The impact of the Iran-China Strategic Partnership Agreement on facilitating Iran's foreign trade: A case study of selected goods exports

Abstract

One of the main goals of developing countries, such as Iran is to achieve economic growth. According to theory, trade is an important determinant of economic growth and development. To increase economic trade volume, Iran has signed several agreements globally and one of the most important trading allies in recent years is China. This article seeks to assess how strategic partnership agreements in the Iran-China 25-year Cooperation Program and the progress of the Belt and Road Initiative influence the export of selected goods, specifically in the categories of iron, copper, steel, and alloy products. Based on the gravity model and the combined data approach from 2001 to 2021, the findings reveal that trade facilitation, gross domestic product, and China's population have a significant positive influence on Iran's foreign trade. Conversely, Iran's population shows a negative and substantial influence on the country's foreign trade.

Keywords: Strategic Document, Trade, Gravity Model, Iran, China, Combined Data

JEL Classification: C23, E66, F13, B41, O53

1. Introduction

International trade is one of the powerful factors that reasons for growth in developing coun-tries. This is also upheld by the increasing and intensifying trade levels between nations. Countries are consistently working to enhance and broaden foreign trade by establishing agreements, eliminating trade obstacles, and forming economic and trade unions with other nations. Data indicates that over the last twenty years, the export of industrial goods globally has increased by more than 2.3 times. For instance, in 2018, nearly 66% of the total exports within the goods category were related to industrial goods. This year, India, Thailand, Vietnam, and Turkey have made notable strides in the export of industrial goods among developing countries, following China. India exported $228 billion, Thailand $187 billion, Vietnam $201 billion, and Turkey $129 billion[1]. Iran is not excluded from this principle and has consistently worked to enhance its trade in goods, services, and investments with other nations. On the other hand, because of the sanctions and with an emphasis on recent years; it is necessary to reduce Iran's dependence on foreign currency revenue from export of oil and petrochemical products. The importance of non-crude oil exports is underlined

[1] https://www.wto.org/english/res_e/statis_e/trade_profiles_list_e.htm

in the economic plan as well as in vision document, hence this imperative (Asgari 2019). Since that time, the Iranian government has focused not only on the export of oil and petroleum products but also on diversifying its exports. The work is intended to sharply increase the share of exports from non-oil products. These types of goods that are exported to countries other than oil, such as foodstuffs, Apparel, carpets, metal products, various gemstones, plastic etc.

According to a report by the Customs of the Islamic Republic of Iran, most exports have been based on oil and its by-products for nearly four decades. For this reason, export capacities and infrastructural and institutional restrictions are some of the principal' limiting factors for Iran's exports. This paper will analyze the behavior of Iran-China strategic association as an important trade engagement with a case study approach using Iranian foreign trade statistics and focusing mainly on non-oil exports. In this sense the tariffs, which were designed to restrict trade only so far as temporary balancing of one-hand meeting another at net and indeed pork can be highly effective. The effect of various factors on the foreign trade of selected products will be studied in Iran using the gravity model and panel data methodology.

Therefore, after the introduction in Section 1, the theoretical framework is discussed in Section 2, and the study background is introduced in the third section. The fourth part of the article analyzes Iran-China trade relations. Section five, on the other hand, will be dedicated to model introduction, model estimation and analysis. The sixth and final section will be a conclusion, a summary of key findings that emerged in the first five sections, followed by recommendations.

Saleh and Yazdanshenas (2024) examine the emerging strategic partnership between China and Iran within the context of U.S. hegemony in the Persian Gulf. They argue that this collaboration represents a direct challenge to U.S. interests in the region, potentially reshaping the geopolitical landscape. Their analysis suggests that China's involvement provides Iran with economic and military support, which enhances its leverage against Western sanctions and influences regional power dynamics. The authors highlight key areas of cooperation, including energy, infrastructure, and military ties, suggesting that as this partnership strengthens, it may lead to a significant reconfiguration of power in the Gulf region. This study serves as a crucial foundation for understanding the competitive dynamics of great powers in the Middle East.

The study by Farhadi and Zhao (2024) focuses on the impact of Iran-China trade relations on environmental sustainability. They investigate the interplay between increasing bilateral trade and environmental policies, emphasizing that while trade can foster mutual economic benefits, it also poses significant environmental challenges. The authors highlight the need for both countries to implement sustainable trade practices to mitigate negative environmental impacts. This research underscores the importance of integrating environmental considerations into economic cooperation, a point that is critical as Iran seeks to enhance its economic ties with China while grappling with severe environmental issues.

Karami (2024) shifts the focus to the broader implications of the triangle cooperation between Iran, Russia, and China. This study delves into how this triangular relationship influences Eurasian security dynamics. Karami argues that the cooperative framework established among these nations enhances their collective bargaining power against U.S. influence in the region. The analysis

provides a comprehensive overview of military and strategic partnerships, suggesting that this alliance could reshape security architecture in Eurasia, presenting both opportunities and challenges for regional stability and international relations.

Nurdun (2024) discusses the Sino-Iranian 25-Year Comprehensive Cooperation Agreement as a pivotal development in the geopolitical landscape. The study presents this agreement as a balancing act, where Iran seeks to leverage Chinese support against Western pressures. Nurdun analyzes various sectors covered by the agreement, including energy, transportation, and technology, asserting that it marks a significant shift in Iran's foreign policy orientation. The author posits that this agreement solidifies China's role as a key player in Middle Eastern geopolitics while also questioning its long-term sustainability and implications for regional security dynamics.

2. Theoretical Principles

Iran's foreign policy is driven in large part by its deepening economic relationship with China. Ever since, it has come to be Iran's most significant source of economic exchanges and a key political ally. Based on Shariati nia (2022), the trade facilities in this agreement and ongoing talks of Iran – China Comprehensive Strategic Cooperation, represent a breakthrough within the improvement of Irans strategic situation where it performs towards powerful nations. The first Contemporary Treaty of Amity between China and another nation was signed in Rome by the ambassadors of Iran, on 26 August 1920. Yet, it was eventually met with resistance since then China began forcefully pushing Chinese production to Iran by overwhelming markets and installing them essentially everywhere under no mercy. Given this context, it is necessary to know the national economy—both strengths and resources as well as opportunities and vulnerabilities—in order to promote trade relations. With such understanding it would make correct sense for the negotiator to determine his/her approach to negotiation and craft an appropriate method of negotiating (Shakeri, 2017). The current state of the international system reveals that any region can only develop and survive when its work with other countries based on a cooperative, collaborative, and alignment. The level and quality of cooperation is also highly influenced by naturally occurring geography, as well as by a set of political, economic and cultural particularities in different countries. This principle also applies to the bilateral relationship between Iran and China. In Iran's foreign policy, China has been a significant factor to keep an eye on. The relationship has ebbed and flowed over the years. Similarly, a 25-years agreement was signed between Iran and China which has further assisted both the parties to continue its trade with each other more effectively.

