the field of international trade, Coffee is mainly divided into green coffee beans and roasted coffee; among them, Green Coffee Beans (HS 0901.11) are usually raw materials for roasting and grinding, while instant coffee (HS 2101.11) belongs to highly processed products with stronger added value. In addition to each

part being examined independently, it is still necessary to take these as a whole to get an all-around evaluation; that is, apart from general productivity benefits outside the scope of production, cost control ability under such technology application will also be evaluated by technical efficiency; For commercial applications prospects, we need to pay special attention.

In this study, we will use the following three indicators to compare the export competitiveness of green coffee and instant coffee in Vietnam and China from 2005 to 2023: Balassa's 1965 revealed comparative advantage (RCA), Dalum et al.'s (1988) revealed symmetric comparative advantage (RSCA), and trade competitiveness index (TCI) and the trade balance index (TBI) by Lafay (1992). Using the Product Mapping approach that integrates RSCA and TBI for trade position classification, as well as tracking changes in the export structure over time.

The purpose of this article is mainly to make three aspects of efforts and contributions. One is to provide a quantitative analysis basis for the comparative advantages and trade surplus of the two types of coffee in both countries; Second, it will be made clear how exports have changed in competitiveness under policy adjustments, technological progress, changes in consumer demand and other factors after primary processing has been transformed into deeper processing; In view of these analysis results, strategies to enhance national and local industries in the international economic value chain structure will be proposed at home.

2. METHODOLOGY

2.1. Data Sources

2.1.1. Subsubsection

The secondary data in this study comes from the UN Comtrade Database. The dataset includes the export values of Vietnam and China for two major categories of coffee products: Green coffee (HS 0901.11) and instant coffee (HS 2101.11) from 2005 to 2023.

The Harmonised System (HS) of the United Nations has defined it, among which HS 0901.11 is unroasted and non-decaffeinated green coffee beans; while HS 2101.11 covers instant coffee, coffee extract products, etc. Therefore, in terms of this two-item classification method, the production link and export situation of both countries can be precisely compared. It also offers a reliable basis for assessing their export competitiveness at various stages of processing, from raw materials to highly processed products.

2.2. Research Method

2.2.1. Revealed comparative advantage (RCA)

To evaluate the competitiveness of exports, this paper first uses Balassa's (1965) concept of Revealed Comparative Advantage (RCA), which is calculated as follows:

$$RCA_{ij} = \frac{X_{ij} / X_{it}}{W_j / W_t} \quad (1)$$

In the case where RCA >1, this indicates that country i has a comparative advantage in product j, meaning this product accounts for a larger proportion of that country's total export turnover compared to the average proportion of the same product worldwide. Conversely, if RCA <1, the product does not have a comparative advantage.

In the field of coffee, this method is relatively commonly used. Jalata (2021) used the RCA index to demonstrate that Ethiopia has a clear comparative advantage in coffee products, although its export share has not yet matched this advantage. Apriani et al. (2020) also used the RCA index to show that Indonesia's coffee RCA results are heavily influenced by factors such as export volume, total production, and exchange rates.

2.2.2. Revealed symmetric comparative advantage (RSCA)

In light of the uneven development of the RCA index, this paper will introduce and explore the RSCA index proposed by Dalum et al. (1988) to address existing limitations. In 1998, as follows:

$$\mathrm{RCA_{ij}} = \frac{X_{ij} / X_{it}}{W_j / W_t} \quad (2)$$

The range of RSCA is from −1 to +1, and a positive value represents a comparative advantage, while a negative value indicates a competitive disadvantage. This Symmetrical transformation can better balance the Comparison among products and countries, and Shohibul (2013) applied this method to analyse Trade between ASEAN and China, demonstrating the stability of China's export Specialisation over Time.

2.2.3. Trade balance index (TBI)

To further indicate the extent of export specialisation, according to Lafay (1992)'s proposal of the trade balance index (TBI), it is calculated as follows:

$$TBI_{ij} = \frac{X_{ij} - M_{ij}}{X_{ij} - M_{ij}} \quad (3)$$

X_{ij} and M_{ij} represent the export and import amounts of country i in product j, respectively. When TBI >0, it indicates that the country is an exporter; when TBI <0, it indicates that the country is an importer.

Ervani (2013) and others have pointed out in their studies on Indonesia's agricultural trade that the transient balance of trade index (TBI) is usually calculated when determining whether a country's trade surplus is sustainable.

2.3. Product Mapping Approach

In combination with the competitiveness index, that is, comparative advantage (RSCA) and trade specialisation (TBI), this paper uses Widodo's (2009) product mapping approach.

Figure 1 shows that the four groups are determined according to the RSCA and TBI values of the products; that is, whether there is an advantage or disadvantage in foreign trade, as well as their strength or weakness in international competition.

Ishchukova and Smutka (2013), Ridhwan et al. (2024) and others have applied this approach to the study of agricultural trade in

Russia, Indonesia, and other countries to identify strategic export commodities and changes in structure over time.

