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INDIRECT NON-TRADE BARRIERS IN INTERNATIONAL TRADE AND THEIR IMPACTS ON NON-OIL EXPORTS OF AZERBAIJAN

Doctoral PhD Dissertation

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1. INTRODUCTION

International trade is the cross-border exchange of capital, goods, and services. It has existed historically, as evidenced by the Silk Road, Amber Road, and Uttarapatha. Foreign commerce constitutes a significant portion of the gross domestic product (GDP). Thus, in recent centuries, the social, political, and economic importance of foreign trade has been rising.

From an economic perspective, the aim of foreign trade is to bring goods and services that are not available in the domestic market and to improve welfare in domestic market through transfer of local products to foreign markets. The ultimate objective is to increase welfare levels of individuals, companies, and indirectly society. Foreign trade transactions consist of activities that are carried out to validate the interests of business entities (French, 2016; Reyes-Heroles *et al.*, 2020).

Exports facilitate international trade and stimulate domestic economic activity by creating employment, production, and revenues. A trade surplus boosts a nation's economic expansion. Increased exports are indicative of high production levels of factories and other industrial facilities, as well as higher employment rates to maintain these factories.

Exports play a pivotal role in fostering economic and social growth through impacting economic expansion and poverty reduction. As a result of the prosperous outcomes in South-East Asia and Latin America, developing countries have included exports into their growth strategy. The importance of imports in bringing foreign technology and knowledge into the domestic economy has also been emphasised in contemporary growth models. New technologies can be integrated into imported intermediate goods like machinery and equipment. This leads to workers to become accustomed to new technology and labour productivity rises over time (Ayob *et al.*, 2023; Ma and Lu, 2011).

Global trade provides opportunities to be exposed to new products and markets for consumers and countries. One important aspect of globalization is the rise in international trade. For firms today, importing and exporting goods may be quite advantageous. While exporting may boost the revenues of medium and big firms, importing can assist small and medium-sized enterprises grow and expand by connecting them with larger markets overseas. Some other advantages of international trade are increased revenues, enhanced reputation, longer product lifespan, easier cash-flow management, better risk management, benefiting from currency exchange, access to export financing, and disposal of surplus goods.

In the balance of payments, exports and imports are accounted for current account of a country. The balance of payments is statement of all payments or monetary transactions between a country

and others during a specific period. The statement of balance of payments includes capital account and current account. The transactions in central bank reserves and financial instruments form capital account. On the other hand, the current account includes a nation's net trade in goods and services, its net earnings on cross-border investments, and its net transfer payments.

To improve international trade performance, governments intervene their foreign trade activities and try keep export and import levels under control through setting policies and rules. The main aim of such interventions is to achieve favourable interests and continuous gains. Therefore, since trade interventions of governments are for the sake of own benefits, their actions might affect the entire world trade (Egan and Guimarães, 2017; Lin *et al.*, 2023). Apart from direct government interventions, there could be policies implemented that could indirectly affect export performance of a country and become barriers for foreign trade. Such obstacles are considered non-trade barriers which are elaborated in this study (Mehtiyev and Magda, 2019).

A state intervenes its international trade activities with the aim of increasing employment, ensuring trade balance, protecting infant industries, eliminating market failures that do not meet the conditions of full competition, and improving national security and income distribution (Kinzius *et al.*, 2021). Many countries adopt protectionist trade policies to reduce trade deficit. These objectives are in line with the mercantilist doctrine that the trade surplus is accepted as nationally beneficial. However, in fact, substantial number of criticisms have been made about the foreign trade balance argument. First, the distinction between a desirable trade surplus and an undesirable trade deficit has not been clearly identified. For instance, if a country's economic growth is higher than that of other countries, it may lead to an outward trade deficit. In this case, the foreign trade deficit cannot necessarily be attributed to an unhealthy economy. In addition, policies that reduce imports may adversely affect exports that rely on imported raw materials and intermediate goods (Mehtiyev and Magda, 2022b). Thus, policies aimed at consistently maintaining higher exports than imports may not always be applicable. In protectionist policy implemented economy, consumers are subject to complex and inevitable small individual costs. While the overall economic impact may be significant, the individual cost to each consumer remains relatively low (Grübler and Reiter, 2021).

1.1. Problem statement

Foreign trade activities are being expanded in the recent decades. Since foreign trade has direct impacts on economic growth of a country, governments encourage their exporters as well as the imports which are demanded by citizens (Mehtiyev, 2020). Governments intervene foreign trade

with the purpose of keeping it under control. Usually, such interventions ultimately result in trade barriers.

There are several practices that limit the growth of foreign trade volume globally. One of such practices is tax regulations that is also known as tariff. Any other practice applied on foreign trade activities are denominated as non-tariff barriers (NTBs) (Dhingra *et al.*, 2023). Moreover, there are non-trade barriers that indirectly affect foreign trade as well. The impacts of such hindrances are usually hidden as they are not elements of trade activities while the impacts could be significant on trade (Mehtiyev and Magda, 2019). Those barriers and their characteristics have never been differentiated and from other NTBs.

Furthermore, impacts of indirect non-trade hindrances collectively have never been studied to best of my knowledge. Even though causality of some variables to trade have been analysed in the past, they have never been recognised as indirect trade barriers. Understanding NTBs from different perspectives can offer new insights into trade policy and economic strategy, shedding light on their wider implications for global trade dynamics and economic development (Tai, 2021; Yoganandan and Vasan, 2022). Therefore, this research examined key NTBs, assessed the collective impact of certain indirect hindrances, and derived conclusions based on the findings by identifying them as indirect non-trade barriers.

1.2.Significance of the study

The inspiration to make this research acquired by the fact that there have not been publications about non-trade barriers. Although there are plenty of research done about tariff and non-tariff barriers, non-trade barriers and their characteristics have never been differentiated (Mehtiyev, 2020). Thus, through this research non-trade barriers and their impacts on economy and international trade were analysed.

Since oil and oil products account for about 90% of all exports from Azerbaijan, the country's export volume is heavily reliant on the oil prices. The primary source of trade surplus is oil exports (Mehtiyev *et al.*, 2021). Oil prices directly affect the exports of Azerbaijan and, by extension, the country's total trade balance. While other factors would not considerably affect Azerbaijan's total exports, the volatility of oil prices is a major effect (Mukhtarov *et al.*, 2021). Stated differently, the impact of indirect non-trade obstacles on oil exports is negligible. Non-oil sector trade is nevertheless hampered by several non-trade barriers. The study thus seeks to determine the degree to which Azerbaijan's non-oil exports are impacted by non-trade barriers.

1.3. Objectives of the study

The primary objective of the research is to ascertain indirect non-trade barriers, examine their attributes, and evaluate their effects on Azerbaijan's non-oil export performance. The study elaborated and analyzed four primary non-trade barriers: currency rate volatility, country reputation, R&D spending, and subsidies. The focus county for evaluating the effects of non-trade barriers is Azerbaijan.

The other objectives of this research are as follows.

- Identifying non-trade barriers and their characteristics.
- Elaborating non-trade barriers and distinguish them from other trade barriers.
- Illustrating effects of non-trade barriers on economy.
- Analysing significant hindrances among non-trade barriers and drive empirical results.
- Analysing cases where indirect hindrances impacted international trade to connect the research with real life cases.

Furthermore, the research aimed to provide useful insights by drawing several sources of information. Using different types of data, based on below four elements of research, the result was driven in an analytical framework. These approaches were combined to provide a unified basis for analysis.

1. Literature review on the existence of non-tariff barriers.
2. Differentiation of non-trade barriers from other non-tariff barriers (NTBS).
3. Multiple analyses and case study indicating impacts of non-trade barriers.
4. A review of policy implementations on exchange rate volatility.

1.4. Research questions

This study will attempt to answer the following research questions:

- What are non-trade barriers and their characteristics?
- What differentiates non-trade barriers from other trade barriers?
- Does exchange rate volatility impact export performance of Azerbaijan?
- What are the policies to keep exchange rate volatility at minimum in the long-term?
- Do non-trade barriers have any associations with non-oil exports of Azerbaijan?
- Do non-trade barriers impact and cause non-oil export trade balance change?

Apart from the above research questions, preventive actions against non-trade barriers and the ways to get rid of or lower the impacts of non-trade barriers are also questioned in the study with

the intention of discussions in the future. Through this, the study opens a path for further research and analysis.

1.5. Hypotheses

Both local and global economic growth are indirectly influenced by non-trade barriers. These hidden trade hindrances are often more complex to assess than traditional barriers such as tariffs and NTBs. However, their impact on the global economy can be even more severe. Given these challenges, the following hypotheses are proposed to explore the extent of non-trade barriers' effects on Azerbaijan's non-oil exports.

Hypothesis 1 - I consider that non-trade hindrances to international trade exist and indirectly affect Azerbaijan's export volume.

Hypothesis 2 - I suppose correlation and regression analyses are insufficient for accurately assessing the impact of non-trade barriers on Azerbaijan's non-oil exports, as they fail to capture complex causal relationships and qualitative factors.

Hypothesis 3 - Exchange rate volatility, particularly currency devaluation, significantly influences Azerbaijan's export performance and inflation dynamics.

Hypothesis 4 - Subsidy incentives, R&D expenditures, and country reputation, as proxies for non-trade barriers, do not significantly impact Azerbaijan's non-oil export volume in the short run.

Hypothesis 5 - Subsidy incentives, R&D expenditures, and country reputation, as proxies for non-trade barriers, significantly impact Azerbaijan's non-oil export volume in the long run.

2. LITERATURE REVIEW

2.1. Trade barriers

Since the 1990s, the number and scope of trade agreements as policy instruments for international economic integration have changed. Roughly 300 agreements are in force today, compared to only about 20 in 1990. Early trade agreements primarily focused on reducing tariffs and quantitative limits to facilitate trade in products. Contemporary trade agreements include a variety of deeper features such as investment liberalization, intellectual   property protection that go beyond the limited scope of conventional trade policy instruments (Dhingra *et al.*, 2023).

Industrial networks for a single product may span several dozen nations. Tariff measures on goods have been decreased in comparison to early 2000s. Therefore, deep trade agreements (DTAs) and non-tariff measures (NTMs) have become central to policy discussions in industrialised countries, both on a global and bilateral basis (Grübler and Reiter, 2021).

Emerging economies usually impose trade barriers to prevent multinational corporations and protect their small and medium-sized domestic businesses. If enterprises in emerging economies are not developed enough, it is recommended that trade barriers be put in place. Furthermore, since the multinational corporations are willing to shift production locations internationally, trade barriers are ineffectual on multinational corporations once local firms gain credibility (Lin *et al*., 2023).

French (2016) developed a framework to quantitatively assess the role of the composition of trade flows in determining the aggregate welfare effects of trade barriers. He found out that falling trade barriers lead to income per worker to increase significantly on average and increase relatively large in developing countries. Trade barriers' impact on welfare is dependent on trends in comparative advantage at the product level (French, 2016).

Trade economists often support the removal of needless trade barriers which would consequently lead to decrease and harmonisation of NTMs as well. However, since these policy tools often serve purposes beyond trade, such as protecting human, animal, and plant life or reflecting consumer preferences, economists disagree on the extent to which NTMs should be reduced or eliminated. Therefore, policies on NTMs cannot be easily assessed in comparison to tariffs (Grübler and Reiter, 2021).

Small countries experience fluctuations in trade barriers over time, causing deviations from equilibrium and variations in trade and other global factors. In other words, trade obstacles distort

foreign prices relative to domestic prices, which can also be influenced by other factors (Madanizadeh *et al.*, 2019).

2.2. Tariff barriers

Tariffs are tax practices imposed on imported products from other countries. Tariffs are the most referred protective policy by governments with the aim of protecting domestic industries. In other words, they restrict imports and increase the price of products purchased from other countries. Although tariffs are the easiest and most applied measure within the framework of national policies, they could have negative consequences for the world economy in general.

It is argued that whether tariffs are the most effective policy to protect infant industries. Supporting production by subsidizing the sector instead of tariffs is considered as the best alternative approach, because subsidies provide indirect support, reduces tariff retention, and directly impacts the well-being of consumers (Mehtiyev and Magda, 2019).

Recent studies suggest that decreases in bound tariff rates increase the probability of new non-tariff measures. For instance, decrease of tariff rates on agricultural products led to implementation of further sanitary and phytosanitary (SPS) measures (Grübler and Reiter, 2021).

Policies with the aim of industry protection can be applied in different forms. Many of them are aimed at improving the situation of domestic producers against foreign competitors. The best way is to raise the price of foreign products in the domestic market or to restrict the sales of goods in the domestic market in various ways. One of the most effective ways to increase the prices of foreign goods is tariff implementation on imports. While conservative policy tools are generally classified as tariffs and NTBs, methods such as export promotion and currency control and some other indirect interventions can also be applied in this context (Mehtiyev and Magda, 2019).

2.3. Non-tariff barriers (NTBs)

Apart from tariffs, other protectionist policies on trade are implemented and they have been increasingly important in their impact. NTBs are the restrictions which set barriers on trade and make imports and exports costly. They vary and arise from conditions, prohibitions, or specific market requirements. The implementation forms of NTBs by governments are laws, regulations or policies aiming protecting domestic economy.

All in all, the impacts of NTMs might differ by country and sector. For instance, Bao and Qiu (2010) estimated that technical barriers to trade in China have trade-restricting effects on the agriculture sector while having trade-promoting effects on the manufacturing sector. Bratt (2017) finds both positive and negative effects on trade flows for the same NTM among exporters in his

estimations. Higher income exporting nations are in a better position to combat the negative consequences of NTMs. Lower-income countries have more trade-restricting NTMs, which could be that because they implement prohibitions more frequently (Bao and Qiu, 2010; Bratt, 2017).

Like tariffs, NTBs are government practices, and they discriminate importations into a country by making them more costly. However, on similar products of local manufacturers, those restrictions are not applied. Consequently, it causes discrimination. Below some types of NTBs are discussed.