The gravity model of trade has long been a popular framework for understanding international trade patterns, primarily due to its intuitive appeal and empirical success. However, a recent paper applying this model raises several critical points regarding its implementation and the broader context of trade theory. While the gravity model provides valuable insights, the commentary highlights important areas that warrant deeper exploration, particularly in relation to other trade theories and the effects of external shocks on trade dynamics.

The gravity model operates on the premise that trade between two countries is directly proportional to their economic sizes (usually measured by GDP) and inversely proportional to the distance between them. While this framework has provided robust predictions in various studies, it is essential to recognize its limitations. The commentary rightly notes that the paper fails to incorporate other trade theories, such as comparative advantage and the Heckscher-Ohlin model, which could enrich the analysis by providing additional perspectives on why countries trade.

Another critical point raised is the period covered by the analysis—2001 to 2021—during which the global economy experienced significant disruptions, including sanctions, financial crises, and the COVID-19 pandemic. The commentary questions whether these events precipitated structural changes in trade patterns and notes the lack of discussion around this topic. It is vital for research to consider how such events could have shifted trade dynamics, as ignoring them may lead to incomplete or misleading conclusions. Moreover, incorporating robustness checks and sensitivity analyses could bolster the credibility of the findings. These methods would help ascertain whether the results are consistent under various conditions and assumptions, providing a more reliable foundation for drawing conclusions about international trade. The paper utilizes variables like GDP and population, which are often highly correlated, potentially leading to multicollinearity issues. The commentary points out that the paper does not explore these correlations, which could obscure the true relationships between the variables in the gravity model. Addressing multicollinearity is critical to ensuring that the estimates produced are both accurate and interpretable.

Additionally, the interpretation of the cross-border trade index, as mentioned, appears inconsistent across product categories. This discrepancy raises questions about the model's efficacy in capturing the complexities of trade across different goods. A clearer explanation of why impacts vary by category would provide valuable insights to readers and researchers alike. The gravity model of international trade undoubtedly offers a useful framework for analysis, but it is crucial to acknowledge its limitations and the broader context in which it operates. By considering alternative trade theories, investigating the impacts of significant global events, conducting thorough robustness checks, and clarifying interpretations across diverse product categories, future research can enhance our understanding of international trade dynamics. The conversation surrounding the gravity model should not end here; instead, it should continue to evolve as scholars seek to reconcile its findings with broader economic theories and real-world complexities. As trade patterns adapt to global changes, so too must our analytical frameworks. The insights from the commentary serve as a reminder to researchers to remain vigilant and comprehensive in their approach to understanding trade.

2.1. Trade facilitation

Trade facilitation is a strategic element in today's business negotiations. It is important as it allows countries to maintain the status quo and trade at a competitive level. Therefore, it focuses on the enforcement of strong state-to-state trade rules that are most often regarded as a cornerstone of global trading. Trade facilitation: The process of managing customs processes and documentation in a more efficient, organized way. On a broader base, it covers all moves and touches which affect

the motion of goods in arranging from sellers to buyers oversupply chains worldwide. Policymakers should consider more oversight and trade facilitation to be two sides of the same coin, and therefore, both need to be addressed simultaneously. Although trade facilitation is essential for the private sector, the government needs to uphold effective oversight, which can occasionally create conflicts of interest between the two parties. In reality, when the government implements trade laws to combat problems such as smuggling, it may hinder trade facilitation for economic participants aiming to streamline processes and reduce time and costs through standardized practices, regulations, and information technology (Grainger, 2012). Different definitions have been offered to facilitate the business environment. In basic terms, it inlcudes any action related to producing and selling goods and services, defined by ongoing transactions focused on making a profit, usually with an element of risk involved. Consequently, enhancing the trade facilitation environment in developing countries is crucial for boosting their export performance (Moïsé, 2012). This aspect encompasses the procedural and documentation requirements at customs, various regulatory agencies, and ports.

2.2. Ease of Doing Business Index

The World Bank's Ease of Doing Business Index explains how difficult or easy it is for a local entrepreneur to set up and run a legal business. And for those seeking to operate small and medium commercial projects This index is compiled by the World Bank yearly with updated terms and modifications depending on the situations in nations for subsequent years. It is an important measure that provides information to economic planners, the government and internal investors in general. The study of the ease of doing business across countries involved the assessing of ten specific indicators: 'starting a business,' 'construction permit requirements,' 'electricity access,' 'property registration,' 'credit acquisition,' 'minority investor protection,' 'tax payments,' 'cross-border trade,' 'contract enforcement,' and 'bankruptcy and debt resolution' (Naderan, Moghadasi, Daliri, & Naderi, 2020). Notably, the cross-border trade index is considered so important that it is analyzed separately in the study.