Using the product mapping approach to determine the competitive situation of Vietnam's and China's green and instant coffee in the international market. Based on this, a reference can be derived to form policies and direct future directions for the development of China's coffee industry amidst enhanced economic Globalisation and changes in the international value chain.

3. RESULTS

Revealed Comparative Advantage (RCA) index: Reveals the degree of specialisation in a country's exports of a particular product in global trade. According to the data from 2005 to 2023, it can be known that there is a significant difference in the two types of coffee between Vietnam and China, namely green coffee beans and instant coffee.

The RCA index of green coffee in Vietnam has been at a high level, with the lowest being 6.33 in 2021 and the highest reaching 42.85 in 2007, as illustrated in Figure 2. The average across all years was 19.26. Vietnam has been producing coffee at a significantly higher rate than other countries consistently over many years; thus, it is evident that Vietnam's production of raw coffee holds stronger comparative advantages continuously. In 2005-2007, the value of the RCA index rose sharply from 25.65 to 42.85, indicating that there was great production capacity and export scale at that time; After 2008, although this number fell slightly, it is still between 10 and 15 times after all, which suggests our country's strategy has shifted to export processing products instead of primary goods.

On the contrary, China's RCA was extremely low, with an average of only 0.058 (Figure 3), and it rarely exceeded 0.1 over almost two decades. The above data suggest that China has not formed a distinct comparative advantage in the export of green coffee, and its coffee industry mainly meets domestic consumption demands without participating much in international competition.

For instant coffee, comparing the relative change in competitive advantage across different regions from the early 2010s, it can be observed that Vietnam increased more significantly than other places (Figure 2). According to RCA, from 1.13 in 2005 to 6.91 in 2013, it has shown an increasing trend, indicating improvement in adjustments to the product structure and upgrades in processing capabilities at the national level; Beginning in 2014, despite fluctuations, it generally remained stable; Specifically speaking, its value was roughly between 4.5 and 5.2 at this time, and on average 3.67. Based on the above stability, it can be inferred that the international competitiveness of Vietnam's instant coffee industry has been effectively maintained.

Meanwhile, China's RCA for instant coffee is also relatively low, ranging from 0.0002 to 0.0527 (Figure 3), but it has shown a trend of gradual increase over time. This indicates that the initial stage of capability building and nascent participation in international trade has emerged in the instant coffee industry. Although China has not yet reached the RCA > 1 standard, given its positive trend in transformation of the coffee market structure and ongoing efforts for sustained development.

Analysis of Revealed Symmetric Comparative Advantage (RSCA) and Trade Balance Index (TBI) can provide more details on their comparative advantages and trade specialisation patterns. The results presented in Table 1 and Table 2 indicate clear differences in comparative advantage between Vietnam and China across coffee product categories.

During 2005-2023, Vietnam's RSCA of green coffee was generally positive, ranging from 0.73 to 0.95, and the average was 0.87. In addition, TBI reported in Table 2 was kept at a high level of 0.91-0.99 over the entire period and still had an advantageous position in international trade specialization. Based on this, Vietnam has one of the most robust continuous comparative advantages in raw coffee exports worldwide.

RSCA of Vietnam's instant coffee increased rapidly after 2010, reaching 0.75 in 2013, and was between 0.65 and 0.70 for the next decade. At the same time, the TBI value of instant coffee was >0.8 after 2013, which can also be seen that Vietnam has shifted from the export of raw materials to high-value-added products. Based on the data shown above, after applying technology to improve agricultural production in Vietnam, new added-value links have also been constructed in agricultural product processing.

As shown in Table 1, the RSCA values for green coffee and instant coffee in China were all negative, with an average of −0.89 for green coffee and −0.97 for instant coffee. The average TBI value for Chinese green coffee was only 0.079, and that of instant coffee was a negative number, −0.60. Based on the above comparison, China does not have an export comparative advantage in the deep processing of coffee products, and imports still play a significant role in the domestic market; that is, a large proportion of the required amount is imported from abroad.

By allocating the samples of indicator variables to RSCA, TBI respectively; For ease of comparison between two countries.

Based on calculations based on UN Comtrade data from 2005 to 2023, the Figure 4: RSCA-TBI mapping for Vietnam and China coffee 2005-2023 reveals distinct positions for each country. Vietnamese green coffee data points are concentrated in the upper right of the graph - RSCA >0.85 and TBI tends to +1. There is a high degree of stability, with strong export specialisation; thus, it has established itself in the international market for raw coffee trade.

By comparison, Vietnamese instant coffee appeared in the neutral zone (with RSCA around 0.1 and TBI below 0.3) at first, but after 2013 it has gradually moved into the advantageous quadrant (RSCA approaching 0.74, TBI approaching 0.90). From this, we can see that Vietnam's upgrading process of the industrial chain has moved from exporting raw coffee to producing high-value-added processed products for the global market.