Quota: A quota determines the maximum amount of a product that a foreign country can sell in another country's domestic market during a certain period. Quota is the most well-known quantitative regulatory barrier. Before the Uruguay Round of WTO in 1986, quantity restrictions, commonly known as quotas were widely applied by governments to restrict the entry of textile, steel, apparel, machinery, and automotive products to the domestic market from foreign producers. Like tariffs, quota implementations aim to increase the domestic market prices, the production of domestic producers, and reduce the consumption of consumers. While tariffs create an income for governments, in quota implementation, advantage goes to the import license holder in the quota application.

Voluntary export restrictions: In the scope of regulative market agreements, a government requires a foreign government to reduce the amount of goods to be placed on its domestic market. Such a requirement is an NTB practice because it intervenes exportation of a foreign country. In case the foreign government does not accept such request, more restrictive measures are taken. Basically, such agreements are a form of mutually agreed quotas (Möhlmann *et al.*, 2010). The main aim of such practices is the bilateral agreement on a voluntary basis to avoid implementation of other trade barriers (Bouët, 2001).

Technical barriers: Technical barriers are requirements associated with trading activity that increase product compliance costs. Some of the types of such barriers that are often referred to are labelling rules, stringent sanitary standards, and product standards (Bao and Qiu, 2010). The objectives of implementing such barriers might vary. For instance, to protect public health, health and product safety standards are included in the import of foodstuffs. However, they may decisively be implemented as a tool for the protection of the domestic producer. There are big application differences between developed and developing countries. In some countries, exporters might have to wait an average of seven weeks to get their products exported. There can be more technical procedure barriers for developing countries (Michalek, 2004).

Technical barriers are defined as conformity assessment processes or technical regulations that unduly impede trade or the flow of innovative products. These measures lead a country to being

at risk of missing out on opportunities to capitalise on its leadership in high-tech manufacturing, services, and agriculture, as well as science. The European Union's regulations on chemicals, Chinese cybersecurity and encryption standards, Indian and Brazilian regulations for telecommunications equipment testing and certification, and technology are a few instances of such hindrances (Tai, 2021).

Subsidy as NTB: Subsidies are benefits provided to an industry or a business field by government. Subsidy is also a type of non-trade barriers and will be discussed on next chapter in details.

Some other types of NTBs are complex regulatory environment, import bans, seasonal import regimes, determination of eligibility of an exporting country by the importing country, additional trade documents like certificate of origin, certificate of authenticity, loan programs, insurance, and loan financing (Hoekman and Nelson, 2020). Below figure illustrates the NTB practices.

Figure 1. Implementation of NTBs
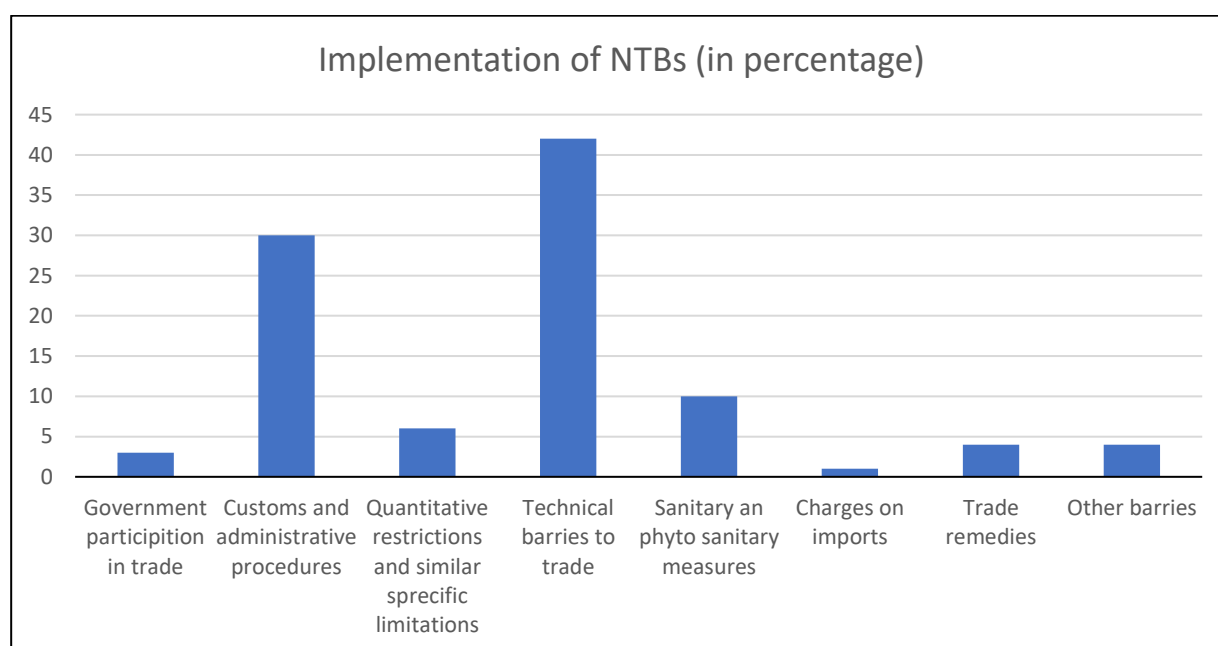
Source: UNCTAD report, 2021

Customs and administrative procedures and technical barriers have the highest share amongst all NTBs. Reduction of non-tariff barriers might significantly contribute to economy. However, assessment of the impact presents significant challenges because of large scope of these obstacles and data collection limitations. It is estimated that a 1% decrease in the costs of trade transactions is capable to increase the global welfare by 40 billion USD. Also, if these costs are spread to ports, customs, regulatory applications, and service industry, it is estimated that total global goods trade will increase by 10%, in other words 377 billion USD.

2.4. Non-trade barriers

Non-trade barriers are hindrances that are not directly related to trade activities, however, have indirect effects on international trade. Fundamentally, non-trade barriers are NTBs that are applied on trade related processes. They can restrain trade indirectly and to what extent they impact the trade is complex in comparison to tariff barriers and other NTBs. The effects of non-trade hindrances on international trade can be wider than tariffs. The regulations implemented with the purpose of trade expansion can also be non-trade barriers. One of such measures, for instance is subsidy (Deardorff and Stern, 2010). So, in some cases, non-trade barriers might intentionally be implemented for the purpose of expanding trade by providing benefits on a field, business or an individual. However, even though implementation of a non-trade barrier can benefit originating country, it negatively affects overall foreign trade (Webb, 2018).

Scholars of economics have begun to recognise that non-tariff measures (NTMs) need not be non-tariff barriers (NTBs). It is a fact that some NTMs, such quotas, have a detrimental impact on international trade. However, other types of NTMs, such as SPS measures, may enhance quality, potentially boosting trade. Likewise, some technical trade barriers (TBTs), such as labelling regulations, provide customers more knowledge, which may influence their purchasing habits and foster a sense of trust that could encourage trade (Kinzius *et al.*, 2021).

Non-tariff obstacles can be imposed by adopting technical/green barriers concerning quality and labelling, or by establishing distinct product standards. Products are more likely to be rejected by emerging economies under the cover of covert trade protectionism. When faced with stricter quality requirements, multinational firms find it more difficult to join foreign markets (Lin *et al.*, 2023)

Nowadays, non-tariff measures (NTMs) cover a broad spectrum of trade policy tools, such as geographic indications for agri-food goods, electronic device labelling regulations, pesticide residue limitations on imported fruits, and duties to prevent price dumping or export subsidies. The number of nations participating in international NTM negotiations and frequency of applying such instruments is expanding (Grübler and Reiter, 2021). As a result, this trend consequently leads to more non-trade barriers implementation indirectly.

2.4.1. NTB categorization

Indirect non-tariff measures might boost global trade when the positive impact on the demand side outweighs the negative impact on the supply side (WTO, 2012). According to UNCTAD report published in 2013, below are the three major groups of NTBs categorized based on their links with trade:

1. Directly trade-related NTBs such as import quotas, antidumping measures, etc.

2. NTBs that have a link with trade since their implementation is monitored at the border. SPS measures, packaging can be indicated as examples for this group.

3. NTBs appeared from public policy such as government procurement, investment restrictions.

2.4.2. Main indirect non-trade barriers

Non-trade barriers are NTBs, and they fall in the section of NTBs which appear from public policy based on the UNCTAD report in 2005 and 2013. The non-trade barriers which have relatively wider effects on international trade and have been focused on the recent decades are as follows; *subsidy, monetary policy and exchange rate volatility, country image and company reputation, technology and R&D, pre-shipment inspection, advanced element and language problem, storage and distribution, competitors and violence of competition, quality standards, political engagements, packaging/labelling and branding, and consumer behaviour.*

Above mentioned items are NTBs as well as non-trade barriers at the same time. So far, non-trade barriers have not been distinguished separately, however they have always been mentioned in the scope of NTBs. Different from other NTBs, non-trade barriers are hidden and identifying and measuring their impacts are not as easy as other barriers since non-trade barriers are usually not trade linked, however their impacts are (Ferdowsi, 2021).

2.5. Classification of trade barriers

The table below provides a comparative analysis of tariffs, non-tariff barriers (NTBs), and non-trade barriers, highlighting their key characteristics, economic implications, and role in global trade. Understanding these distinctions is essential for evaluating their impact on trade policies, market accessibility, and economic performance.

Table 1. Trade barrier classification

Aspect	Tariffs	Non-Tariff Barriers	Non-Trade Barriers
Definition	Taxes imposed on imported or exported goods	Various restrictive measures other than taxes	NTBs that have nothing to do with trade but have indirect impacts
Nature	Monetary barrier	Non-monetary barrier	Non-monetary indirect barrier
Purpose	Generate government revenue	Achieve various policy objectives	Achieve various policy objectives
Visibility	Transparent and easily quantifiable	Varied and often less transparent	Varied and no transparency
Revenue Generation	Direct source of government income	Indirect impact on government revenue	Indirect impact on revenue and global trade
Impact on Prices	Directly affects prices of imported goods	Can indirectly affect prices and supply	Can indirectly affect prices and supply
Trade Flexibility	Some flexibility in adjusting rates	Often rigid and less flexible	Less flexible
Compliance Costs	Relatively straightforward to calculate	Compliance can be complex and costly	Rarely can be subject to compliance
Negotiation in Trade Deals	Often subject to negotiation in trade deals	Subject to negotiation but hard to quantify	Subject to negotiation but harder to quantify

Source: Mehtiyev and Magda, 2024

2.6. Subsidies

Subsidy is a type of non-trade barrier which is extensively applied by governments. They are state expenditures or state aids to support the production of goods or services. Such a definition encompasses a wide range of governmental activities as well as classical state functions (Shadikhodjaev, 2021). If this definition was taken as the basis for international commercial law, traditional state duties such as firefighting or state security might be considered as subsidies although they are not. Moreover, governments would be allowed to implement countervailing measures against all kinds of subsidies. Following the World War II, without undefined definitions of subsidy on the GATT basis, it was not possible to liberalize and protect world trade. Therefore, a different definition of the subsidy was required to be used in the field of international trade law. Although at least some types of subsidies were unfair in the international trade policy for more than a century, there was no definition of this concept in the GATT period covering 1947-1995. This resulted from the complexity of the issue and the difficulty in distinguishing between justified state practices and subsidies preventing international trade (Hoda and Ahuja, 2005).

2.6.1 Definitions of subsidy

Important changes were introduced regarding subsidies in 1994 Uruguay Round when GAAT was transformed into WTO later. As a result, new Agreement on Subsidies and Countervailing Measures (SCM), also called Subsidies Agreement was adopted. The ultimate objective SCM was to strengthen discipline on trade distorting subsidies that governments use to provide unfair competitive advantage for their firms. The definition of subsidy on SCM was determined as "a financial contribution by a government or any public body within the territory of a member which confers a benefit". Based on the Agreement, subsidy was considered when a financial contribution provided by a state and benefiting its economy or where there is an income or price support (Rubini, 2012). This definition aimed to narrow the limits of the state practices. Below various definitions are listed which were set after elaboration of the SCM subsidy definition:

The unequal financial aid given in the form of money by a state to influence production or export in various ways to protect and promote producers is called subsidy.

Subsidies are supports and cash aids for the promotion and maintenance of the production of private and public undertakings by the state. With the coupon method, the state provides aids for promotion and maintenance of the consumption of certain consumer segments to certain goods and services.

Subsidy is identified when any financial contribution directly or indirectly provided by the exporting country.

Subsidy exists if there is a direct transfer of funds, withdrawal of government revenues that must be paid, a financial contribution such as the provision of goods or services outside the general infrastructure, or financial or other income or price support by government or a public body.

Provision of subsidy by a state can be expressed as money to influence production or export in various ways without any compensation by considering the interests of the society and to protect and promote producers and exporters (Bartels, 2015).

In short, the subsidy is carried out as an unpaid benefit of the state in the form of money, goods or services to individuals and institutions. Reasons for the application of subsidies are ensuring the efficient resource allocation and widespread availability of externalities (Sykes, 2005). For instance, the use of subsidies in programs against environmental pollution is a positive improvement in the quality of the environment is thought to create positive externality. In other words, subsides can also aim pollution prevention. Thus, authorities or companies can be eligible for below types of subsidies if certain requirements imposed by government are achieved:

- Deletion of operating losses, corporate or income tax exemption
- Direct financial contribution of government or local authorities
- Provision of credit below company's value
- Return of more than indirect taxes paid for imported inputs
- Provision of input below its value

2.6.2. Subsidy elements

In SCM Agreement, the elements indicating existence of subsidy have been conveyed. Below two elements must exist to consider and aid as subsidy.

- Financial assistance, income, or price assistance by a state
- Benefit to which the assistance is made.