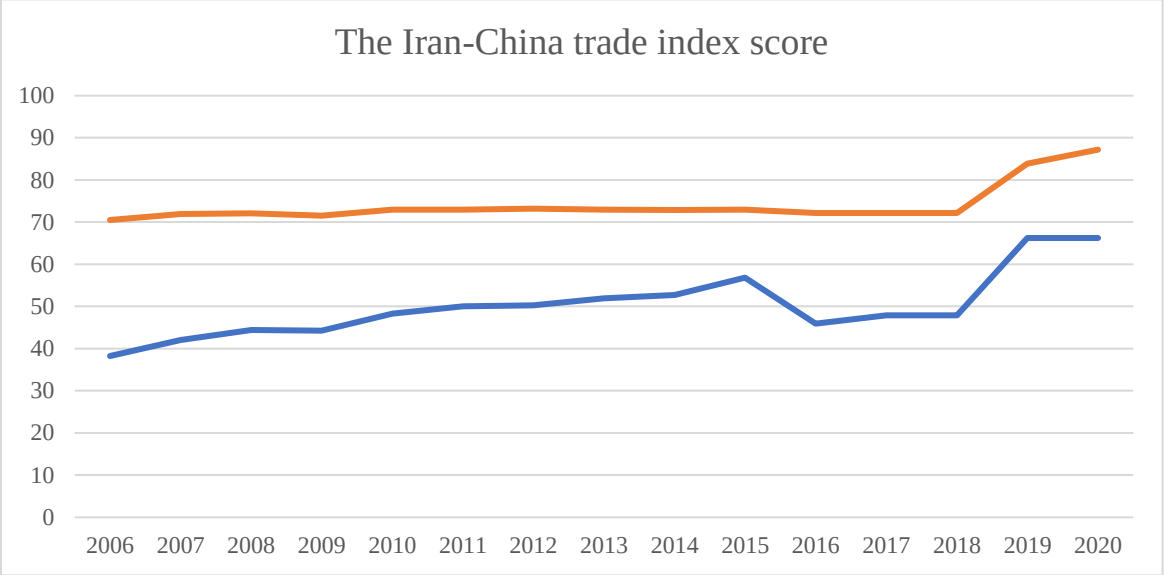
2.3. Cross-Border Trade Index

Cross-border trade is a key index acquired by the World Bank to evaluate the ease of doing business, significantly influencing the enhancement of the business environment in each country. As a result, taking into account the cross-border trade index, there is optimism for a rise in Iran's foreign trade. This index calculation considers the time and costs related to the logistics processes for importing and exporting goods. Thus, the overall assumptions for calculating the cross-border trade index are founded on two key components: 'time' and 'cost,' which are assessed and reported in two phases: 'document compliance' and 'border compliance.' As a result, improving the cross-border trade index—and, in turn, enhancing the business climate and economic growth in the country—relies on lowering the costs associated with imports and exports.

Consequently, different rules through the various preferential agreements that a country comes across in practice can result inefficiency costs to the traders besides affecting trade flow. As we can see, as long as commercial infrastructure has been significantly built out, then the chances of short-term success in partnership strategy sharply increase. Nonetheless, for states with deficient infrastructure it can be seen as a useful step towards building such infrastructure and facilitating

the necessary adjuncts to strengthen that foundation. This will have a positive impact on the potential to derive benefits from future collaborations.

The second step involves border compliance, focusing on the time and expenses associated with following the customs laws and regulations of the country. It also takes into account the pertinent rules for other mandatory inspections needed for containers to pass through the country's busiest port or border. The time and various expenses associated with customs clearance and the inspection procedures controlled by government authorities (in situations where more than 10% of the goods are used) are also considered.



Graph 1: The Iran-China Cross-Border Trade Index

Orange: China's Cross-Border Trade, Blue: Iran's Cross-Border Trade

Source: Research Findings

Chart 2.1 shows the score, or in other words, the level of the cross-border trade index. Each country is assigned a specific ranking and position according to the score it obtains. As a result, a higher score shows better business relations for the country, positioning it favorably for trade and investment. Countries are ranked in cross-border trade by organizing scores derived from the simple average of their evaluations concerning the time and cost involved in document compliance and border compliance for both exports and imports. The time component is assessed in hours, while the cost component is evaluated in dollars. Data about cross-border trade is gathered and examined using a questionnaire distributed to cargo transport personnel, customs agents, traders, and government agencies. The chart shows that cross-border trade in China has been fairly consistent at about a score of 70 for most years, but it started to increase significantly in 2018. Iran

steadily increased its score from 2006 to 2015, and in 2018, it experienced a significant jump from approximately 50 to 70 in the subsequent years.

2.4. Strategic Partnerships and Trade Agreements

Using preferential trade agreements represents the most basic type of economic integration, with many studies conducted on the impact of trade between nations. Many political, economic, and key regional and international issues reflect shared and aligned perspectives. In strategic partnerships, nations do not always possess the same economic capabilities; thus, the exact definition of a strategic partnership often differs due to its adaptable nature in relation to various issues among the participating countries. (Mirfakhrayi, Rahimi, & Sefidi Kasin, 2017). Essentially, a strategic partnership represents a more modern and flexible form of agreement.

The process of designing a strategic document involves several steps: First, the "mission," which includes the philosophy and ultimate purpose of the work, is defined. This is followed by the establishment of a "vision," representing a realistic goal or a specific timeframe for achieving the mission. Subsequently, an "analysis" of the current conditions is carried out based on the "organizational values." Finally, appropriate "goals and strategies" are formulated (Abdollahi & Yaghoubi, 2014). Some important strategic cooperations include the Joint Comprehensive Plan of Action (JCPOA) established between Iran and the p5+1 countries[2], as well as the 25-year agreement between Iran and China. When two governments desire more regular interactions at all levels, a strategic partnership engenders a higher level of agreement than before. We take an open and honest view of resolving a myriad of challenges, coming together collaboratively to agree on any matters involving both the seller and buyer. This engagement implies a long-term commitment to shared interests and the operation to fulfill their goals, but it refrains from, in essence, allying with each other.

Generally, Iran's mode of competition is participating in customs unions, preferential agreements and strategic partnerships. The resulting economies of scale enhance Iran's potential to enter the global market and attract a larger number of investors (Razini, Mirzaei Nejad, & Shirin Zadeh, 2015). However, each strategic partnership varies in aspects such as product coverage, the scope of tariff preferences, the time frames required for implementation, rules of origin, technical standards, regulations concerning protective measures, and customs laws. Moreover, on a global scale, numerous trade agreements have expanded to include areas like investment, competition, environmental issues, and labor. As a result, the numerous and varied regulations that a country encounters in different preferential agreements can lead to extra costs for traders and disrupt the trade flow. Evidently, when commercial infrastructure is well-established, the chances of short-term success in strategic partnerships are greater. However, for countries with weaker infrastructure, joining these partnerships can be a useful step toward building and enhancing that foundation. This will positively influence the ability to gain advantages from future collaborations.

[2] China, France, Germany, Russia, the United Kingdom, and the United States

According to a report by the World Trade Organization in 2011, this was true for half of preferential trade agreements that were not regional. Although these agreements are technically regional trade agreements, they have been called preferential by academia. These are also agreements that frequently go beyond the region they inhabit. For this reason, the term regional trade agreements might be judged misleading. The term "preferential trade agreements" by itself, is a multilateral way of suggesting an idea crucial to the multilateral trading system—that such pacts are in fact discriminatory. Hence, despite the fact that "economic integration" agreements are no longer self-explanatory and do not carry their old impetus as well (Bigdeli & Asadi Ziaei, 2019), it would certainly fall short of arguing exclusively in favor of preferentialism. Nonetheless, with elements of a resistance economy, the growth of regional trade exchanges on one side, and the implementation of investment-friendly regulations on the other, there is potential for achieving positive outcomes in this area.