Green coffee in China is mainly distributed on the left side of the chart (RSCA <0, TBI approximately 0-0.3), with a small export

scale and weak competitiveness. China's instant coffee performs even worse, with all its points in the lower-left part of the quadrant (RSCA close to −1, TBI strongly negative), indicating a continuous trade deficit and underdeveloped processing capacity.

As a whole, the Product Mapping shows that there is a divergent path: On the one hand, Vietnam has gradually become an important and specialised exporting country in the global coffee supply chain; On the other hand, China is still at the initial stage of entering the global coffee supply chain.

4. DISCUSSION

4.1. Static Comparison: Comparing Export Competitiveness Indices

4.1.1. Competitiveness of green coffee from Vietnam and China

For three types of International Trade Indexes, including RCA, RSCA and TBI, compared with Vietnam's performance in exports at different times, it was found that China is generally worse off than Vietnam. Due to more substantial structural imbalances across natural resources, value chains, policies and technology applications among other causes.

For Vietnam, both RCA and RSCA are consistently at a high level throughout the entire period. The mean of RCA is 19.26, and that of RSCA remains above 0.85. TBI is near +1, indicating that Vietnam has had a trade surplus in green coffee for a long time and consistently. Most of Vietnam's RSCA-TBI charts are in the upper right-hand part; Therefore, it has a relatively substantial comparative advantage and is convenient for trade.

Several factors help explain this performance. To begin with, favorable natural conditions serve as a crucial foundation. The Central Highlands—particularly Dak Lak, Lam Dong, and Gia Lai—enjoy a sub-equatorial climate and fertile basalt soils. As a result, average yields reach 2,979 kg/ha, which is 3.37 times the global average (Tran et al., 2025). In addition, agricultural support policies from local authorities and ministries have been implemented effectively over the past two decades. These include preferential credit, technical extension services, and cooperative farming models. The "coffee landscape" strategy, jointly promoted by the Ministry of Agriculture and Rural Development and IDH, has further encouraged sustainable production, strengthened value-chain commercialization, and enabled farmers to obtain international certifications such as Rainforest Alliance and C.A.F.E Practices (IDH - The Sustainable Trade Initiative [IDH], 2024). Moreover, the involvement of FDI enterprises such as Nestlé, Vinacafé, and Tin Nghia has improved value-chain integration, raised processing standards, and expanded access to global markets.

China, on the other hand, shows a low and unstable competitiveness across the board during the entire study period. The RCA index is continuously at a low level, and the RSCA index has been negative for some time, ranging from −0.9 to −0.6; TBI values have mostly been less than zero or very close to zero. Apart from a short period of increase from 2009 to 2010, China's green coffee exports have been small and unable to establish real comparative advantages. As shown in Figure 4 RSCA-TBI diagram, there are few Chinese data points and they are primarily concentrated within the deep-negative RSCA region; this indicates that China has consistently lacked competitiveness.

This outcome can be traced to several structural limitations. In Yunnan Province, production still relies heavily on the "smallholder + base + enterprise" model, where small farms dominate and mechanization remains limited. This leads to unstable quality and relatively high production costs (Zhang, 2020; Wei, 2024). Furthermore, coffee has not been designated as a strategic crop in national agricultural policies, which means the sector lacks adequate financial instruments, technology investment, and R&D support. Reported by CoffeeBI (2024) based on ICO figures, China's coffee output in 2023 reached only 7,800 tons—equivalent to merely 0.06% of global production—a scale far too small to build any sustainable export advantage.

4.1.2. Competitiveness of instant coffee from Vietnam and China

The sub-segment of instant coffee shows a more distinct trend of Vietnam moving up the value chain. RCA and RSCA both reached their peaks at around 6.91 and 0.74, respectively, in 2013; RCA achieved this peak after reaching a high level in 2010, and RSCA also did so. TB1 has changed from a negative number to a positive one and then stabilised. According to the distribution map, Vietnam's instantaneous coffee data points have deviated from the neutral area into the region where RSCA is above 0.7 and TBI is over 0.8; It can be concluded that its export competitiveness has remained in a continuous improvement trend.

The rise and development is jointly promoted by the industrialisation of agriculture and the deep processing strategy in Vietnam. The Ministry of Agriculture and Rural Affairs has listed deep processing as the key breakthrough for achieving a target of USD 6 billion in coffee exports, promoting investment in high-tech production and value-added processing (Vietnam News, 2023). Several large companies, including Tin Nghia, which invested $30 million in a freeze-drying plant (Global Coffee Report, 2018), and An Thai and VCU, have introduced European standard technology and increased production to meet the high-end market requirements for the EU, the United States and Japan under EVFTA and CPTPP (Cam, 2025).