Only if both of above stated elements coexist, then an aid can be considered as subsidy. Unless a financial aid provides benefit to assisted industry or company, it is not considered subsidy. According SCM Agreement, the support should be provided by governments. However, governments might initiate third parties which can provide financial support and assistance to some industries. Thus, the SCM Agreement considers assisting entity not only national governments, but also any public or individual body by direction of government, in other words, governments initiating assistance through third parties.

There are still discussions on some other trade barriers whether they must be treated as subsidy or not. For instance, for years, there has been controversy about whether it is against WTO regulations to use countervailing charges to offset currency undervaluation (Coppens, 2014). However, a rule released by the US Commerce Department in 2020 permits the use of tariffs to offset imports from nations whose governments depress their national currencies. Under U.S. trade remedy legislation, the rule permits currency undervaluation to be viewed as a subsidy. Consequently, commodities from countries where the Commerce Department determines that the currency is undervalued may be subject to countervailing duties (CVD) (Wu and Lo, 2021).

The method's detractors argue that currency undervaluation does not satisfy the requirements for a subsidy to respond to countervailing tariffs as outlined by the WTO. According to the SCM Agreement, a subsidy is considered to exist whenever a government or other public entity makes a financial contribution within the borders of a member, or if income or price support is provided and a benefit is thereby granted (Ikeda, 2021). Currency undervaluation, according to critics, doesn't fit either of those descriptions. In response, the Commerce Department presented two counterarguments in its final regulation. First, the agency made it clear that decisions about this matter are not made through rulemaking, but rather on a case-by-case basis. Second, the

department just claimed that a financial contribution might be made by exchanging local currency for US currency.

Evaluating currency misalignment is a well-known challenging task. Attempting to allay some of the worries, the Commerce Department's final rule makes clear that it will "take into account the gap between a country's real effective exchange rate (REER) and the REER that achieves an external balance over the medium-term" in determining whether a currency is undervalued. This is an approach that the International Monetary Fund (IMF) uses in its own country-specific external sector assessments. Second, any government intervention in the exchange rate that results in the currency being undervalued will be viewed as a subsidy, and appropriate action will be taken (Wu and Lo, 2021).

2.6.3. Export subsidies

Export subsidies and domestic input subsidies are forbidden in SCM Agreement. In case of identification and proof of such subsidies, they must be released immediately as per request of WTO. Such subsidies are also called "Red" subsidies. Subsidizing an industry or a company aiming to increase export level performance of a country are called export subsidies. Some countries grant subsidies to increase their export volume. These are including special tax exemptions, advantageous exchange rates and others which provide capital at appropriate interest rates. Export subsidies aim to decrease the price paid by foreigners through provision of cost advantage to domestic producers (Sundaram, 2022). Consequently, consumers in foreign countries have price advantage in comparison to domestic consumers since the price of subsidized exports in foreign market is lower than the price of product in the subsidizing country (Chaisse *et al.*, 2013). Some examples of most extensively applied export subsidies are direct subsidies for export performance, advantageous exchange rate applications, export credit guarantees or export insurance, return of customs duties for imported inputs used in the production of export products, export bonuses (Green and Trebilcock, 2009).

2.6.4. Domestic input subsidies

The other type of forbidden subsidies is domestic input subsidies. Interventions which prohibit usage of foreign inputs and policies require use of indigenous inputs rather than imported ones are considered domestic input subsidies. Through such interventions, usage of domestic inputs in the production process is encouraged rather than imported inputs. Prohibition of foreign product importations is against the international trade law and affects foreign industries since their sales to subsidizing countries will decrease.

2.6.5. Impacts of subsidization on economy and foreign trade

Governments frequently implement subsidies to promote the usage of specific products by customers. Certain commodities are sold for less than their true prices under a subsidy scheme, and the government keeps the difference. There are several economic challenges to which subsidies might be used for. In classical sense, the main objectives of subsidy applications are based on price policy and anti-inflationary policy which are effective (Hellegers *et al.*, 2022). Additionally, in the modern sense, it used with the purpose of general equilibrium to equalize trade balance such as controlling inflation and lowering prices. However, when long-term uses are considered, subsidies may have serious detrimental repercussions on global commerce, including price discrimination, tax increases, local industry inefficiencies, and higher borrowings. Before applying a subsidy on an industry, all outcomes should be predicted and analysed to avoid subsidy incentive to be a barrier in international trade and affect local economy (Mehtiyev and Magda, 2019).

Positive Effects

Lowering prices and controlling inflation: One of the primary instruments for controlling pricing is subsidization. In the event of inflation, governments can lower prices or stop the inflation of specific sectors or goods by implementing subsidies. Subsidization may be an extremely expensive and irrational method of price control in the long run, but it is an effective strategy to stop inflation in the near term.

Preventing the long-term decline of industries: When some industries cannot perform well but have potential to recover, governments implement subsidy programs on those industries to prevent their decline. This approach has been extensively used in many countries because the support of potential industries is always in favour of governments and local economy. Moreover, there are some industries governments provide subsidies aimed to prevent short-term decline of them. Agriculture sector is an example of above two approaches. Depending on the season or year which is not the best for agricultural products because of weather or any other reason, subsidies can be implemented on those specific products to prevent decline of them. On the other hand, there might be some specific agricultural products which are subsidized aiming to protect its decline and benefit in the long-term (Sykes, 2023).

Subsidization can enable domestic firms that work less effectively to compete against foreign producers. It allows domestic manufacturers to sell their goods below their actual costs. If a government wants development of certain indigenous industries, they subsidize to ensure development and trade expansion of those industries.

A greater supply of goods: Often subsidies aim to decrease the sales prices of goods. Such favourable prices are achieved through cost reduction, in other words, through support of government. The decrease in the sales price is also reflected on the amount of supply, as obviously a decrease in the price will lead to increase in the demand. Therefore, subsidized companies or industries will be required to supply larger quantity. Moreover, even the price is not decreased after subsidization, since the companies or the overall industry can reduce the cost, they can invest on other fields of their business which is more likely to increase the supply. Such an incentive is in favour of both the industry and the government because lacking products in the domestic market will be filled with local products, alternatively, in case of excess supply, it can be exported (Huang, 2022).

Foreign currency flow: Companies can benefit in terms of offering their global customers favourable price if they receive export subsidies, low interest loans or tax relief or any other assistance. In case of subsidization applied on export performance, net exports will increase and in return, the inflow of foreign exchange into country will increase. One of the main reasons that governments use export subsidies is to open paths for local companies into global markets (Supriyo and Wicaksana Prakasa, 2021). As an example, we can indicate China whose manufacturers can sell products at very low prices by being provided interest free loans mainly.

Providing positive externality: Subsidies can create positive externalities by helping to internalize the marginal external benefits of production or consumption activities. Such an incentive decreases payments made by producer or consumer. Subsidies can also be considered as a negative tax as regulatory tax.

Negative Effects

Inflation: The inflation in subsidizing country is one of the main negative effects of subsidies. Subsidy is a tool to control inflation, however, at the same time it might cause inflation. The labourers, for instance, of export subsidized industry are likely to demand higher wages. The increase in the wages of an industry will affect the other industries, too. As a result, it might cause the collective national wage rates increase. Since it is an export subsidy case, the main quantity of products will be exported and the remaining will be sold in the country. Because the companies will try to reflect cost of labour increase in their prices, in the long term, such wage increase will lead to inflation essentially. This increase implications have been mentioned by WTO and they called for a ban on export subsidies especially on agricultural sector.

Price discrimination: The other negative effect of subsidies is price discrimination. Subsidies might disrupt the identity between buyer prices and vendor prices in markets. In a commodity

market where subsidy is applied, the market price of goods is often below the factor price of the commodity. The price of subsidized product is also called artificial market price. If the applied unit subsidy amount is added to the market price of the good, the natural or factor price, in other word, real market price is reached. It is a fact that one of the main aims of the subsidy implementation in the market is to encourage consumption and use of those products and reduce the prices. As a result of this practice, public spending will increase spontaneously. While the provision of subsidies to any consumer good constitutes an income for manufacturer, at the same time it might affect competitors in foreign market (Mehtiyev and Magda, 2021)

Affecting consumer behaviour: Through subsidy provision, two main goals of governments are minimizing expenditures and maximizing welfare. The resulting effect of such goals is increasing sales quantity. In the long run, subsidy provision can be costly for governments. Thus, some governments which have budget constraint, subsidize with the length of five years which is most common period. As a result, the efficiency of firms is more likely to decline after the subsidy program ends.

Subsidy programs encourage more consumers to buy products or the same numbers of consumers to purchase more of those products. In fact, such impact is directly related to consumers' behaviour. Furthermore, in case a government has budget constraints and subsidies are provided temporarily, subsidization might have mixed effects on consumers' behaviour. The mixed effects make consumers' purchasing behaviour more complex than usual and pose greater challenges for firms serving those consumers (Mehtiyev and Magda, 2021).

Subsidy provision to remanufacturing industries is directly related to consumers' behaviour. One of the main objectives of such subsidy programs is to encourage more consumers to purchase remanufactured products. Consumers are unwilling to make purchases when they are uncertain about the quality of products. However, the number of consumers buying such products is reversely proportional to the uncertainty level meaning that if more people consuming those products, uncertainty of consumers can be eliminated. Such relation is based on the network externality theory. Network externality states that consumers' behaviour is affected by the behaviour of others, and consumers' utility increases with the number of other consumers adopt the product (Dung, 2021).

Inefficiency: The capital subsidies granted to the business sector by several governments, as well as the EU, may have a positive impact on the economic growth. However, subsidization is not always unproblematic, as it can give the opportunity for politicians and bureaucrats to maximize political objectives rather than economic efficiency. Nonetheless, the long-term impact of

investment subsidies remains uncertain, making it difficult to determine whether they are ultimately beneficial or detrimental.

It is known that subsidization of businesses can increase employment, as well as capital investments, but can it affect the productivity. Productivity is one of the most important aspects of long-term growth of an industry as well as economy. For instance, subsidies can facilitate the technological advancement of the firms receiving them, which results in better utilization and more efficient productivity. Although governments argue that these subsidies are growth enhancing, as in some cases it can happen that resources are allocated inefficiently (Mehtiyev and Magda, 2019).

Despite these previous points, there are also reasons why capital subsidy provision may negatively impact productivity. One example, as previously mentioned, is allocative inefficiency, where a firm receiving the subsidy may over-invest in capital. Furthermore, subsidization can also lead to technical inefficiencies, as firms perceiving the capital subsidy as increased profit may reduce their effort, particularly among stakeholders such as managers and workers. If a mid-sized business achieves significantly high profits, it may become less efficient, as worker motivation could decline, and management may no longer actively seek cost-improvement methods. Assuming that these supported firms are guaranteed protection from bankruptcy by the government, then they are not forced to improve their performance and productivity or re-organize their activities in the same degree as non-supported firms do. Similarly, subsidized industries might be inspired to be more interested in subsidy-seeking actions (such as lobbying) rather than other profit or productivity improving activities. Targeting certain businesses with these capital subsidies can be seen as a kind of "protection" and can also lead to the decrease in competition between companies, which in return may make the firms less effective.

Some other negative impacts of subsidies are listed below:

- Distortion of economic activity: Subsidy provision leads to supply and demand to change both domestically and globally.
- Distortion of market: Subsidies distort market.
- Increase in taxes: Subsidy is provided from collection of taxes.
- Increase in borrowing: Governments might borrow more to subsidize their inefficient industries.
- Unfair competition: Competitors are affected by subsidy implementations in global market.
- Encouraging inefficiency: Subsidies artificially sustain uncompetitive firms.
- Financial cost: Subsidies can become expensive in the long run.

2.6.6. The effects of export subsidies

Subsidies usually are intended to provide favourable prices. However, domestic prices might rise when there is an export subsidy applied. If more output is exported because of an export subsidy, then international market prices will fall. Domestic prices, however, might rise because if subsidized industry exports main portion of its production, then less quantity of output available in the market will lead to increase in the prices (Mehtiyev and Magda, 2021).

Figure 2. Export subsidy in a large country case
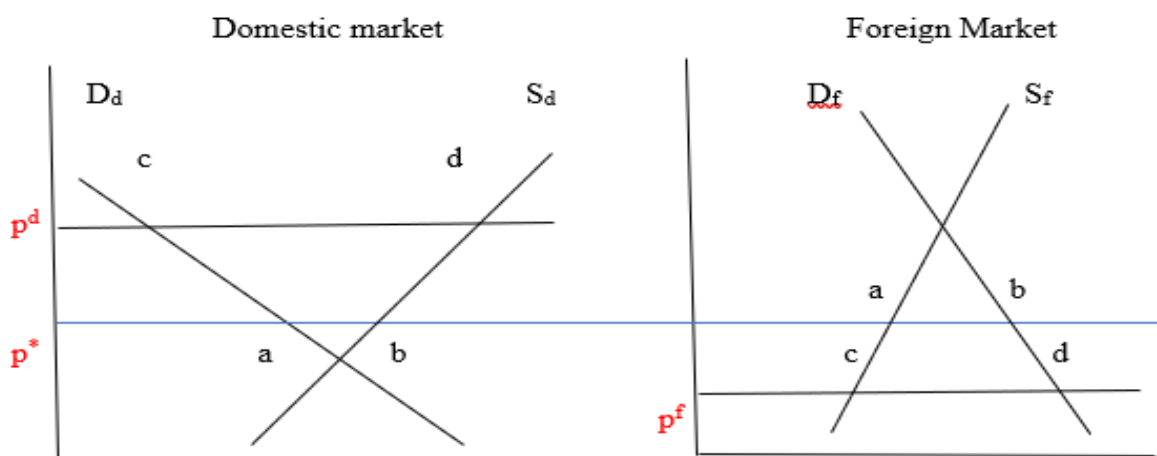
Source: Mehtiyev and Magda, 2022b

In Figure 2, before subsidy implementation, P* is the initial world price and distance ab is the initial level of exports. When the government provides subsidies to an industry or domestic producers, export levels tend to increase. However, it is crucial to consider the government's objective behind the subsidy, as this directly influences the quantity of goods allocated for export. For instance, if the government implements an export subsidy, a significant portion of the produced goods will likely be directed toward foreign markets. While this can boost trade, it may also lead to a shortage of those products in the domestic market. Essentially, such a policy can result in price increase in domestic market. As illustrated in the figure above, the price of the product will switch to P^d in domestic market. On the other hand, an increase in the supply in international market will lead to decrease of market prices which will be P^f in foreign market. In this case, the export level of the subsidizing country will be cd distance (Mehtiyev and Magda, 2022b).