Under the terms of these agreements, member country goods would face lower tariffs than those produced in countries not among members. Preferential trade agreements are considered to augment the multilateral trading system or potentially substitute it globally. The most critical when it comes to trade-obligations are the preferential trade agreements — they often simulate a platform for trade liberalization. The movement had a dramatic effect on global economy with world sales and purchases rising as one of the important features of preferential trade agreements (PTAs) around the globe, especially in Asia. Preferential Trading Agreements are agreements between 2 or more countries, that allows the businesses from these nations to trade on a preferential basis. This preferential treatment can be applied either on a bilateral or multilateral basis, compared to other members of the agreement. Various studies have shown that most preferential trade agreements typically consist of members from a specific geographic area, which is why they are often referred to as regional trade agreements. But as affordable internet connectivity spreads, a new trend of such agreements is taking root that not only occur spanning countries within the same region but also exist significantly outside the scope of accords made under World Trade Organization. Joint negotiations such as these present new difficulties for the multilateral trade system. Nevertheless, trade liberalization and enhanced relations among member countries offer numerous advantages. According to these agreements, the tariffs on goods produced in member countries are lower than those applied to goods produced in non-member countries. At present, around 37 percent of worldwide trade is accounted for by countries that are members of at least one preferential trade agreement. Turkey, Pakistan, and Iran are among the nations that have recently shown an interest in establishing bilateral trade agreements in the Middle East, especially with neighboring Muslim countries. These agreements are also quite relevant for developing nations. In numerous developing nations, trade and investment are regarded as the primary elements affected by economic convergence. Because regional cooperation operates on a smaller scale than the global economy, participants encounter fewer economic and trade difficulties. This ultimately enhances their relative and competitive advantages, encouraging the influx of foreign investors and technology.

2.5. The Role of Customs in the Strategic Partnership Document

The Islamic Republic of Iran Customs Administration is a governmental organization that functions under supervision Ministry for Economic Affairs and Finance. It is the 3rd organization for generating revenue of a country because it plays an important role in foreign trade processes. Medium — It is the de facto economic border guard of every aspect/entry point in country. Upgrades also target an organization responsible for enforcing customs laws—regulating the movement of goods in and out, transit procedures, duty collection (and other taxes) technical requirements—and promoting trade. A good customs system must minimize the export process and base it on true costs, allowing additional services such as entry to processing under bond for subsequent re-export. In respect of imports: to expedite the import procedure, fix correct rates of duties and taxes, proper valuation and avoid under/over invoicing smuggling in disguise as legitimate imports. We also model the impact of reducing custom processing time, which when combined with trade facilitation would improve producers´ competitiveness and consumer welfare by lowering costs. Secondly, this is one of the important targets for Customs to speed up in convicting smuggling (in judicial area), thus enabling it to address economic disruptors at export & import sector within country. This agent is integral in the smooth running of foreign trade activities, a key constituent of cross-border trade index. Efficient customs help in facilitating international trade and increase the exports of a country.

Especially in the face of current political and economic conditions within Iran (economic sanctions) consumer confidence is a burning Issue which warrants attention across business communities domestic ward as well exporters. One of the pillars of 20-Year Vision Document for the Islamic Republic of Iran is its economic package. Business metrics have to be on the rise in order for people and a region to hold the first place. The Cross-Border Trade Index is vital for governing the business environment and placing a country at par with its competing nations. In the Cross-border Trade Index, Iran experienced a notable decline, dropping from 87th place in 2007 to 153rd in 2014—a decrease of 66 positions. However, the years between 2016 and 2020 marked a rise in Iran's trade facilitation index to its highpoint in 121st position out of190 countries during year of rage. Its worst place was in 2017 when it ranked at 170 out of a total of 190 countries. The rank of Australia in this index was 167 in 2016, 166 in 2018 and 123 in 2020.

3. Experimental Studies

Several studies have examined the influence of trade agreements and trade facilitation on both Iran's economy and the global economy. Researchers have employed gravity models and other econometric methods, typically finding that such agreements significantly and positively impact bilateral or multilateral trade between nations. Accordingly, the subsequent studies are categorized into two groups: domestic and international studies.

3.1. Domestic Studies

In a comprehensive analysis of systemic developments and strategic relations between Iran-China, Shariati-Nia (2022) started with the other add-on query regarding how containment evolved in western policy designing. The formation of this strategic alliance between China and Iran is driven by multiple factors as well. It was more than a contract; it represents our long-term localized perspective — this is what the most comprehensive strategic cooperation ever. This alliance is predicated on a different framework and rules compared with prior compacts. Top of the list is

structural change both in public and private sectors, which are main drivers for political-economic advancement.

Farzi et al. (2021) analyzed and forecasted the impact of the economic agreement between Iran and Turkey on the production, export, and import levels of the agricultural and industrial sectors, using the Global Trade Analysis Project (GTAP) model for the 2011-2025 period. The findings suggest that while the enforcement of the agreement has caused a decline in production for certain product groups during specific years, almost all sectors are expected to boost their production levels by 2025.

Amiri et al. (2021) develops a model aimed at improving cross-border trade in Iran in their research. Research indicates that there are two components on which trade facilitation largely depends such as standardization of processes and regulations, needed to pave way for formulation the strategies related with business & economic development.

Gravity model analysis of developing countries — Rezayi (2020) used the gravity equation to explain the two-way interaction among developing nations by employing fixed effects weighted least squares on panel data for 2006–18. The results of this research imply that reducing trade facilitation indeed reduce trade cost and improve export performance in the developing countries. Besides, when there is trade facilitation measures implemented by both countries, it increases industrial goods bilateral trade and facilitates an increase in the exchange of these items between them.

Amini Zadeh et al. (2019a) investigated how Iran's participation in trade agreements impacted the country's pistachio exports, using the gravity model, over the timeframe of 2001 to 2016. Trade agreements significantly contribute to lowering trade barriers and promoting economic growth in the country by reducing business expenses. The findings show that agreements have led to a meaningful and positive impact of 38 percent on Iran's exports.