In addition, the development of domestic brands such as G7 (Nguyen, 2024) and King Coffee has also begun to change the situation that Vietnam's coffee industry is limited to price competition, shifting towards high-quality brand construction. To enhance Vietnam's positioning within the worldwide value chain after this adjustment.

Compared with an increase in domestic demand within the instant coffee industry, there is no export benefit at present. Although coffee consumption has grown at an annual rate of around 30 per cent (China Briefing, 2022), this mainly indicates that the expansion of the domestic market is weak in export capability. According to the United States Department of Agriculture (USDA, 2025), China's green coffee bean imports reached 3.405 million 60-kg bags in the 2023/24 marketing year, representing an impressive year-on-year growth of approximately 73% compared to the 2022/23 period, and China still needs to import from other countries. This Dependency is in line with the continuous negative TBI and low RSCA.

According to a report by Stellar Market Research Company (2024), most R&D investments in China are aimed at increasing production rather than enhancing the technology for deep processing or improving product quality. Also, without a cooperative brand Strategy, these Chinese enterprises are unable to compete internationally. According to Daxue Consulting (2023), the domestic coffee chain stores, such as Luckin Coffee and Saturn Bird Coffee, have not achieved global expansion comparable to Starbucks or Nestle.

Another notable aspect is that China's instant coffee value chain remains concentrated in downstream activities, especially consumption and e-commerce retail. Platforms like Alibaba and JD.com play an important role in distributing finished products domestically, yet they do not necessarily stimulate upstream developments such as product formulation, deep processing, or export-oriented standardization. Even international companies operating in China—such as Neumann Kaffee Gruppe (NKG)—tend to focus on serving the domestic market rather than exporting (Teixeira, 2024). As a result, China's instant coffee continues to fall into the negative RSCA and TBI region, reflecting limited export capacity and a lack of specialization.

To sum up, due to different policy objectives, technical directions and value Networks, the competitiveness of instant coffee exports in the two countries is relatively weak.

4.1.3. Overall comparison of competitiveness indices

Based on the results of RCA, RSCA, and TBI applied to green and instantaneous coffee production, there are some uniform reference criteria. First of all, Vietnam has a strong and stable comparative advantage in both segments and is relatively specialised; Therefore, it is evident that its development path shows clear movement towards value-added growth. The parallel enhancement of RSCA and TBI at different times indicates that Vietnam's export Structure has moved from a state dominated by raw materials to one dominated by processed and high-value-added products.

China, by contrast, appears to remain in a capacity-building phase. It's RCA and RSCA values stay relatively low, and its TBI remains negative in both segments—patterns that point to a continued dependence on imported raw materials. In other words, the country's export capability has not yet kept pace with the rapid expansion of domestic consumption.

In short, based on the previous analysis, Vietnam has a higher degree of export competitiveness in the coffee industry than China in terms of depth and level of comparative advantage as well as degree of trade specialisation.

4.2. Differences in Product Structure and Market Orientation

4.2.1. Product structure

Vietnam and China illustrate two notably different coffee development models. Vietnam is predominantly a Robusta producer, with the variety accounting for around 90% of total output. Robusta thrives in tropical climates, offers high yields at relatively low production costs, and is particularly suitable for instant coffee manufacturing. Following the collapse of the International Coffee Agreement (ICA) in 1989, Vietnam rapidly expanded its coffee acreage. Combined with the Doi Moi reforms and land-allocation policies, this expansion enabled a high degree of specialization, helping Vietnam become the world's second-largest exporter of green coffee today (Stockman, 2009).

China, by contrast, mainly cultivates Arabica in Yunnan Province, where the altitude ranges from 1.200 to 1.800 m and the climate is subtropical–temperate. Yunnan Arabica is well regarded for its fruity notes and mild acidity, yet production remains fragmented and yields are comparatively low. As noted by Zhang (2020), most Yunnan coffee continues to be exported in raw form and has not developed significant influence in global markets.

Regarding processing levels, Vietnam has now developed a comprehensive range of products—green coffee, roasted, ground, instant, and even tablet formats. Deep-processed items account for roughly 15-20% of total export turnover (General Department of Customs, 2024). Meanwhile, China's processing sector is still geared mainly toward roasted and ground coffee for domestic consumption. Instant coffee and tablets are largely imported or produced only on a pilot scale.

Branding and standardization reveal another clear difference. Vietnam has built an international presence through certifications such as Rainforest Alliance and C.A.F.E. Practices, supported by well-known brands like Nguyen (2024) King Coffee, and G7. China, however, has yet to form a complete export-oriented value chain. Domestic brands such as Luckin and Saturnbird primarily target the local market (Daxue Consulting, 2023).

In terms of technology, Vietnam currently leads the region in deep-processing capacity, with multiple factories adopting freeze-drying and spray-drying techniques. China has also begun investing heavily in processing technology in recent years. As reported by China Daily (2024), the share of deeply processed coffee products in the country rose to 33.4% in 2023—up from just 8% in 2021—indicating a rapid upgrading process.