In this example, subsidy has a direct negative impact on welfare of domestic consumers since they will pay higher price for a product which is going to be sold cheaper in international market. Because production level and export level increases, domestic producers are the main gainers. The other benefit is collected by international consumers of subsidized products because they will pay

lower prices for that product. On the other hand, similar product producers in the foreign market will be affected negatively. If the situation goes further and gets worse, uncompetitive producers in foreign market might go bankruptcy. Subsidizing government will be another benefiting side on this case as they gather more foreign currency and economy as well as export level of the country expand. Foreign country in which subsidized products are sold is better off in this situation because positive effect to consumers offsets the loss to producers. As we can see the example, subsidy for the purpose of improving an industry might affect many participants of similar product which are traders, consumers, and some others (Dawar, 2016).

Government political agendas may influence the coordination of globally efficient policies in the context of global production. Export subsidies are an effective tool that governments can utilise to address holdup issues and move the amount of input trade closer to its optimal level (Legal Affairs Division, World Trade Organization, 2017; WTO, 1994). Uncertainty over whether firm-specific subsidies are being utilised to benefit privileged enterprises can have detrimental effects on competition, even in cases when governments do not intend to. In terms of global production, subsidies may be utilised to entice foreign investment. For example, cross-border ownership may create incentives to subsidise imports to collect rents from foreign investors, but it may also lessen incentives to raise tariffs (Blanchard, 2010). Beyond tariffs, ownership has unclear effects on international cooperation: either shared ownership lowers tensions, or it creates new reasons to implement protectionist initiatives. For instance, millions were spent by the Venezuelan government to subsidise multinational corporations' imports. These resources might further function as a barrier to entry for non-incumbent enterprises, even though certain privileged firms might get investment incentives. Local businesses and the regional hubs of international producers might profit from subsidies, while smaller, less integrated overseas businesses would be left out (Gulotty, 2022).

All in all, it seems that the "rules based" subsidy method becomes difficult to adapt to significant changes in the international trading system. The increasing proportion of trade with non-market economies such as China, and the expansion of worldwide production, have challenged the system and rules. In ways that were overlooked in the past, China's WTO admission and its sizable state sector make the issue of subsidies inevitable. The problem is not just that the GATT/WTO is not set up to deal with nonmarket economic systems; the task of bridging geopolitical divides has become essential, replacing the previously collusive agreements between allied nations that operated outside formal regulations (Gulotty, 2022).

In my opinion, subsidies can help local businesses and attract foreign investment, but if not applied fairly, they can lead to unfair competition and harm smaller businesses.

2.6.7. Subsidization in Azerbaijan

Nearly every government intervenes and engages in market manipulation that distorts international business, even despite the overall economic and social benefits of eliminating most government subsidies and opening economies to trade (Anderson, 2004).

The Azerbaijani government mainly subsidizes agricultural inputs, targeting increasing hazelnuts, rice, citrus fruits, tea, tobacco, and cotton products as well as machinery (International Trade Administration, 2023). However, no aggressive subsidization has been identified so far that could be perceived as barrier to foreign trade. The purpose of subsidies in Azerbaijan is mainly to protect infant industries, encourage production, and promote underdeveloped sectors.
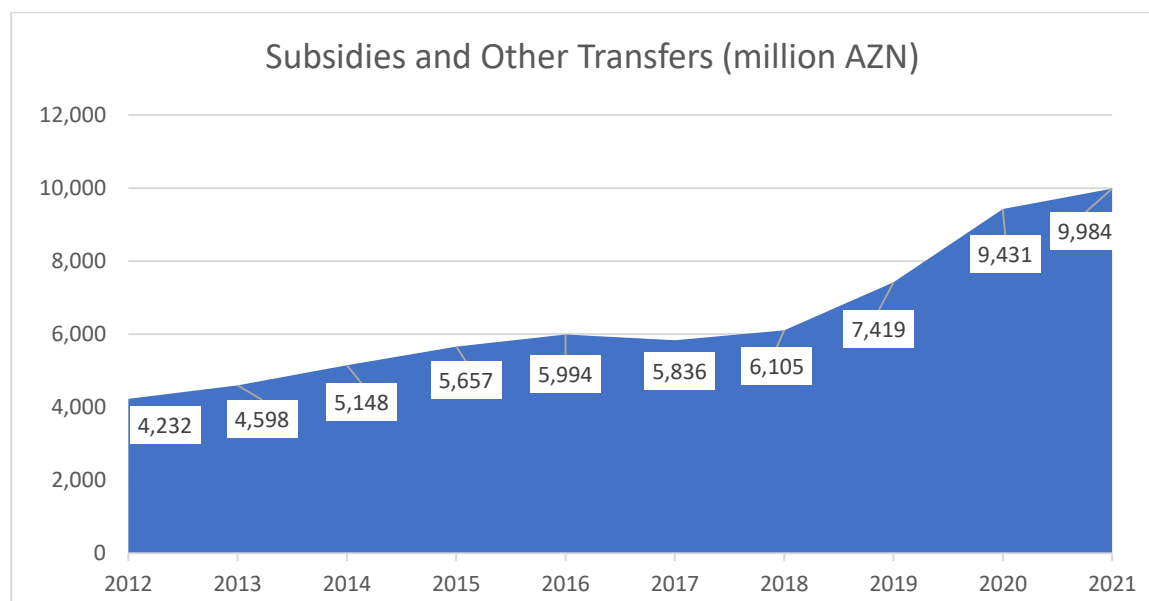
In 2021, data on subsidies and other transfers was recorded at 9,983.781 AZN million. Compared to the prior figure for 2020, which was 9,431.311 AZN million, this represents an increase. In the context of subsidies, grants, and other social benefits, these figures encompass non-repayable transfers on current accounts to private and public enterprises, grants to foreign governments, international organisations, and other government units, cash and in-kind social security, social assistance, and employer social benefits.

Agriculture lost its relative importance in the economy of Azerbaijan during the oil boom, which lasted from 2005 to 2011. This further hampered the country's agricultural development. However, the government had to address the social and economic challenges arising from the underdevelopment of the agricultural sector. In 2019, the government launched a substantial subsidy scheme to support the agriculture industry and address the issues. According to the programme, farmers and businesses in the agriculture industry would get a certain amount each year. As a result, in 2021, Azerbaijan spent more than 500 million AZN for agricultural subsidies, which was 1.8 percent of its total expenditures.

One of the four priority sectors for Azerbaijan's economic diversification is agriculture. Azerbaijan's largest sector, employing 37 percent of the workforce although making up only 7 percent of the country's GDP, is agriculture. The government provides grants, tax breaks, and subsidies for fertiliser, insecticides, and machinery to the agricultural industry. The liberated lands of Azerbaijan have created new agricultural opportunities for both domestic and foreign businesses. A key priority is conducting feasibility studies to evaluate the agricultural potential of these areas.

Below table indicates the subsidy and other transfer expenditures between 2012 and 2021 by the Azerbaijani government.

Figure 3. Subsidies and other transfers

Subsidies and Other Transfers (million AZN)

Year	Value
2012	4,232
2013	4,598
2014	5,148
2015	5,657
2016	5,994
2017	5,836
2018	6,105
2019	7,419
2020	9,431
2021	9,984

Source: World Bank database, 2022

2.7. Country reputation

The surge of international trade activities among countries over the past decades has been one of the most essential consequences of globalization. There are many factors affecting international trade both directly and indirectly. Indirect barriers are usually non-trade barriers. Country reputation is a type of non-trade barrier impacting international trade invisibly. Measuring the impact of non-trade barriers has alway been complicated since there is no concrete data and direction. However, some insights can be deriven through different approaches to assess non-trade barriers as well as country reputation impacts on internation trade.

A person's overall descriptive, inferential, and informative ideas about a specific country collectively defines country image (Lee *et al.*, 2016). The reputation of a country is what one knows and thinks about it, and it is formed through nation's behaviours and habits, country's integration and its technological innovation, reliability, quality (Hamzaoui and Merunka, 2006). Country reputation is a non-trade barrier which has an impact on international trade. It can affect and boost the trade activities of a country. IQ, literacy rate, GNI per capita, population size, geography, degree of democracy, happiness level, minimum wage rate, and many other elements all contribute to the construction of country image. Different factors might be considered when evaluating a nation's reputation (Martin and Eroglu, 1993; Zhi *et al.*, 2017). From an economic standpoint, a nation's image is shaped by its GDP, GDP or GNI per capita, foreign direct investment, participation in international trade, reserves, wages, and natural and human resources.

Of these, FDI inflows and GNI per capita are most commonly used as indicators of a nation's economic standing and overall attractiveness to investors (Mehtiyev and Magda, 2022a).

Country image encompasses various associations and information that shape perceptions about a nation. Country image is the impression individuals have about places and is the sum of beliefs; geography, history, art, music, famous citizens of that country etc. In addition, the entertainment industry of a country and its media have significant influence on shaping people's perceptions about that country (Reputation Institute, 2018).

Importance of managing a country's reputation has been increased due to the information flow simplicity through digital channels. Any event in a country can become world news easily and it can affect the public opinion. Consequently, diplomatic relations between countries, tourism sectors, foreign investments can be affected since public has a common idea based on the information spread (Reputation Institute, 2018). The stated idea is significantly relevant mainly for developing countries which are competing to attract tourists and investments from developed countries. Moreover, a country's reputation could significantly impede or increase the success of services and goods originating from that country seen from the perspective of other countries (Kang and Yang, 2010).

The governments that are seeking to establish a positive reputation are formulating plans for the growth of their national brands. They anticipate that it will help them become more competitive both domestically and internationally. The techniques and resources employed to develop strategies are comparable, and in certain cases identical, to those generally employed in company management. Most countries now understand the value of intangible assets like reputation, even though some states still have natural resources that give them a competitive advantage. An improved reputation is highly sought after to attract fresh international investment, secure funding for domestic initiatives, expand private businesses, and appeal to skilled workers, visitors, and new residents (Chang *et al.*, 2022; Kelley *et al.*, 2019; Staboulis *et al.*, 2022).

Reputation management is a crucial component of competition and economic, social, and cultural growth of nations because of globalisation and the heightened levels of rivalry to attract talent, investors, tourists, and open new markets (Chen and Wu, 2021; Fullerton and Kendrick, 2017). A perception about a place has a direct impact on our behaviour and attitudes toward it, its people, and its goods. In this sense, every nation strives to grow by acts that enhance its reputation in both local and foreign markets in a manner that is largely strategic, systematic, and organised. These strategies aim to improve or alter the perception of stakeholders, including potential investors and visitors (Canayaz and Darendeli, 2023; Passow *et al.*, 2005).

2.7.1. Country image impacts on economy and foreign trade

A nation's overseas trade contacts are likely to be impacted as its reputation grows. By promoting economic development and trade liberalisation, it boosts national income levels. However, the extent to which these effects are felt in developing countries has been a long-standing controversy. In the last thirty years, organizations such as International Monetary Fund and World Bank, which support trade liberalization have had gradual significant impacts on free trade between countries espacially in developing countries. Increasing integration of countries in the world economy is perceived as an important determinant of income and growth differences between countries (Chang and Fujii, 2012). Trade resource allocation efficiency enables countries to benefit from economies of scale and scope, facilitates the dissemination of information. At the same time, trade has positive impacts on economic growth by provision of technological development and strengthening competition in domestic and foreign markets. Liberal trade, reduced barriers to trade, and globalization lead to increase of trade activities between countries. Independent technology transfer of trade, transfer of skills, workforce and total factor productivity have created many positive economic results, including economic growth and development (Zahonogo, 2017). In my opinion, while the reputation of a country can enhance its foreign trade and economic growth, the benefits of trade liberalization may not be equally distributed. Developing countries may face challenges in leveraging their global reputation effectively, as structural barriers and inequalities could limit their ability to fully capitalize on trade opportunities and economic integration.

2.7.2. Country reputation formulation

According to Simon Anholt (2006), who is credited with contributing to develop the concept of the country brand, a country's reputation is developed through the exchange of both material and immaterial values through the following six channels (Anholt, 2006). Those channels are listed below:

Governance: Public opinion regarding the government's skill, integrity, and perceived commitment to local and international issues.

Population: The reputation of the country's population regarding competency, openness to strangers, and a pleasant attitude.

Culture and heritage: How the people view the culture and legacy of their country.

Investment and immigration: The reputation to attract expats to invest and work.

Tourism: The degree of desire to travel to the country.

Export: The public perception of a country's goods and services. For instance, Germany is very well known for its quality products, thus export volume is substantial.

Country reputation could influence overall export volume. Dimitrova *et al.* (2017) used the structural gravity model of international trade - one of the most effective empirical frameworks, to experimentally investigate this relationship between export volume and a bilateral measure of reputation. As per the results of the study, several countries' export volumes might amount to billions of dollars because of their reputation (Dimitrova *et al.*, 2017).

Every unit enhancement in a country's global product reputation (within a target country) corresponds to a 2 percent increase in exports to that specific market. The effect is equivalent to the importing country lowering a tariff by as much as 2.9 percent. Moreover, certain facets of a country's reputation diminish different types of uncertainty and, as a result, promote export volume in various way (Cagé and Rouzet, 2015; Holtzhausen and Fullerton, 2015).