Rafiei et al. (2019) analyzed the role of trade in quality-fed fisheries for assessing its exports from Iran. For this purpose, we estimated a gravity model using export data from 25 Asian countries that cover about 88% of exports (in value terms) to Iran during the period between 2001 and 2016. Therefore, depending on the results, the participation of Iran in trade agreements has a significant positive effect on fisheries exports to trading partners. The findings regarding the interaction between trade agreements and deterrent factors suggest that trade agreements have diminished the influence of deterrent elements, including geographical distance. Consequently, exporters should leverage the opportunities provided by trade agreements to discover new markets among member countries and develop effective long-term marketing strategies for exporting to these markets.

Asgari (2019) studied the influences on Iran's exports to the Eurasian Economic Union, using a gravity model based on panel data from the years 2007 to 2016. The findings suggest that establishing the preferential trade agreement between Iran and the Eurasian Economic Union will result in a 43% boost in Iran's exports.

Najjar and Karimzadeh (2015) studied the factors affecting Iran's bilateral trade with 17 trading partners by applying a gravity model and using panel data from 2002 to 2013. The results of the

estimation show that, gravitationally speaking, determined Iran with respect to bilateral trade between selected countries. There is an inverse relationship between distance and trade or, depending on the context, one percent increase in distance will lead to a one percent decrease Iran's trade with those countries. Likewise, a one percent rise in the number of business partners will lead to a 37 percent boost in Iran's trade with them. The GDP variable aligns with the gravity model and shows a positive correlation with trade. When the gross domestic product of Iran's trading partners rises by one percent, Iran's trade experiences a three percent increase.

Ahmadian Yazdi et al. (2014) studied how trade liberalization and economic growth influenced the non-oil bilateral trade balance between Iran and China. Their study used the autoregressive distributed lag (ARDL) approach and covered the period from 1981 to 2012. The findings suggest that as trade freedom between Iran and China increases, both in the short and long term, the country's trade balance will likely face a deficit. Economic growth, both in the short and long term, negatively impacts the bilateral non-oil trade balance between the two countries. On the other hand, the real exchange rate positively impacts Iran's trade balance, showing that the devaluation of the national currency has contributed to an enhancement in the trade balance.

Khaki Poor (2012) explains the business environment index and the international trade index in his article. He highlights that, based on World Bank statistics, Iran's ranking has consistently been low due to a lack of focus and minimal efforts from the country (Danaei, Parhizkar, Hosseini & amiri, 2021). Since this index defines trade facilitation, it deserves greater attention.

Sagheb et al. (2011) carried out a study assessing the effectiveness and phases of regional trade agreements between Iran and Pakistan for the years 2006 to 2008. The findings suggest that preferential trade agreements play a crucial role in lowering tariffs and enhancing trade facilitation infrastructure, which, along with the increasing trend of development, is significant for regional trade.

MoradHasel et al. (2008) investigated the factors influencing the business environment and trade facilitation. They used panel data from two groups of countries: developing and developed, covering the period from 2000 to 2008. The findings suggest that information and communication technology have a notable influence on the business landscape and trade facilitation in developed nations, whereas its impact in developing countries is not well-defined. This indicates that developed nations have successfully leveraged the capabilities and benefits of information and communication technology to foster economic growth. In developing countries, the influence of information and communication technology on the business landscape and the ease of trade is not evident. The results show that information technology has a positive impact on the business environment and trade facilitation in developed countries, while its effects in developing countries remain ambiguous.

3.2. International Studies

Beverelli et al. (2018) studied how the quality of institutions affects trade between 64 impoverished and affluent countries during the period from 1988 to 2006. By using national institutions as a variable and analyzing the direct influence of specific institutions in each country on trade within the gravity model framework, substantial evidence emerges in countries with higher quality

institutions concerning their trade activities. Furthermore, countries with stronger institutions influence imports more than exports in poorer nations compared to wealthier ones.

Grainger (2012) explores customs regulations and trade facilitation within the European Union. The key findings of this study suggest that the reduction in trade transaction costs at the interface between trade and government has been achieved through WTO trade round negotiations, supply chain security initiatives, development and capacity-building programs, and several customs modernization efforts.

Moïsé et al. (2012) examined trade facilitation indicators that evaluated the outcomes of OECD[3] indicators. This study evaluated the economic effects on non-OECD countries of adopting different trade facilitation measures by applying a gravity model using panel data (2002 to 2010). According to the study, this implies that trade facilitation reduced trade costs by 1.9 percent.

4. Iran and China Trade Relations

Throughout the years, between 1949 and nowadays, Chinese foreign policy has been based on various ideas: anti-capitalism, three worlds theory, peaceful coexistence, pragmatism, open-door-policies. All of these combined have definitely influenced to define China's prospects and activities worldwide. An important feature of China's foreign policy under the Communist Party has been its departure from ideological interests and promotion to pragmatic initiatives. Kissinger characterizes the 1970s as the era when Chinese pragmatism emerged on the international stage. During this period, he says that the Mao-modelled ideological policies were derided and politicians in Beijing could see what they believed was a great danger to China posed by the Soviet Union who possessed significant military forces. In turn, acknowledging the nature of this danger has led to a change in China´s foreign policy from ideology to informing its geopolitical calculations. One of the signals pointing to this adjustment has been trying to rebuild ties with U.S. China only embraced this pragmatism after Deng Xiaoping took over the reins and began to practice a pragmatic reformist model. In recent years, China has focused on strengthening its relationships with economically promising countries that can support its economic development, driven by its rapid economic growth and increasing dependence on energy resources. This approach is rooted in a policy of active pragmatism, with particular emphasis on Iran, the Middle East, and the Persian Gulf as priority regions. Over the past few decades, China has made important strides by fostering close and peaceful connections across various sectors, particularly through numerous trade relations with Iran.