4.2.2. Target market orientation

Vietnam has adopted an outward-oriented development strategy, exporting to more than 80 countries. The EU alone accounts for nearly 40% of total export turnover during the 2023-2024 crop year, while the US, Japan, and ASEAN have emerged as fast-growing destinations. Trade agreements such as EVFTA and CPTPP play an essential role, cutting tariffs by roughly 5-7% and improving Vietnam's competitive position in high-standard markets, particularly Europe.

China, on the other hand, has concentrated mainly on expanding its domestic market. The country's coffee industry revenue reached USD 15.34 billion in 2022, with a projected CAGR of 9.6% between 2022 and 2025 (China Briefing). Consumption growth is driven largely by urban youth, with strong contributions from coffee chains such as Luckin and Starbucks China and from e-commerce platforms including JD.com and Alibaba (Intelligence Coffee, 2022). Although China's Arabica exports are forecast to increase by 358% by 2024 (Customs China), the base level is still

Table 1: RSCA values of green beans and instant coffee in Vietnam and China (2005-2023)

Year	Green beans		Instant coffee	
	Vietnam	China	Vietnam	China
2005	0.92	−0.93	0.06	−1.00
2006	0.94	−0.92	0.14	−1.00
2007	0.95	−0.93	−0.08	−0.99
2008	0.95	−0.91	0.10	−0.99
2009	0.93	−0.89	0.31	−1.00
2010	0.92	−0.89	0.38	−1.00
2011	0.91	−0.88	0.48	−1.00
2012	0.92	−0.84	0.58	−0.98
2013	0.91	−0.82	0.75	−0.98
2014	0.91	−0.85	0.66	−0.98
2015	0.85	−0.87	0.63	−0.97
2016	0.87	−0.85	0.67	−0.97
2017	0.85	−0.87	0.63	−0.96
2018	0.85	−0.84	0.66	−0.92
2019	0.79	−0.89	0.68	−0.94
2020	0.74	−0.91	0.64	−0.98
2021	0.73	−0.95	0.64	−0.95
2022	0.74	−0.90	0.64	−0.90
2023	0.77	−0.96	0.66	−0.95
Average	0.87	−0.89	0.49	−0.97

Source: Author's computation

Table 2: TBI values of green and instant coffee in Vietnam and China (2005-2023)

Year	Green bean		Instant coffee	
	Vietnam	China	Vietnam	China
2005	1.00	0.27	0.59	−0.91
2006	1.00	0.24	0.55	−0.71
2007	0.99	0.18	0.25	−0.41
2008	0.99	0.19	0.06	−0.53
2009	0.98	0.40	0.13	−0.83
2010	0.99	0.35	0.41	−0.90
2011	0.98	0.26	0.52	−0.93
2012	0.98	0.25	0.53	−0.48
2013	0.96	0.32	0.88	−0.54
2014	0.96	0.19	0.85	−0.58
2015	0.97	0.20	0.79	−0.44
2016	0.97	0.27	0.84	−0.43
2017	0.94	0.14	0.84	−0.32
2018	0.94	0.17	0.82	−0.24
2019	0.94	−0.02	0.87	−0.40
2020	0.92	−0.12	0.91	−0.77
2021	0.93	−0.59	0.88	−0.74
2022	0.93	−0.42	0.85	−0.58
2023	0.91	−0.80	0.88	−0.67
Average	0.96	0.08	0.65	−0.60

Source: Author's computation

small. Moreover, domestic taste preferences pose challenges for achieving the standardization required for export markets (Perfect Daily Grind, 2022).

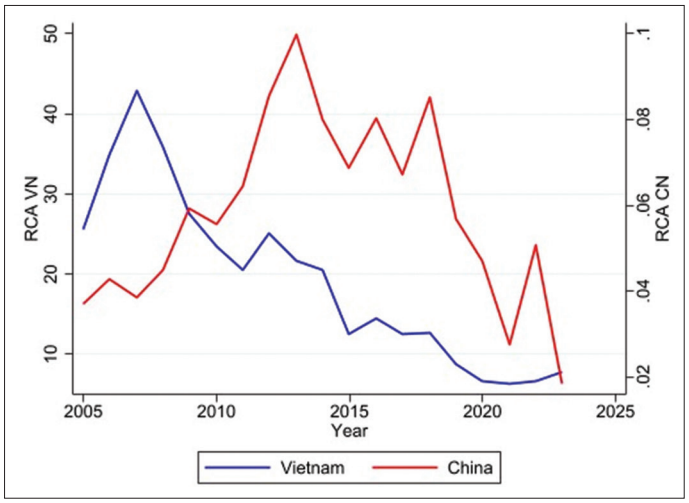
Generally speaking, Vietnam hopes to expand its exports and deepen the level of processing; China is mainly for meeting the needs of the domestic market and has not increased external sales volume significantly. These opposite strategies reflect, on the one hand, the different economic orientations of the two countries; On the other hand, they are also at different stages of development in the coffee value chain.