The entire collection of opinions, attitudes, and perceptions that an individual or group of individuals has about a country is known as the country image. Further differentiation of the concept is based on individual and collective image. On the other hand, country identity relates to how a nation's population view themselves, whereas country image is defined as how a nation is perceived by international audiences. Identity is defined as the domestic self-perception existing among a country's domestic public, whereas country image is defined as the perception of a country that exists among its foreign audiences (Jenes, 2005).

According to Rusciano (2003), publicly communicated images accumulate to form the global reputation of a country which can be conceptualized as the emergent construct of the country reputation. Reputation in communication management is often understood to be the collective opinion of an organisation among its stakeholders. Accordingly, what matters is not a person's attitude but rather the level of public respect accorded to a social entity, in this case, a country. Reputation is more than just a collection of images. It is the public's opinion and is determined by societal norms rather than personal assessments (Rusciano, 2003). Reputation grows in the global context of a country when critical evaluations of that country are made public and broadly disseminated by others, primarily through mass media (Buhmann, 2016).

The idea of a country brand is closely associated with the reputation and image of a country. Reputation is one of the most fundamental resources in today's knowledge-and information-driven economy that ensures strategic advantages and the opening of new markets.

A typical definition of a brand is a name, word, sign, symbol, or design, or a mix of these, used to identify and set one seller's or a group of sellers' goods and services apart from those of rivals.

Therefore, the brand is first and foremost a strategically planned self-representation (Kotler and Armstrong, 2018). The perception of a nation-state as the result of well-crafted self-communication is that of its national brand. It is closely connected to the country identity, which constitutes the necessary basis for any consistent self-representation (Buhmann, 2016).

2.7.3. Country reputation, image, brand, and identity framework

Below figure illustrates a coordinative framework of country image, reputation, brand, and identity.

Figure 4. Country image framework
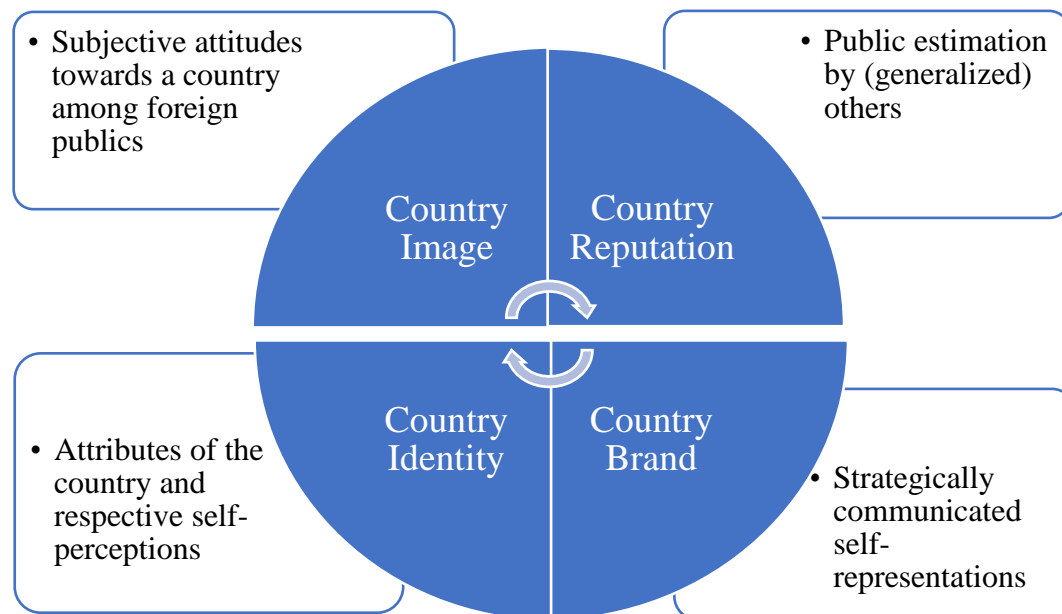
Source: Buhmann, 2016

2.7.4. Country attributes

National economy is one of the main attributes of a country formation. The strength of a country's economy contributes to image and reputation formation. The key features of the process of country formation are depicted in the figure below. Among them, the national economy and political structure are the two key indicators of how a country's reputation is formed (Morgan *et al.*, 2020).

Figure 5. Attributes of a country
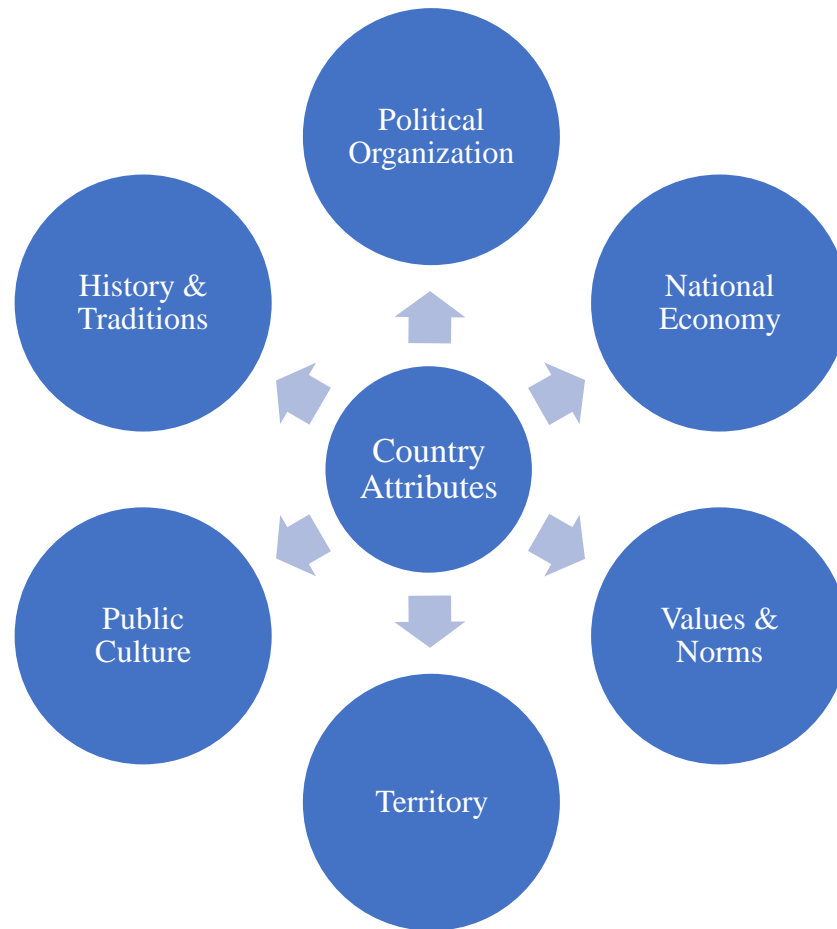
Source: Buhmann, 2016

2.7.5. Country image formative measures

Below figure illustrates weights of the formative measures that contribute to country image and reputation formation in the order from most influencing to least.

Figure 6. Country image formative measures

Competencies of political leadership

Political Stability

Economic Strength

National Prosperity

Country Innovativeness

National Products & Services

Labor Markets

Others

Source: Buhmann, 2016

Political leadership and political stability are the measures that contribute to country reputation formation the most. Following these, the factors that most influence how a country's image is formed are economic strength and national prosperity which the study will focus on and use as proxies to analyse country reputation impacts on trade (Huai *et al.*, 2020).

GDP is easily accessible indicator that is frequently highly correlated with other non-financial measures of the life quality indicators. However, it does not directly measure a nation's level of development or the welfare of its citizens. Since GNI measurements reflect national income rather than the value of domestic production, they are preferred to GDP measurements (Saha, 2023). Income received by citizens of a nation, regardless of whether it comes from domestic output or foreign assets, is included in GNI.

As a broad average indicator, GNI per capita does not reflect inequalities in the income distribution within countries since it includes population size. Recognition of all revenue entering a national

economy, regardless of whether it is earned domestically or abroad, is one of main advantages of GNI per capita as an economic indicator. It indicates the income of the whole country per citizen. Therefore, GNI per capita is used as a proxy for country reputation in the analysis section in this study.

2.7.6. Country reputation of Azerbaijan

Azerbaijan has initiated plenty of programs in the last couple of years to enhance its country reputation. Hosting first European Games in 2015, Islamic Solidarity Games in 2017, as well as FIA Formula One World Championship since 2016 and The Caspian Sea-European Union Green Energy Corridor project are some examples of such initiatives. Moreover, the 2024 UN Climate Change Conference (UNFCCC COP 29) was held in November 2024 in Baku, Azerbaijan. This important event seeks built on prior achievements and laid the groundwork for greater future efforts to address the global climate change challenge. Delegates from different countries, NGOs, and other stakeholders convened to discuss and negotiate strategies for mitigating and adapting to climate change, aiming for a collective move towards a sustainable future. Furthermore, the government has demonstrated extraordinary leadership in terms of humanity policies implementation, responsiveness to public needs and adherence to democratic principles in global arena. Humanitarian assistance provision to the nations facing challenges, hosting the 18th Summit of the "Non-Aligned Movement" are some examples of such endeavours. Through such political leadership and country innovativeness, the country has gained reputation in the global arena.

Country Image has more impacts on trade relations of Azerbaijan with Europe since Azerbaijan is relatively new market for them. Due to regional relations and trade policies with Turkey and post-Soviet countries, the trade relations of Azerbaijan ties back to historical trade policies and trading products. Therefore, country image is correlated with trade flow of Azerbaijan with European countries.

These measures, in my opinion, provide substantial prospects for growing commercial connections with Europe in addition to improving Azerbaijan's standing internationally. Azerbaijan is well-positioned to strengthen economic alliances and expand its trade relations as it enhances its international reputation, contributing to both its economic growth and global standing.

Since this dissertation uses GNI per capita as a proxy for country reputation, the graph below illustrates Azerbaijan's GNI per capita from 1993 to 2022.

Figure 7. GNI per capita of Azerbaijan (1993-2022)
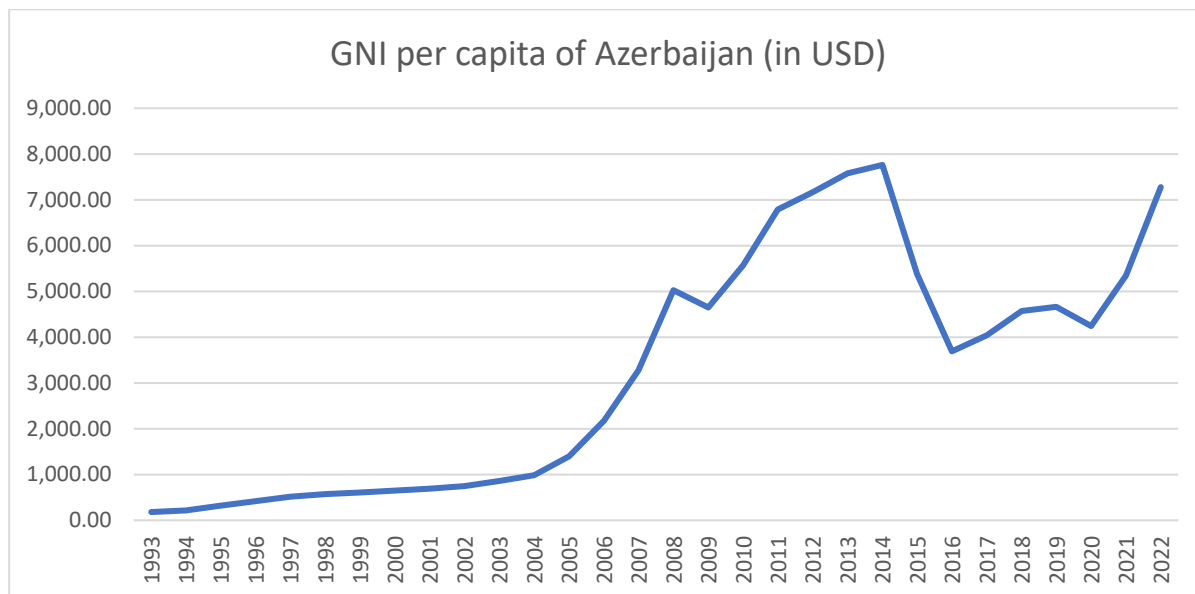
Source: The State Statistical Committee of the Republic of Azerbaijan, 2023

GNI per capita of Azerbaijan has been increasing gradually every year in terms of national currency. In terms of USD, due to AZN faced devaluations in 2015 and 2016, there were significant decreases in those years. Still, since 2015, Azerbaijan's GNI per capita has been able to rise. Since GNI per capita is a key indicator of economic growth and national wealth, it has contributed to enhancing the country's reputation, as economic strength is a fundamental factor in shaping a nation's image.

Table 2. Export ratio of countries based on GNI per capita

Sample Size = 158	GNI per capita (USD)	Export Ratio (Percentage of GDP)	Number of Countries
Small (t-value)	<700	29 (3.4)	53
Medium (t-value)	700-9000	41 (0.8)	76
Large (t-value)	>9000	46 (3.0)	29

Source: Reyes-Heroles et al., 2020

Statistics shows that countries with high income tend to export more. We observe low-income countries export significantly less in comparison to mid and high-income countries, yet difference between mid-income and high-income countries' exports is not significant in statistical sense (Luo and Suacamram, 2022). This further highlights GNI per capita as an indicator of national wealth,

demonstrating its direct correlation with exports and its influence on a country's image. Azerbaijan was among the low-income countries in the past as per the model classification for its GNI per capita, however, in the last two decades, it has been considered mid-income country.

2.8.Research and Development (R&D) expenditures

Globalization has enabled countries and companies to access new markets, leading to increased competition. Consequently, businesses must focus on continuous improvement to enhance profitability. In this competitive landscape, companies have sought innovative strategies to strengthen their market position (Mehtiyev and Magda, 2022a).