Year	Total trade of Iran (million dollars)	Iran-China Trade all groups of goods (million dollars)	Percentage of total trade with China all groups of goods	Iran and China's Exports and Imports (Goods under Study)	Iran-China trade percentage / all groups of goods (the studied goods)

[3] Organization for Economic Co-operation and Development

2017	101,441	22,248	0.22	8,722	0.39
2018	87,839	19,701	0.22	10,538	0.53
2019	85,054	20,835	0.24	6,166	0.30
2020	73,751	18,916	0.26	9,485	0.50
2021	101,436	27,338	0.27	3,503	0.13

Table 1: An overview on the shape of overall commerce of Iran and China along with other countries concentrating specific commodities

The aforementioned table presents that Iran's total trade with other countries reached 101,436 million dollars in 2021 and amounted to 73,751 million dollars in 2020. In recent years, trade between Iran and China reached $27.338 billion in 2021, making up 27% of Iran's total trade. In 2020, this trade amounted to $18.916 billion, or 26% of the total, positioning China as Iran's leading trade partner. Out of the mentioned percentage, 13% and 50% of trade with China pertain to selected non-oil products (such as iron, copper, steel, and metal and alloy goods, which have had high export values in recent years). This stresses the dominant role of oil trade in the past year and the relatively small portion of non-oil exports, whereas in previous years, the percentages were different and more favorable.

4.1. Joint Comprehensive Plan of Action (JCPOA)

By agreeing on the primarily nuclear issue and signing the Joint Comprehensive Plan of Action (JCPOA) with the P5+1 countries (China, France, Germany, Russia, the UK, and the US), Iran made a significant move toward normalizing its relations with the West. This issue is evident in Iran's nuclear negotiations and its interactions with world powers. Iran views the agreement as a means to enable the country to develop a domestic nuclear program focused on scientific and economic factors, specifically for peaceful purposes. This is intended to foster trust and align with the previous agreement, encouraging international cooperation in this field. The agreement frames that it will result in the complete removal of all sanctions imposed by the United Nations Security Council, as well as any multilateral and national sanctions associated with Iran's nuclear program. This agreement also includes access to commerce, technology, financial assistance, and energy resources. The European Union, for its part, will cancel the sanctions in 90 days following implementation relating to 'the export of graphite; raw or semi-finished metals such as aluminum and steel', reads Clause 18 section F on lifting of restrictions. It also looks to construct multilateral trade and reduce the cost of sending goods in other regions. Even though some of them were established at the inception of negotiations, member countries could not resolve their disagreement and once again commenced aggressive counter-action against Iranian nuclear activities. However, China was not one of the member states in JCPOA so it checked over its terms & conditions and then crept with its strategic partner- Iran. This article extensively discusses the commercial

engagement with Iran concerning precious metals, including iron, copper, aluminum, and alloy products.

4.2. Iran-China 25-year Cooperation Program

Regarding the 25-year comprehensive cooperation agreement between Iran and China, the Islamic Republic of Iran and the People's Republic of China have elevated their bilateral relations to a "comprehensive strategic partnership" through the release of joint statements. Based on the proposal from the Iranian side to create long-term relations with China over a period of 25 years, both parties indicated their willingness and readiness to engage in discussions and negotiations for a long-term cooperation agreement in paragraph 6 of the statement. During a meeting with the Chinese President, the Supreme Leader described the 25-year strategic agreement between Iran and China as entirely valid and wise. Since February and March of 2016, the Ministry of Foreign Affairs of Iran has conducted multiple meetings in partnership with different domestic ministries and organizations. These meetings were focused on determining priorities, creating a draft, and outlining the content to be included in this document. On April 7, 2020, the foreign ministers of the Islamic Republic of Iran and the People's Republic of China signed a detailed cooperation agreement between their two countries. This document outlines a political, strategic, economic, and cultural framework aimed at exploring different areas of collaboration between Iran and China. It is important to note that this document does not confer any exclusive rights.

Improving cooperation within the private sector by eliminating obstacles, simplifying financial and banking partnerships, customs regulations, and deregulation. This includes collaboration in developing special and free trade-industrial zones, particularly along the Makran coasts, and reinforcing partnerships in agriculture and knowledge-driven sectors. There was also a strong emphasis on facilitating investment and project financing, along with other economic collaborations. Enhancing infrastructure, such as maritime and rail transport, while overcoming associated challenges; promoting investment in the production of machinery for industrial and mining purposes; exploring and equipping mines for extraction; and generally advancing the sectors of industry, mining, agriculture, and health, among others. The document presents the development of infrastructure, which includes maritime and rail transport, the elimination of related challenges, the promotion of investment in the manufacturing of industrial and mining machinery, as well as the exploration and preparation for mining operations. Overall, it aims to advance the sectors of industry, mining, agriculture, health, and others.

5. Presentation of patterns, estimation techniques, and analysis

5.1. Research Framework

The attraction models assess the volume of trade between two nations. This model is based on Newtonian mechanics, which states that the gravitational force between two objects is directly related to their masses and inversely related to the distance separating them (Kazerooni, 2016). This assesses how independent variables, such as trade facilities, influence the dependent variable of trade value (exports + imports) between Iran and China, measured in dollars, from the years 2001 to 2021 in the Persian calendar.

Baker (1987) carried out a comprehensive theoretical analysis of the foundational concepts underlying the gravity model in international economics. He mentions two main issues related to the model while discussing its advantages. To begin with, the model does not have solid theoretical underpinnings, and the effort to relate this empirical model to a theoretical framework raises doubts. Additionally, the gravity model fails to capture substitution effects in international trade, which means it neglects the 'diversion and creation effects of trade.' As a result, the gravity model cannot separately quantify these effects. Since many countries compete with each other in exports, when one country imports from a specific nation, it can serve as a replacement for imports from a rival country. The gravity model is unable to accurately estimate these kinds of deviations, and it lacks the ability to account for the substitution between flows. Consequently, it tends to produce trade flow estimates that are biased upward. Nevertheless, both critics and users of the model agree that its simplicity is one of its greatest strengths. This simplicity allows it to work with a limited number of variables, which facilitates calculations and makes managing data issues more straightforward.

In the majority of empirical studies, the gravity model demonstrates a strong fit for trade relationships, making it widely used in trade analyses. As previously stated, the required data and information for this model are readily available, and the outcomes derived from it align with reality.