Figure 1: RSCA-TBI products mapping

RSCA >0	Category B (RSCA >0; TBI <0) Comparative advantage Net-importer	Category A (RSCA >0; TBI >0) Comparative advantage Net-exporter
RSCA <0	Category D (RSCA <0; TBI <0) Comparative disadvantage Net-importer TBI <0	Category C (RSCA <0; TBI >0) Comparative advantage Net-exporter TBI >0

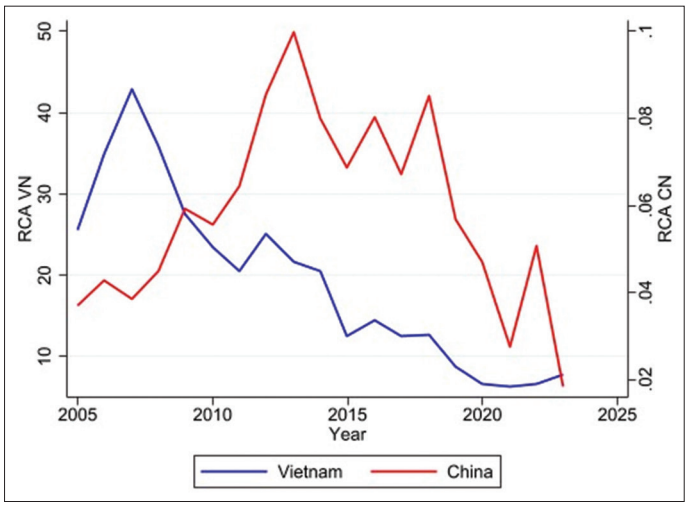
Source: Widodo (2009)

Figure 2: Revealed comparative advantage value of green beans coffee



Source: Author's analysis

Figure 3: Revealed comparative advantage value of instant coffee



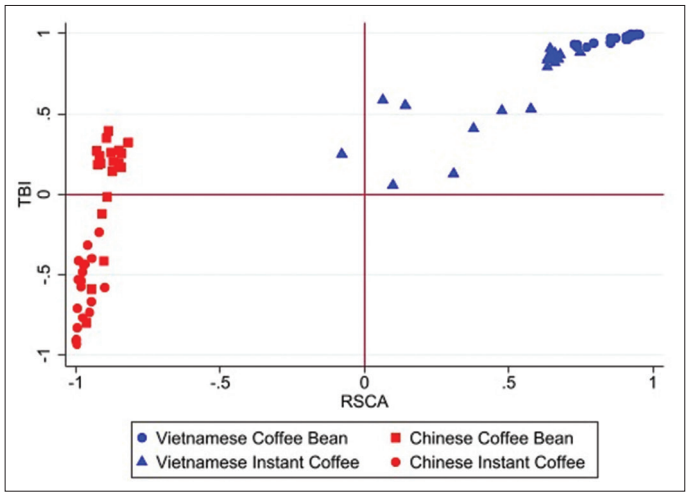
Source: Author's analysis

4.3. Potential for Development and Expansion of Competitiveness

4.3.1. Production area structure and possibilities for expansion

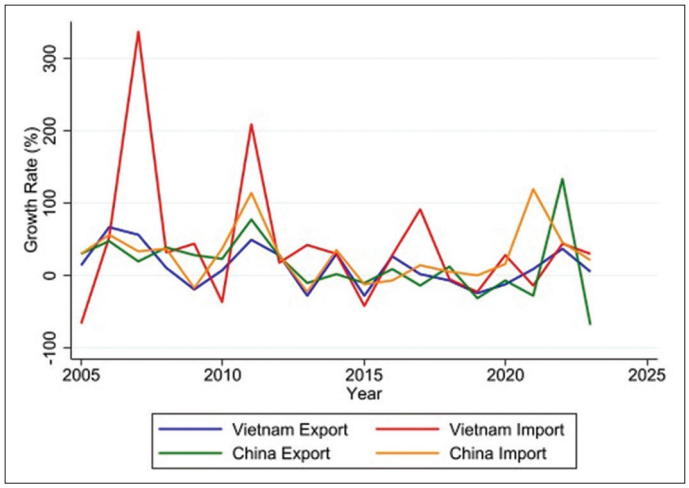
Vietnam has developed a wide and relatively mature System of coffee-growing Areas, mainly concentrated in the Central Highlands and extending to provinces such as Son La, Quang Tri and Binh Phuoc. In addition, the above growth also provides support for combining agriculture-processing-logistics-trade to ensure the stability of raw material supply chain, enhance