Research and development (R&D) is a way of increasing effectiveness. Thus, the importance of R&D investment increased nowadays. The primary cause is the possibility of acquiring more information and improving technology and other tools through increased expenditure in research and development. As a result, companies can protect or increase their competitiveness in global arena (Kathuria *et al.*, 2023a).

R&D investment has several significant advantages for countries in addition to its benefits for businesses. First, businesses are likely to be more competitive in global markets if they invest more in research and development in their own countries. Thus, the country's export volume is likely to rise because of the companies' R&D investments. The current account deficit problem, which is acknowledged as a key symptom of the financial crisis, will improve as a result (Askarany and Smith, 2003).

### 2.8.1. Importance of R&D investments

Investment in research and development also plays a crucial role in driving economic growth and expansion. First, increased exports are one way that R&D investment supports economic growth. Because export is the component of GNI as well as GNI per capita, any increase in the export amount leads economic growth to go up. Furthermore, it enhances economic growth by boosting investment in the respective nations. Like exports, because investment is another component of GNI, economic growth is assured ultimately (Yüksel, 2017).

Governments are more involved in R&D investments nowadays in comparison to previous decades. This is because lack of R&D in different fields can impact technological advancement, economic growth as well as export performance of a nation (Bojnec and Ferto, 2014). Thus, the state of nonexistence as well as lack of R&D centres and investments could lead to obstacles in different sectors of a country. From economic point of view, it would cause to generation of obstacles to exports, consequently to economic growth (Kathuria *et al.*, 2023b; Tamini and Valéa, 2021).

Countries began to focus more on R&D activities because of the above-mentioned benefits. Within this framework, the R&D expenditures of counters has increased significantly in the last 2 decades across the globe. Moreover, countries provide certain advantages to entice the corporations to engage in R&D.

The recent World Bank research states that there has been a noticeable rise in R&D expenditures. The total amount spent on research and development worldwide increased significantly. Below chart illustrates the increase of R&D expenditures for top investing countries for the period of 1990-2019.
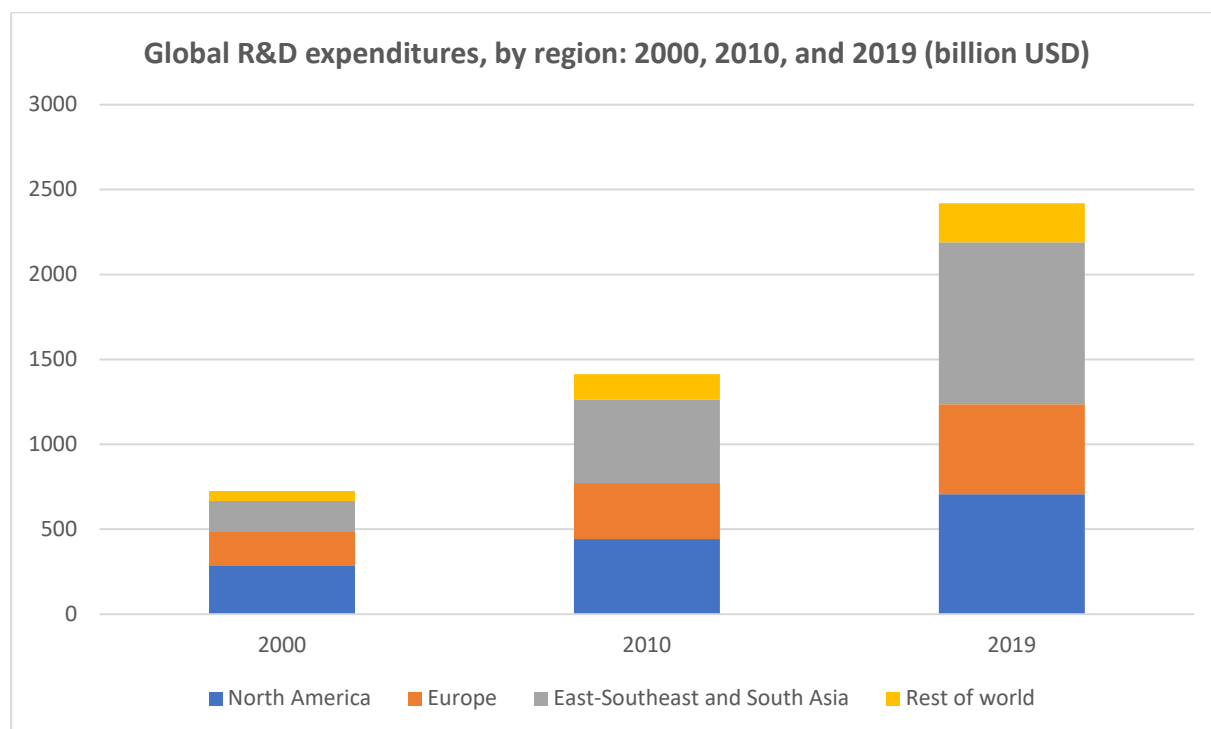
Figure 8. Gross domestic expenditures on R&D
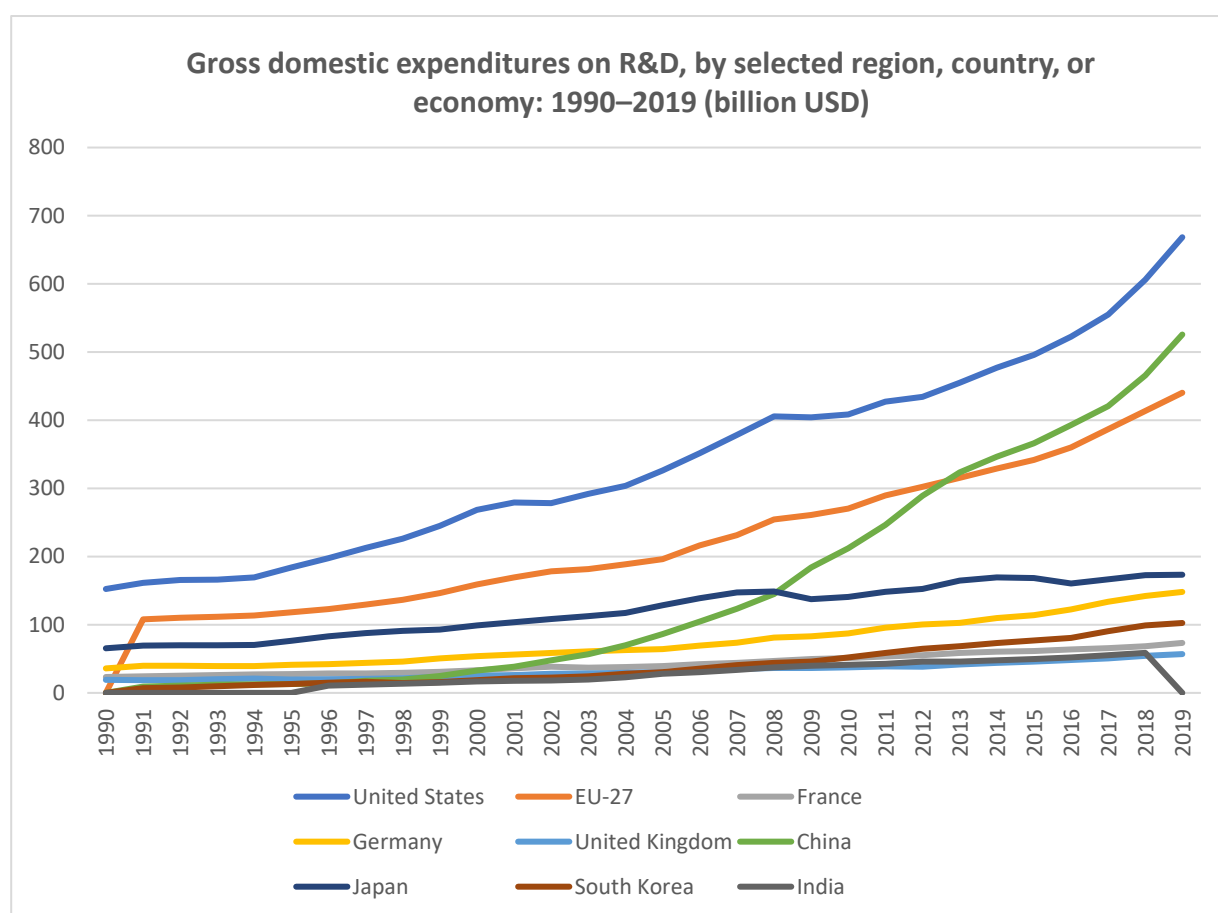
Source: National Science Board, 2020

The total amount spent on R&D worldwide keeps rising significantly as countries intensify their R&D initiatives. Between 2000 and 2019, global R&D spending climbed by more than three times to $2.4 trillion from $725 billion. Below figure illustrates the comparison of regions on R&D investments for the last three decades.

Figure 9. Global R&D expenditures

Global R&D expenditures, by region: 2000, 2010, and 2019 (billion USD)

Legend: North America | Europe | East-Southeast and South Asia | Rest of world

Source: National Science Board, 2020

Government support for research and development varies greatly between nations and is subject to change over time. There are a few ways how governments can support R&D. Governments can directly support businesses to do research through grants or procurement programmes. They can also encourage R&D by offering tax incentives, like as R&D tax credits. The government conducting its own R&D in public laboratories is another way as well. In the fields of public health, energy, economy, and defence, such research typically addresses the needs of the government while potentially having broader applications. Lastly, the other method is research at universities funded by a government, usually with the aim of producing fundamental knowledge (Guellec and Van Pottelsberghe De La Potterie, 2003). Among these ways, direct government funding of R&D performed by firms has more positive effects on businesses in comparison to other above-mentioned methods.

The notion that a state can contribute to economic and social development through innovation reinforces its influence on R&D initiatives. To facilitate manufacturing and export of technologically advanced items, a state also provides the required funding for research and development, which facilitates achievement of the long-term growth rate target (Huseynov, 2022).

Table 3 presents data on Gross Expenditures on R&D (GERD) for selected countries, categorized by sector and funding source for 2019 or the most recent available year.

Table 3. Gross expenditures on R&D (GERD)

Country	GERD	R&D performance: Share of total (percent)				R&D source of funds: Share of total (percent)			
	($billions)	Bus.	Gov.t	Higher education	Private nonprofit	Bus.	Gov.t	Other domestic	Rest of the world
United States (2019)	668.4	74.5	9.7	11.7	4.1	65	21	6.8	7.2
China (2019)	525.7	76.4	15.5	8.1	N/A	76.3	20.5	NA	0.1
Japan (2019)	173.3	79.2	7.8	11.7	1.3	78.9	14.7	5.8	0.6
Germany (2019)	148.1	68.9	13.7	17.4	N/A	64.5	27.8	0.4	7.4
South Korea (2019)	102.5	80.3	10	8.3	1.4	76.9	20.7	0.8	1.6
France (2019)	73.3	65.8	12.4	20.1	1.8	56.7	32.5	2.8	8
India (2018)	58.7	36.8	56.1	7.1	0	36.8	63.2	0	0
United Kingdom (2019)	56.9	66.6	6.6	23.1	2.3	54.8	25.9	5.6	13.7

Source: National Science Board, 2020

2.8.2. Impacts of R&D investments on economy and trade

Several studies of researchers found out that there are some degree of associations between R&D expenditures and economic growth as well as export volume and performance of countries (Dobrzanski and Bobowski, 2020; Peng and Ilinitch, 1998). While some studies indicated strong correlation between R&D expenditure and economic growth, likewise some other studies proved the existence of causal relationship between R&D expenditure and export performance. Moreover, several studies proved that R&D expenditure is associated with the changes in export volume through regression analyses (Yüksel, 2017).

Furthermore, Yüksel (2017) conducted a study to define whether R&D expenditure has influence on export and economic growth using the Worl Bank data of 28 member countries of European Union for the period of 1996 and 2014. Dumitrescu Hurlin panel causality analysis which is a form of Granger causality test method was applied. According to the results of this analysis, it was determined that exports cause R&D expenses.

In my opinion, while existing studies provide valuable insights into the relationship between R&D expenditure, export performance, and economic growth, these findings highlight the importance

of fostering innovation-driven policies. Countries can enhance their competitive edge in global markets by strategically investing in R&D, not only boosting exports but also paving the way for long-term economic growth and resilience.

The table below presents recent studies that assess the impact of R&D investments on economic growth and export volume, detailing the applied methodologies and key findings.

Table 4. Similar studies on R&D expenditure and economic growth/export

| Authors	Scope	Method	Result
Galovic (2015)	OECD	Regression	R&D has a significant influence on export volume.
Bozkurt (2015)	Turkey	Johansen Cointegration Analysis	There is a causal relationship between economic growth and R&D expenditures.
Akçalı and Sismanoğlu (2015)	19 different countries	Regression	R&D expenditure increases economic growth.
Kuo and Su (2015)	US	Regression	There is a positive correlation between R&D investment and export.
Gümüş and Çelikay (2015)	52 different countries	Regression	R&D expenditure has a positive and significant effect on economic growth.
Edquist and Henrekson (2015)	Sweden	Regression	R&D investment plays a very significant role with respect to economic growth.
Guarascio et. al. (2015)	EU	Regression	R&D has a positive impact on economic performance of the countries.
Altıntas and Mercan (2015)	21 OECD countries	Panel Cointegration Analysis	R&D expenditures play a very significant role to increase economic growth.
Inekwe (2015)	66 developing countries	GMM	R&D has a positive contribution on economic growth.
Çetin and Cincera (2015)	EU	Probit	Export and R&D expenditure have strong correlation.
Blanco et. al. (2016)	US	Panel Cointegration	R&D investment has a positive influence on economic growth.
Bilas et. al. (2016)	EU	Granger Causality Analysis	There is a causality relationship between R&D expenditure and economic growth.
Türedi (2016)	23 OECD countries	GMM	There is a relationship between R&D expenditures and economic growth.
Vuong et. al. (2016)	Sweden	Regression	R&D investment increases the productivity of the firms that provides a competitive advantage regarding export.
Sungur et. al. (2016)	Turkey	Granger Causality Analysis	R&D is an influencing factor of the export in Turkey.