In the most basic scenario, with no barriers or incentives in place, bilateral trade flows can be modeled as a direct function of the economic size of both countries and an inverse function of the geographical distance between them.

$$T_{ij} = F(GDP_i , GDP_j , D_{ij})$$

In conclusion, drawing from the gravity model and influenced by the theoretical foundations and previous empirical studies, the following fundamental econometric model will be employed as the empirical framework for this research, which will be formulated using the panel data econometrics approach.

$$LTrade_{ijt} = \beta_0 + \beta_1 ltfc_{it} + \beta_2 ltfi_{jt} + \beta_3 popc_{it} + \beta_4 popi_{jt} + \beta_5 Lgdpc_{it} + \beta_6 Lgdpi_t + e_{kt}$$

In which:

The variable *i* shows country i, *j* refers to country j, and *t* represents time (year). According to this, the dependent variable L$Trade_{ijt}$ signifies the logarithm of the trade value (exports plus imports) between country *i* and country *j* in dollars for the year *t*. The variables $LTFc_{it}$ and LTFi$_{jt}$ presents the trade facilitation conditions of country *i* and country *j*, respectively, focusing on the reduction of tariffs and non-tariff barriers. For this purpose, the cross-border trade index of the country has been regarded as a measure of its position in terms of trade facilitation.

Along with the trade facilitation variable, other control variables have also been incorporated into the model, which include:

Gdpi = GDP of country i

Gdpj = GDP of country j

Popi = Population of country i

Popj = Population of country j

ε_{kt} is the stochastic error term, where the index k is considered for each ij pair. For instance, the index will be k=1 for the country pair 1 and 2, and k=2 for the country pair 1 and 3, continuing in this manner. In this model, k signifies a bilateral relationship, meaning that each country will have a bilateral relationship with each of its trade partners. As a result, K will significantly exceed the number of countries. In this model, the population variable is used as an indicator of market size, and the gross domestic product variable reflects the purchasing power within the market. it has been anticipated that as countries' GDP increases, their trade tariffs will decrease, leading to an increase in bilateral trade between them.

5.2. Data Introduction

Based on the pattern presented above, the hierarchy of the used variables is described as follows:

Variable	Introduction of the model variables	Variable Type
Ltrade	The total trade (both exports and imports) of Iran, expressed as its natural logarithm, serves as the dependent variable in this research.	Dependent Variable
LGDPi	The natural logarithm of Iran's GDP, adjusted to constant prices from 2015 (in millions of dollars), is presented here, with the information sourced from the statistical database of the World Bank.	Explanatory Variable
LGDPc	The natural logarithm of China's GDP, adjusted to constant prices from 2015 (in millions of dollars), is presented here, with the information sourced from the statistical database of the World Bank.	Explanatory Variable
Ltfi	It presents Iran's cross-border trade index, reflecting the simplification of trade processes and the improvement of the business environment.	Explanatory Variable
Ltfc	It presents China's cross-border trade index, reflecting the simplification of trade processes and the improvement of the business environment.	Explanatory Variable
Popi	Population in Iran of any year, localized according to the World Bank by means of thousands. This statistic is	Explanatory Variable

	directly taken from World Bank's statistical database, in regarding to Population of Iran.	
Popc	Population in China of any year, localized according to the World Bank by means of thousands. This statistic is directly taken from World Bank's statistical database, in regarding to Population of Iran.	Explanatory Variable

Table 2: Introduction of the model variables

5.3. Estimation And Analysis Method

In the first step for panel data, F-Limer test was employed to check whether our data is pooled (static regression) or it is meant from a dynamic form. The operation may look as a panel regression from the results. The most appropriate regression model for the coefficient estimation between the pooled and panel (fixed effect or random effects) models was tested by Hausman Specification Test. We will also check the standard assumptions of homoscedasticity and no autocorrelation in the error terms (tested). For problems met if these assumptions are not satisfied, appropriate action will be taken to fix the issue. Using long-run estimators depended on the findings of unit root and cointegration tests that constituted step two. Pesaran & Shin unit root tests was performed in the first stage which indicates all variables are stationary at level. The variables were chosen depending on the results of heteroskedasticity test and if cointegration was found between any series, then unit root test is performed. In order to test for long-run relationship among variables of the model, Kao cointegration was conducted and it verified a longer lasting relation between research dimensions. The appropriate model was identified through F-Limer and Hausman diagnostic tests between Pooled vs. Random, Fixed effect estimations which concluded the random effects estimation for our current study data capabilities. Using the F-Limer and Hausman diagnostic tests, we identified the adequate model from among combined regressions and integrated regression models to estimate a random effect. At the end of this chapter, we would have tested these long-term and short-term coefficients derived for each, to then discuss whether or not our Research Hypotheses are accepted.

Variables	Coefficient	Z-value	Probability Level
Ltfc	0.0123249	0.61	0.540
Ltfi	0.0233624	1.87*	0.061
Popc	$4.81\times e^{-9}$	4.25***	0.000
Popi	$-5.58\times e^{-7}$	-10.90***	0.000

Lgdpc	4.031014	4.99***	0.000
Lgdpi	9.534326	9.26***	0.000
Cons	-321.2089	-17.64***	0.000

* The coefficient is significant at the 10 percent level.

** The coefficient is significant at the 5 percent level.

*** The coefficient is significant at the 1 percent level.

Source: Research calculations (Stata 17 software)

Table 2: Outcomes of estimating the gravity model through the feasible generalized least squares (FGLS) regression approach using the indirect method

In conclusion, we will directly examine the estimation of the gravity model through the FGLS regression method.

Variables	Coefficient	Z-value	Probability Level
C	-212.3844	-7.948325***	0.0000
POPI?	-2.83E× e^{-7}	-9.200675***	0.0000
POPC?	6.67× e^{-9}	3.599004***	0.0029
LGDPC?	0.645045	2.071478*	0.0573
LGDPI?	8.577995	7.258207***	0.0000
LTFC_1	-0.010733	-0.596446	0.5604
LTFC_2	-0.115748	-1.895939*	0.0788
LTFC_3	-0.139307	-2.298567**	0.0375
LTFC_4	-0.162869	-2.682775**	0.0178
LTFI_1	0.032869	2.604529**	0.0208
LTFI_2	0.075424	2.347529**	0.0341
LTFI_3	0.140723	3.419736***	0.0041
LTFI_4	0.145032	3.420754***	0.0041

_1_C	-3.054207	—	—
_2_C	4.978878	—	—
_3_C	-3.669986	—	—
_4_C	1.745315	—	—
R-squared	0.946691	Durbin-Watson stat	2.162120
Adjusted R- squared	0.928518	F-statistic	0.000000

Table 3: Outcomes of estimating the gravity model through the FGLS regression approach using the direct method

* The coefficient is significant at the 10 percent level

** The coefficient is significant at the 5 percent level

Source: Research calculations (EViews software)

In the following section, we will thoroughly examine the results obtained. Nevertheless, based on the findings, the hypothesis of autocorrelation in the disturbance terms can be dismissed, as the value of the Durbin-Watson test statistic is approximately two. The significance of the regression model mentioned above has also been validated through the F-statistic. The R-squared value of the model reveals that 49% of the changes in the dependent variable can be accounted for by the independent variables present in the model. Thus, the values mentioned support the overall reliability of the estimated model.