Figure 4: RSCA-TBI mapping for Vietnam and China coffee 2005-2023



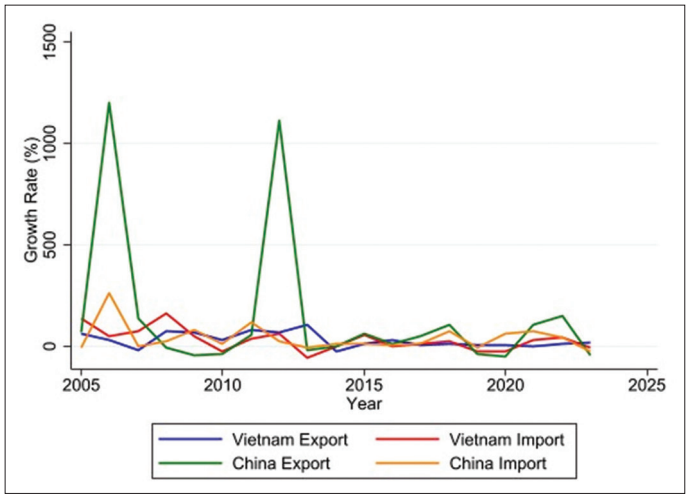
Source: Author's computation

Figure 5: Growth rate of green beans in Vietnam and China (2005-2023)



Source: Author's computation

Figure 6: Growth rates of instant coffee in Vietnam and China (2005-2023)



Source: Author's computation

adaptability in response to weather factors such as climate change, thereby increasing the added value of end products.

By contrast, around 98% of China's coffee production is still concentrated in Yunnan, especially in Pu'er, Baoshan, Dehong, and Lincang (Nationwide Coffee, 2024). Although these areas benefit from favorable ecological conditions, such heavy geographic dependence leaves the supply chain vulnerable. For instance, Wang et al. (2025) project that Yunnan's Arabica yield could fall by 18.9% with just a 1°C decrease in minimum temperature.

In light of this shortcoming, China is now trying to disperse the production base across Hainan, Guangxi, Fujian and Sichuan, and is also introducing preferential land and tax policies to attract investment in deep processing. At the same time, the "agriculture-tourism-education" model in Pu'er has been proven effective, creating an inter-industry ecosystem that promotes logistics development and the application of smart-farming technology (Zhang et al., 2023).

Therefore, there are two different directions of development in these differences. In order to maintain the status or increase exports to Vietnam, high-end products with greater value have been developed in this industry continuously; But China's primary task at present is to expand its home appliance market quickly.

4.3.2. Export growth and long-term prospects

UN Comtrade data from 2005–2023 further underscores the divergence in export performance between the two countries. Vietnam has maintained a leading role in global coffee exports: the value of green coffee consistently ranges from USD 1.7 to 3.5 billion per year, with remarkable growth spurts such as in 2006 (+66.5%) and 2011 (+48.8%) , as shown in Figure 5: Growth rate of green beans in Vietnam and China (2005-2023). Although occasional declines occur, the long-term trend remains positive, demonstrating Vietnam's capacity to adapt to international market fluctuations. In the instant-coffee segment, export value expanded from USD 9.52 million (2005) to USD 507.5 million (2023)—an increase of more than fiftyfold—which clearly signals that deep processing has become a new engine of growth. A trend further illustrated by the comparative growth rates in Figure 6: Growth rates of instant coffee in Vietnam and China (2005-2023).

China, however, follows a different trajectory. Its green-coffee exports peaked at USD 214.1 million in 2012 but subsequently fell sharply to USD 67.9 million in 2023. Meanwhile, imports surged to USD 614 million, confirming China's rising import dependence. For instant coffee, exports reached USD 26.7 million in 2023, yet imports climbed much higher to USD 133.8 million, reflecting a persistent trade deficit in this segment.

Overall, Vietnam has achieved a stable and orderly export situation; however, the increase in China's domestic consumption scale has not yet been reflected in the development of export trade. Nonetheless, in the long run, China can use its large consumer market to promote the improvement of processing technology and quality standards, and cultivate some specialised areas, such as Yunnan specialty Arabica.

This Difference also provides opportunities for cooperation among Vietnam, China and other countries in terms of in-depth processing, standardisation of quality norms, technology sharing, etc.

5. CONCLUSION

5.1. Recommendations

5.1.1. Clearly define product positioning and target markets

In light of the substantial changes occurring in the global coffee market, being able to clearly define the positioning of one's own products and target markets has become a key factor in maintaining sustained competitiveness. Vietnam's experience is typical; After changing the previous model of exporting coffee beans and carrying out downstream processing after purchase, instant coffee and other high-end products have been included in export categories.

Meanwhile, China, although not yet a strong exporter, possesses a rapidly expanding domestic market that continues to create momentum. This growing demand could serve as a foundation for building regional coffee brands linked with geographical indications before stepping onto the global stage. Therefore, product positioning should not be confined to choosing export segments alone; instead, it should also integrate localization strategies, connecting products with cultural and regional identities. Such an approach can create differentiation and help products leave a more lasting impression on consumers.