Source: Yüksel, 2017

The lack of coordination among numerous promising initiatives creates inefficiencies that hinder the overall effectiveness of research and development, the dissemination of knowledge, and the

advancement of technological innovation. Without a structured and collaborative approach, resources may be misallocated, redundant efforts may arise, and the potential for groundbreaking discoveries or impactful advancements may be diminished. Strengthening coordination mechanisms among stakeholders, such as government agencies, private sector entities, and research institutions, can significantly enhance the efficiency and effectiveness of R&D activities, leading to more meaningful technological progress and economic growth (Balli and SİGeze, 2018). Azerbaijan should be able significantly to increase the pace and quality of innovation through coordination improvement (Rahmanov *et al*., 2018).

2.8.3. R&D expenditures of Azerbaijan

R&D expenditures of Azerbaijan refer to the financial resources allocated by the country towards research and development activities, aiming to foster innovation, enhance technological capabilities, and support economic growth, particularly in non-oil sectors. Azerbaijan has an increasing focus on information, communication, and technology sector. To gather information, one of the most effective ways is investments on R&D either directly by the state or indirectly through provision of incentives to private sector. Figure 10 shows the gradual increase of R&D investments for the period of 1993-2022 in USD. The reason of decrease after 2015 is devaluation of the national currency, thus R&D investments seem less after 2015 in USD terms. However, in AZN (national currency) terms, there has been gradual increase ever since.

Figure 10. R&D expenditures of Azerbaijan
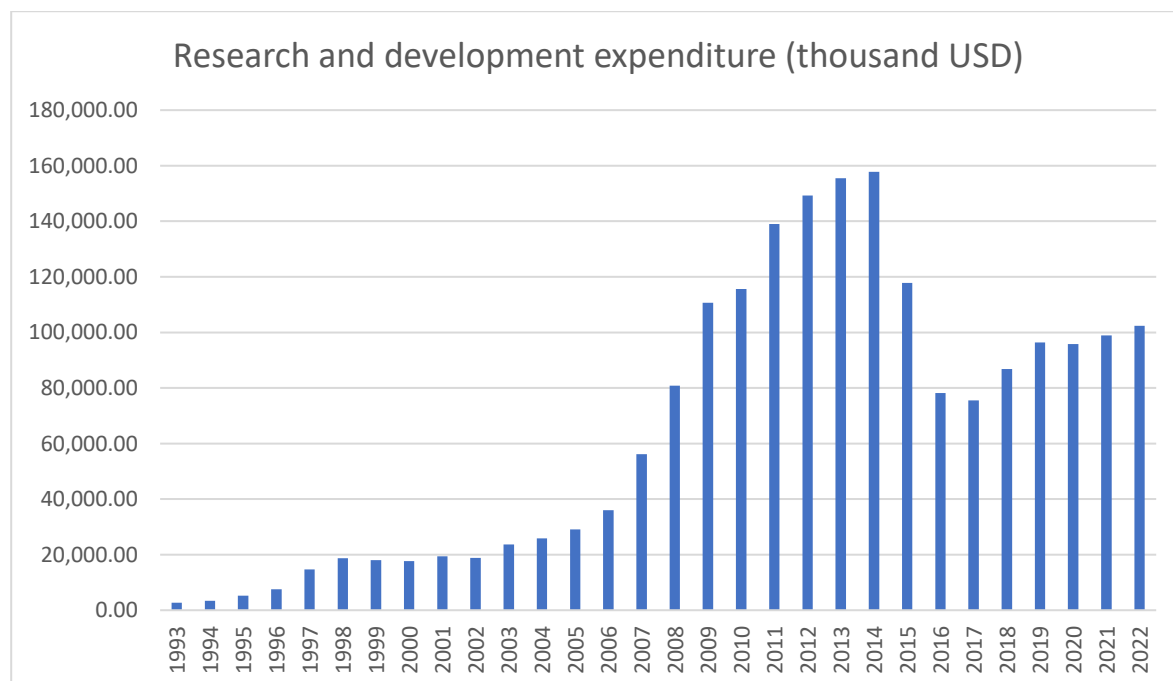
Source: The State Statistical Committee of the Republic of Azerbaijan, 2023

It was recognized that research on the nations' R&D expenditures is crucial when taking these factors into account. One indirect trade barrier to open international commerce is said to be the absence of R&D investments. From an economic perspective, if the R&D expenditures are invested in a legit way to enhance information, technology, or other tools, it would lead to increase of economic growth and exports in the long term (Huseynov, 2022).

This study aimed to analyse the impact of R&D expenditures on Azerbaijan's non-oil exports. Within this context, alongside the other non-trade barriers, the impacts of R&D expenditures on non-oil exports of Azerbaijan will be evaluated. As a result of the analyses, it will be possible to understand whether R&D expenses in the short and long term have influences on export performance of Azerbaijan (Zeynalli *et al.*, 2022).

2.9. Exchange rate volatility

The global economic crisis altered trade patterns, influenced the trading system, and damaged world economies. Depreciation followed by low employment levels in some countries led to lower prices for exports and higher prices for imports. Because of this, it encouraged policymakers to increase exports in the hopes of boosting trade and account balances. Policymakers needed to examine exchange rate fluctuations more closely. It is imperative to acknowledge that a significant percentage of exported goods are comprised of imported components and may not always be interchangeable with local products (Ejaz *et al.*, 2021).

Examining the volatility of exchange rates is crucial in the context of trade relations. An escalation in exchange rate volatility can lead to a decline in international trade due to associated risks like delivery and transaction costs (Wang *et al.*, 2019). The correlation between trade and exchange rates is predominantly influenced by long-term policy credibility. Fortunately, the existence of various financial derivatives, including futures, options, and currency swaps, provides effective means to mitigate the risks associated with exchange rate volatility. Moreover, the flow of trade itself has the potential to stabilize fluctuations in exchange rates and diminish overall volatility (Broda and Romalis, 2013).

2.9.1. Currency misalignment

Currency misalignment is an additional concept concerning exchange rates and international trade. There have been discussions whether exchange rate misalignment qualifies as a type of subsidization. As per WTO rules, exchange rate misalignment does not qualify as subsidization. In accordance with the SCM Agreement, a financial contribution made within a member state's boundaries by a government or other public institution, or the provision of income or price support that results in the grant of a benefit, constitutes a subsidy. Critics contend that neither of those

descriptions applies to currency undervaluation (Ikeda, 2021). Rather, exchange rate volatility if initiated by governments to receive benefits in foreign commerce activities, perceived as a trade barrier, specifically, as indirect non-trade barrier.

The impact of exchange rate misalignment on trade policy is a further facet of the link between exchange rates and international trade. The currency rate may have a secondary impact on trade policy decisions made by the government. Recent studies suggest that long-term adoption of protectionist trade policies may result from consistently high exchange rates. On the other hand, local businesses may become less competitive if actual exchange rates rise. Conflicts between trading partners on exchange rate policy have the potential to intensify political pressures at home. Trade policy is a tool that countries use to counter perceived exchange rate overvaluation in response to ongoing trade imbalances (UNCTAD, 2013).

Another aspect of the relationship between exchange rate and international trade is currency misalignment, which is mainly driven by its effect on relative import prices. Relative prices mean that in a short term they respond to the movement of exchange rate. If a national currency is depreciated, it increases the competitiveness of the export sectors. In this sense the impacts of currency misalignments on prices are like the effects of export subsidy and import tax. Yet, there is another issue that largely complicates the relationship between international trade and exchange rate misalignment (Nicita, 2013). It is because foreign traders typically absorb a portion of the currency rate volatility because they do not want to completely modify their prices in the country of destination. Also, even in cases where there is a large devaluation of the importer currency, the low entry costs greatly encourage businesses to continue operating in the trade market.

Exchange rate misalignment is not the only driver of global trade imbalances. They also have a significant impact on the flow of international trade. A currency's depreciation promotes exports and, in a sense, limits imports. However, the opposite results from a currency's appreciation. Trade policies are used by some countries to mitigate some of the effects of a currency that is overvalued. Governments and central banks should keep an eye on their currency rates in relation to both their rivals and trading partners (Lal *et al.*, 2023).

Misalignments in exchange rates and their impact on trade policy are the other matter concerning the relationship between exchange rates and international trade. Government decisions over international trade policy may be indirectly influenced by exchange rates. According to recent studies, for example, the usage of protectionist trade policies increases when currency rates are overvalued over an extended period.

Exchange rate misalignments cannot give a full explanation for global imbalances; however, they do have a considerable effect on international trade flow. While currency depreciation promotes exports and restricts imports, currency appreciation causes the opposite (Geiger *et al.*, 2018).

2.9.2. Impacts of exchange rate fluctuation on economy

More research is being conducted on the influence and expansion of both national and international corporations, as well as merchants, in global markets. It is assumed that multinational corporations that engage in foreign production and exportation have monopolistic strength in the global market and are exposed to exchange rate fluctuations. Productions would decline if currency rate risk were not mitigated which could eventually impact the economy indirectly (Tarasenko, 2021).

The fluctuations in exchange rates can directly affect local firms. Local businesses take on a variety of financial and commercial risks when they trade internationally. Businesses implement risk management tools to reduce risks, however, such sophisticated tools might not be accessible to all businesses due to the high cost of their use and the possibility that they won't cover all financial and commercial functions (Mehtiyev *et al.*, 2021).

More risk-averse businesses are more likely to hedge against future fluctuations in exchange rates. To offset the costs of exchange rate fluctuation, they will therefore apply a risk premium. Hedging, however, has drawbacks as well, including high costs and difficulties for businesses predicting the number and timing of their transactions (Kharroubi, 2011).

Advocates of flexible exchange rates emphasise that, in comparison to fixed exchange rates, they offer greater trading freedom that could benefit economy. Flexible exchange rates are evaluated in terms of their ability to maintain the equilibrium of the balance of payments, which is dependent solely on domestic policy goals and is unaffected by outside influences. The purchasing power parity (PPP), which is a phenomenon that contributes to the equilibrium of global commerce, is strongly dependent on flexible exchange rates. It should not, however, be counted on to always help close the PPP gaps. Theoretically, the volatile and ongoing fluctuations in exchange rates in international trade pose a risk since they heighten transaction uncertainty. However, there is an important opportunity that this risk might boost exports in certain cases. This is because traders who are extremely risk averse may worry about the worst-case scenario; therefore, as the risk rises, they are likely to export more to minimise the chance of a sharp decline in their earnings. In this respect, lower-income nations may desire to export more because they are often more risk averse (Mehtiyev *et al.*, 2021).

In agriculture sector, a lot of production decisions are made far in advance, and the ultimate pricing of the products is usually unknown. Thus, one of the primary risks in this industry is price

volatility. Exchange rate volatility can impact the transfer of world prices to domestic prices. For instance, majority of grain trading worldwide is conducted in US dollars. This could result in an extra transaction cost if the exporter and the importer are based outside of the US, yet the items are traded in US dollars (Lal *et al.*, 2023).

Moreover, the levels of exchange rates have a significant effect on investment flows that could result in positives outcomes for local economy. Foreign investors benefit when a country's currency depreciates because it makes capital investments more affordable for them, which is especially crucial for large economies (Barguellil *et al.*, 2018).

2.9.3. Impacts of exchange rate fluctuation on foreign trade

Many studies have been conducted to gain a better understanding of how exchange rates affect both international trade and trade policy. However, even with the growing body of research, there are still unanswered questions about the subject.

There are several hazards associated with exchange rate value in international trade activities, including transaction costs. Increase in exchange rate volatility would likely affect global commerce negatively. As there are a wide variety of financial products available today, including currency options and forward contracts, the risks related to exchange rate fluctuation can readily be mitigated. In this instance, volatility is not always a major problem for global trade, also, trade flow can moderate changes in exchange rates, which lowers volatility. Furthermore, in contemporary international transactions, traders are more likely to absorb the costs associated with potential exchange rate swings as part of their export strategy or to mitigate the risks of any unfavourable price shifts (Ekanayake and Dissanayake, 2022).

Trade restrictions might impact some domestic businesses that are no longer as competitive as they once were because of real exchange rate appreciation. Thus, disagreements among foreign traders regarding exchange rate policy may intensify political pressures. Governments may use trade policy as a substitute for managing excessive exchange rate volatility to address persistent trade balance imbalances (UNCTAD, 2013; Barguellil *et al.*, 2018).

Despite numerous analyses, no agreement has been reached regarding the direction of effects of exchange rate volatility on international trade. It is because in case one side of international trade participant or exporter might benefit from volatility while importer faces challenges associated with trade costs or vice versa. The consensus is that exchange rates have an impact on bilateral flows, including imports and exports. Transaction cost is the most frequently cited result, according to numerous theoretical studies about currency fluctuations and trade. Trade flows may be impacted by currency conversion costs as well as the risk of potential fluctuations in exchange

rates. Put another way, if traders are risk averse, then an increase in exchange rate risk would result in a decrease in trade volume.

Certain scholars continue to question whether exchange rate volatility has a negative impact on trade. Depending on a trader's risk aversion, exchange rate volatility may have both positive and negative effects, according to De Grauwe (2021). The income effect and substitution effect are the two opposing effects that characterize the effects of exchange rate volatility. The income effect suggests that businesses increase their international trade activities to counteract a decline in total expected utility, whereas the substitution effect causes businesses to reduce their trade flows because of uncertainty surrounding exchange rate risk (Giofré and Sokolenko, 2023; Gomez *et al.*, 2021).

A government can lower the relative value of its own currency and increase its trade balance through altering the exchange rate of its currency relative to that of another nation. As the economy's exports grow more affordable, overseas traders find them more alluring. In addition to improving the current account deficit, a greater demand for exports accelerates economic growth (Vasary *et al.*, 2014). However, it is important to highlight that more stable currencies are to likely lead to gradual growth in exports in different fields, while fluctuating currencies bring various negative impacts (Lal and RAI, 2022).