5.4. Results Analysis

This study examines a sample consisting of four categories of non-oil commodities: iron, copper, steel, and alloys. According to the Islamic Republic of Iran Customs statistics, these items have been among the top exports to China in recent decades. The research focuses on the period from 2001 to 2021. To analyze the data, a gravity model was used with a panel data approach. Initially, coefficients were estimated using EViews and Stata software. However, for various reasons, these software tools alone could not fully satisfy all the research requirements. The trade volume logarithm (reflecting the exports and imports between Iran and China) is treated as the dependent variable, while the GDP of both nations, their populations, and the cross-border trade index are examined as independent variables. As a result of the data's nature, a logarithmic model estimation was ultimately performed.

Based on the findings from the indirect method of composite data in the generalized least squares regression model, (Table 2), it can be observed that the GDP sign for both Iran and China is positive and statistically significant, with coefficients of 9.53 and 4.03, respectively. Based on the

analysis of the previous state, the outcomes for this variable remain unchanged. The effects of the cross-border trade index are different for groups of goods. Before, cross-border trade was advantageous for Iran and China's influence was negligible. When we calculate the cross-border trade index for each group of goods separately, Iran has a positive value with factor 0.02 in this rather loose exercise. China meanwhile has a coefficient of 0.01 for all group that provides compensating influence across the board as well China initially encountered problems with data availability in some years. However, the evolution of a friendly economic landscape can always be seen as an untimely intervention (at a cost), and still requires investments to get started. In the past, productivity has often come at a cost to institutions or governments who must pay for modernization and process improvement. Given that our selected category includes non-oil products, enhancing the processes of transportation, loading, and transferring these heavy shipments can be both expensive and time-consuming. For several years, shipping costs and product prices are expected to rise, but eventually, through the principle of increasing economies of scale, these costs and prices will decline. On the other hand, the rise in prices driven by the development of China's infrastructure results in a decline in trade between Iran and China. This means that the improvement of conditions and the efficient utilization of production, transportation, and documentation related to the country's mines are progressing slowly. As product prices increase, the cost of importing goods for Iran also rises, negatively impacting Iran's foreign trade. Consequently, due to China's extensive trade market, greater ease in trade leads to the production of goods with higher economic value. Additionally, since China engages in trade with many major countries worldwide, including the European Union, it is able to export high-quality products at faster rates and higher prices, given the economic situation and sanctions affecting Iran, to other nations. The rise in this index negatively affects Iran's international trade. When analyzing the populations of the two countries, it can be argued, as has been done previously, that the growth in China's population contributes to an increase in imports of goods from Iran, while the rise in Iran's population leads to a reduction in the export of domestic goods abroad. Consequently, China's population coefficient is positive at 4.81, whereas Iran's population coefficient is negative at -5.5.

The results obtained from the direct method of composite data in the gravity model, as shown in Table (3), indicate that as the GDP of Iran and China rises, both parties' willingness to engage in trade and the volume of commercial transactions increase as well. Accordingly, the results show that Iran and China's GDP are significant at a level of 1% with coefficients values equal to 8.57 while it equals up to 0.64 respectively These are the countries in which a direct relationship between trade and GDP is found. The cross-border trade index has a positive and significant impact on Iran, with coefficients 0.03, 0.07, 0.14, and 0.14. Therefore, improving business with international relations and efforts to promote expatriates in Iran can substantially help foreign trade. Finally, for China's cross-border trade index, the sign of coefficients reversed compared to (c), but it is not significant. The population analysis shows that as China's population grows, it creates high internal demand for exported goods. Or, Iran's imports from China declined and its exports to it increased. The results suggest a large positive coefficient of 6.67 on the Natural Logarithm Scale for China suggesting that our Exports increase to this country as its population grows. Iran's large population presents some issues of economies scale, particularly in the agricultural and transport sectors where labor is relatively cheap but capital is dear. Some problems

are easy to resolve: other raw materials needed for industry will merely never be available because they are inherently scarce or otherwise difficult to access geographically.

6. Conclusion and Recommendations

The research findings suggest that as the GDP of Iran and China rises, the interactions and trade between these two countries also increase. This is true both in terms of general estimates and when analyzing the specific impacts of different groups of goods on the independent variable. Overall, it has had a significant and positive effect on Iran's foreign trade. With the rise in Iran's population, there is an increase in the consumption of goods, including those examined in this study. As a result, the export capacity of Iran is decreasing and foreign trade with this country Is getting smaller. Conversely, the increase in population in China has played a significant role on foreign trade with Iran since Chinese populations need to consume more and that is why they are eager for Iranian goods. This analysis is applicable for both overall estimations and for assessing the individual impact of each group of goods on the independent variable. Cross-border trade index did not clarify the performance of all five measurements on same scale. In the end, it was concluded that This period turned out to have no effect on China's across lines trade list concerning Iran import. But when we examined the influence of each good on Iran's foreign trade separately, it became evident that effect is negative. This arises because implementing trade facilitation for these goods is challenging and time-consuming, given their characteristics (heavy products and difficult transportation), both in practical terms and in cost assessments. And as a result, this leads to manufacturing higher quality products and better transportation. The estimates collected by the researcher suggest China suffered from cross-border trade index, concerning making business easier. The cost of goods from China to Iran (as part of the sanctions policy today) is immediately higher. The effect of cross-border trade index on Iran is positive in whole and when analyzing the impact level (for different product groups) over foreign trade between this country. Facilitating trade, be that for production, warehousing and transfer or transportation loading up filled a largely significant role in all these processes– An analysis revealed. Although the costs for upgrading the export procedures for these goods, including transportation and customs, as well as more accurate cost assessments, may rise to some extent, the value of the exported goods has also increased. Therefore, the rise in Iran's cross-border trade index positively affects its foreign trade. As a result, it can be inferred that strategic partnership agreements, including preferential agreements and customs unions, as well as other accords that lower monetary and non-monetary costs in bilateral trade between nations, could positively influence Iran's foreign trade.

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