5.1.2. Strengthening the processing and certification system

Both countries' deficiencies in the production and processing of coffee, as well as international certifications, have delayed certification. At present, consumers in Europe and North America's high-end markets generally demand clarity and verifiability of purchased products; they tend to prioritise environmental protection throughout the production process as much as possible.

Accordingly, policies should prioritize the development of a deep-processing ecosystem closely linked to raw-material regions. In this structure, processing enterprises act as the central link connecting farmers, cooperatives, and exporting units. At the same time, expanding global certifications such as Rainforest Alliance and Fair Trade not only ensures compliance with international benchmarks but also boosts consumer confidence.

For China, localizing processing technology has become particularly urgent. Doing so would reduce its dependence on imported machinery and support the creation of domestic quality standards. Ultimately, it would lay the foundation for a monitoring and certification mechanism that aligns more closely with international systems.

5.1.3. Optimizing strategies for developing growing areas

China's heavy reliance on Yunnan places its coffee industry at considerable risk, particularly in terms of climate vulnerability and output instability. The strategy for developing growing areas therefore needs to move away from a "single-core" mindset toward a more diversified regional approach. Encouraging the expansion of coffee farms in Hainan, Guangxi, and Sichuan would not only reduce ecological risks but also help form a more robust "southern coffee belt."

In addition, to encourage imports of equipment and other policies supportive of construction operations of processing facilities and new planting areas in the green credit field, this industry will continue to grow within that area.

On the other hand, Vietnam should leverage the strengths of its Central Highlands regions to promote cross-provincial collaboration and form integrated clusters combining industry, agriculture, and logistics. This would enhance productivity, reduce supply-chain costs, and strengthen Vietnam's ability to meet demanding global standards. Linking growing-area development with "green – clean – sustainable coffee" orientations will further reinforce Vietnam's position in premium markets.

5.1.4. Promoting Sino-Vietnamese cooperation toward complementarity and mutual development

The coffee market does not have to be in a state of pure competition, and it is quite possible to achieve win-win cooperation. Given that the two countries have different market Structures, product Lines and Development Strategies, they can complement each other in some aspects.

First, cooperation in deep processing and quality standardization should be strengthened. Vietnam could expand exports of green and semi-processed coffee to China, while Chinese firms could focus on instant-coffee production, roasting, and domestic branding. This model increases the added value of Vietnamese coffee while supporting China's need for standardized, high-quality inputs.

Secondly, the two countries need to work together to achieve a Bilateral Preferential Free Trade Agreement and increase the reciprocal recognition rate of international certificate of origin marks such as Rainforest Alliance and Fair Trade. It is also beneficial for goods imports and exports, smooth entry and exit of cargo, reduce transaction costs, increase the transparency and credibility of the movement of coffee between the two places.

Third, development strategies should balance the growth of domestic consumption with the expansion of reprocessed exports. Vietnam's stable supply of green coffee can satisfy China's increasing consumption needs, while also enabling China to scale up its capacity to re-export processed coffee. This approach not only broadens Vietnam's sustainable consumption channels but also strengthens China's presence in the global value chain.

Finally, the establishment of a Vietnam–China Coffee Research and Technology Transfer Alliance will create a platform for variety exchange, technology cooperation, processing technology update, and international marketing strategy coordination. Combining them will increase the economic development of some coastal cities in both countries that have close trade connections.

Therefore, cooperation among coffee industry chain enterprises in Vietnam and China should aim for both parties' interests to develop together. This is a strategic Pathway to promote the sustainable

development of the two coffee industries in increasingly fierce global competition.

6. CONCLUSION

According to the research results, Vietnam has maintained a significant and stable comparative advantage in green coffee export business for many years; In addition, by increasing investment in high-value-added processed products such as instant coffee through technical means, developing its own brand image, actively using free trade agreements and other policies to open up new markets and strengthen export competitiveness under various challenges.

China, by contrast, has yet to establish a clear export advantage. Its RCA, RSCA, and TBI indices remain generally low or negative, suggesting not only limited export capacity but also a rising dependence on imports to satisfy fast-growing domestic demand. This divergence highlights the fundamentally different development pathways pursued by the two countries: Vietnam continues to orient itself outward, leveraging its production strengths and processing capabilities, whereas China concentrates on expanding its domestic consumer market and is still in the early stages of constructing a fully integrated export value chain.

Nevertheless, China's large and dynamic domestic market—combined with recent investments in processing technology—could provide the basis for a gradual improvement in its competitiveness over the long term. From both the quantitative indicators and the qualitative analysis, it is evident that Vietnam currently holds a markedly stronger position than China in coffee exports, especially in green coffee. China, meanwhile, retains significant potential, but it will require more coordinated strategies in the areas of growing-area planning, processing-technology development, and international brand building.

In short, the competitive situation of both parties in the global coffee industry and the practical basis for policy making, as well as long-term strategies to promote the continuous growth of China's own coffee industry, have been described.

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