Exchange rate volatility might have different impacts on traders, depending on their level of risk aversion. It implies that the income effect and the substitution effect are the two opposing forces that influence the impact of exchange rate volatility. Trade flows are decreased through the substitution impact as enterprises become less convinced about exchange rate risks. However, businesses will expand their international commerce due to the revenue effect to counteract a decrease in the total projected utility (De Grauwe, 2021).

Many empirical studies have been conducted in recent years, and they have demonstrated that exchange rate volatility has either a positive, negative, or no effect on the amount of international trade. Additionally, some studies that assessed the effects in various sectors discovered that commerce in some products reacts both positively and negatively to changes in exchange rates. The overall effect depends heavily on the mix of imported and exported commodities (McKenzie, 1999).

2.9.4. Currency devaluation as a factor of inflation

There are two sources of inflation: cost-push and demand-pull. The variables that contribute to inflation for each category are listed in the table below.

Table 5. Factors of inflation

Demand-pull inflation	Cost-push inflation
Cut in interest rates	Higher wages
Increased money supply	Devaluation
Higher wages	Increase in VAT
	Inflation expectations

Source: American Economic Review, 2016

Devaluation is a factor in cost-pull inflation, as was previously demonstrated. Inflation is yet to occur because prices will probably increase in the event of a devaluation. Inflation and devaluation are positively correlated because inflation is a sign of devaluation.

There are two kinds of devaluations of currencies. There is the big bang, which is a large, sudden devaluation, and there is the gradual, which occurs gradually and credibly. Based on the historical events, seems to be better results with gradual devaluation. Since the impacted economies will only have to deal with gradual changes in relative prices, the trade balances of those affected economies often improve after a progressive devaluation. Potentially, more exchange rate changes could be anticipated in the future. All gradual devaluations, though, also depend on a nation's initial circumstances (Geiger *et al.*, 2018).

The big bang devaluation is stunning the economy and bringing several challenges that will have long-term implications. What occurs is that exports do not rise even when an economy's trade balance improves. It can also be linked to the decline in GDP and investments since governments are compelled to make significant exchange rate adjustments during difficult economic times. Trade between countries is disrupted as exports suddenly become less expensive while imports unexpectedly rise in price (Mehtiyev *et al.*, 2021). Furthermore, the value of foreign debts will rise in the event of a swift and severe devaluation, particularly if they are measured in US dollars. This may also result in a banking crisis, which may force a domestic bank that is dollar-based to reject new investments. One of the main advantages of a big-bang devaluation is that it typically does not lead to expectations of further rounds of depreciation.

When imports become more costly due to devaluation, exporting becomes more competitive (Musarat *et al.*, 2021). A currency's devaluation leads to inflation, which drives up the cost of imports. Exports become more competitive as a result, and demand-pull inflation results from rising exports. On the other hand, inflation impacts many other aspects of an economy, including

government bond yields, mortgages, businesses, and the cost of life in the country (Mohammed *et al.*, 2021).

In my opinion, while devaluation and inflation can provide short-term benefits, such as boosting exports, their long-term effects, including eroding purchasing power and creating economic instability can outweigh these advantages.

2.9.5. Impacts of oil prices on exchange rate

Oil prices in the global market have been fluctuating sharply for several decades. Economists have long held that oil prices have a significant impact on population health and the socioeconomic growth of nations. This opinion is a result of the expanding connections between oil prices and the global economy brought about by the social economy's explosive growth. One of the most important aspects of oil pricing is that even little changes in crude oil prices have a significant impact on the growth of the world economy. Unusual fluctuations in oil prices, however, give clear signals to nations around the world to recognise and quickly address a multitude of issues (Mukhtarov *et al.*, 2021). As such, there is a strong correlation between the price of oil and the sustainable growth of the world economy. Specifically, changes in the price of oil could have a major impact on profitability.

Projection of short-term growth and unemployment was frequently done using changes in oil prices. Changes in oil prices are likely to have an immediate effect on oil importers. In the long run, lower oil prices will boost global economic growth and decrease inflation, however many oil-exporting nations are likely to be affected negatively. Variations in oil prices can impact capital flows and heighten market volatility in the financial and exchange rate terms (Mukhtarov *et al.*, 2021).

Higher oil prices ultimately leads to an increase in GDP in oil-exporting countries. Studies indicate oil prices have an impact on the growth rate of GDP and concluded the positive impact of oil prices on economic growth proxied by national income (Taghizadeh-Hesary *et al.*, 2019).

To further mitigate the impact of oil prices on overall trade turnover, promotion of non-oil product exports must be encouraged and the replacement of oil exports with non-oil exports expedited. Given the strong correlation between the national currency's value and oil prices, foreign exchange reserves should be managed more wisely and efficiently. Instead of relying on interventions that deplete reserves, it would be preferable to develop alternative strategies, such as securities and discount rate policies, to regulate the exchange rate.

2.9.6. Currency fluctuation triggering actions

Government policies and monetary policies have direct impacts on exchange rate volatility. For instance, the COVID-19 epidemic has led to increased government interventions in various economic and social domains. Governments have taken various actions in reaction to confirmed cases. Exchange rate volatility is significantly impacted by confirmed cases. Conversely, exchange rate volatility is restrained by the economic policies implemented by governments during the pandemic, such as fiscal measures, income support, and aid (Feng *et al.*, 2021).

A nation's foreign exchange control system must exist to model commercial activities. However, a regulation of this kind can also prove to be an impediment to trade (UNCTAD, 2013). It may result in fictitious currency fluctuations, which would be a non-tariff barrier. Central banks may maintain artificially high exchange rates if they, for instance, plan to shield their exports or home industry from outside competition. They also can intentionally devalue local currencies. As a result, local products will seem cheaper abroad while foreign ones will be more expensive domestically. As a result, domestic consumers will pay taxes, and domestic manufacturers will be supported because of protectionist measures. However, ensuring the sustainability of this policy in the long term presents significant challenges. Central banks should take various measures that may have an impact on the trade balance and several other sectors to maintain the exchange rate at a high level. Maintaining a high exchange rate and having a fixed rate depends on the foreign exchange reserves. Furthermore, in the event of a local currency devaluation, inflation is likely to happen as well. For instance, Azerbaijan's devaluation in 2015 caused changes to the trade balance and inflation. As a country that exports oil, Azerbaijan's currency depreciated because of the drop in oil prices (Mukhtarov *et al*., 2019). The economies of Kuwait, Venezuela, and Algeria are in the list of highly impacted countries as well.

Hedging against potential fluctuations in exchange rates is another countervailing strategy used by risk-averse companies. To offset the costs associated with exchange rate volatility, a risk premium is applied. Hedging, however, has drawbacks as well as high costs. For instance, it can be challenging for businesses to forecast the volume and timing of their transactions (Kharroubi, 2011). The effects of exchange rate volatility on trade can be challenging to predict; they can be either positive or negative, depending on how traders respond to increased risks and transaction delays.

Furthermore, even though exchange rate volatility is not a major concern in trade policy, some countries can use trade policy to recompense some of the consequences of an overvalued currency. However, policymakers should pay attention to exchange rates of their own countries and those of

other countries. They should monitor their exchange rates relative not only to that of their trading partners, but also to that of their competitors (UNCTAD, 2013).

More regulations are being implemented, which could operate as trade obstacles, as global trade activities rise. One of these obstacles is the volatility of exchange rates, which has an impact on trade activity both directly and indirectly. Currency exchange rate volatility can have an impact on both trade agreements and a nation's trade balance. The study's conclusions include the fact that long-term effects of monetary policy changes on trade activities can be discerned. Import levels are impacted over time, whereas export levels are typically affected immediately (Mehtiyev *et al.*, 2021). To conclude, exchange rate adjustments must be accompanied by other trading policy actions for global rebalancing, and strategies should be set (Bostan *et al.*, 2018).

All in all, large body of literature review on this subject indicates that variations in exchange rates have a detrimental influence on international commerce, whilst other studies find no direct significant impacts at all. Exports from certain industries, including agriculture, are adversely affected negatively by exchange rates over an extended period. Furthermore, exchange rates have a major short-term impact on imports and exports. Overall, the effects of exchange rate volatility may differ depending on the business since different business sectors and industries may have unidentical trade policies and levels of concentration (Mehtiyev *et al.*, 2021).

3. MATERIAL AND METHODS

3.1.Research design

The thesis adopted an inductive methodology to undertake explanatory research. Non-trade factors influencing exports were conceptualized as barriers within the framework of contemporary international trade. Initially, studies were conducted to identify and analyse their impacts in detail.

The main goal of the study was to identify indirect non-trade barriers and their characteristics and analyse their impacts on non-oil export performance of Azerbaijan. In the research, four main non-trade barriers – subsidy, country reputation, research and development expenditure, and exchange rate volatility were elaborated and analysed. Azerbaijan is taken as focus country to assess non-trade barrier impacts.

The research consists of three main parts.

In the first part, literature about trade and barriers is discussed and information related to trade and non-trade barriers on global trade is clearly stated. Indirect non-trade barriers were identified and listed, their characteristics, how they are different than direct trade and tariff barriers were discussed and their impacts in country level and on global economy are illustrated. Non-trade barriers were differentiated from direct barriers based on their engagement level with the trade activities.

In the second part, three main non-trade barriers – subsidy, country reputation, research and development, and their characteristics were discussed from different perspectives, sources and multiple analyses applied to find out their impacts on export performance of Azerbaijan.

In the third part, the impact of exchange rate volatility on non-oil trade was analysed separately. The reason for analysing exchange rate volatility separately, while the other three non-trade barriers were examined together, is that the data sample covered thirty years, with ten years for each variable, allowing for more reliable results (Mackinnon *et al.*, 1999; Phaju, 2023). Moreover, exchange rate volatility had to be evaluated from different perspectives due to its wider impact across various economic dimensions. Thus, different analysis methods were applied to evaluate volatility impacts of exchange rate. To provide a clearer picture of the impacts, graphs and charts were used for the illustrations. The aim in this part was to identify if and how significantly this hindrance impacts the trade balance.

3.2. Data collection

This study utilizes time series data covering the period from 1993 to 2022. The data was sourced from the World Bank database and the State Statistical Committee of the Republic of Azerbaijan.

The dataset includes key economic indicators such as R&D expenditures, government-provided subsidy incentives, total exports across various sectors, GNI per capita, and foreign exchange rates over the past three decades. These variables were selected to analyse the relationship between non-trade barriers and Azerbaijan's non-oil export performance.

3.3. Data specifications

In the study, subsidies, country image, R&D expenditures, and exchange rate volatility were chosen among non-trade barriers to be elaborated and analysed. These are some of the main indirect commerce hindrances that could have enormous impact on trade. Total exports of Azerbaijan as means of trade was analysed; however, oil and oil products were excluded. The reason of testing non-oil exports was that Azerbaijan's export volume is significantly dependent on oil as about 90 percent of total exports is oil and oil products. Trade surplus is acquired mainly because of oil exports. Azerbaijan's exports and consequently overall trade balance is directly impacted by oil prices. Thus, testing overall trade in the analysis would lead to completely different direction of results than the research aims. The reason was that obviously oil price volatility plays a crucial role in Azerbaijan's overall export level while other factors would not impact the total exports significantly. In other words, there is very few indirect non-trade barriers which can affect oil exports. However, plenty of non-trade barriers are associated with non-oil trade. The non-trade barriers which were analysed in this research have no or very limited association with oil exports. Therefore, non-trade barriers in non-oil exports were analysed.

Gross National Income (GNI) per capita was used as a proxy for country reputation in the analysis as it is one of the main indicators of country image since it includes the population size of a nation and total income received by the country from its residents and enterprises regardless of whether they are in the country or abroad. Variety of studies suggest that GNI per capita is directly and positively proportional with country image in global arena. General notion is that countries with higher GNI per capita tend to have better perceived reputation (The World Bank, 2014).

3.4. Methodological sequence and rationale

The test was run under the presumption of cointegration between the variables following a Vector Error Correction Model (VECM) estimation. This enables both short- and long-term Granger-causality testing. In the VECM analysis, three out of four main non-trade barriers which the research is based on were analysed. The independent variables in the VECM test are GNI per capita as a proxy for country reputation, R&D expenditure, subsidy expenses and the dependent variable is non-oil exports. Exchange rate volatility was not included in the analysis due to the sample size which is thirty to get more reliable results. However, exchange rate volatility impacts

on trade balance were analysed separately based on an empirical recent historical event in Azerbaijan.

Eviews and R software were used to analyse the data. The main analysis applied to gathered data is Vector Error Correction Model (VECM). This approach facilitated the examination of Granger-causality in both the short and long run (Ravinagarajan and Sharon, 2023). VECM model found whether there is causality between some of non-trade barriers and non-oil exports in Azerbaijan. To find out which causality test to apply and to check the eligibility of the data for VECM test, unit root test and Johansen Cointegration tests were run initially. Through unit root test, the data stationarity was checked and found out that the data is non-stationary at level, however, could become stationary at first differenced. Cointegration test was applied to find out if there is a correlation between time series data in the long term. Besides, optimal leg selection was identified through Akaike information to avoid any spurious results. Using the optimal number of lags enabled the test to generate reliable results (Johansen, 1988; Persyn and Westerlund, 2008).

R was employed to run simple correlation and regression analyses. Through correlation analysis, possible linear association, and the strength of such relationships between each non-trade barrier and non-oil exports has been clarified. Based on Pearson Correlation Coefficient, the strength, and the direction of a linear relationship between two variables were detected.

To determine to what extent the non-trade barriers in the study can predict Azerbaijan's exports of non-oil products, Multiple Regression analysis was used. Subsidies, GNI per capita, and R&D expenditures were classified as independent factors, while non-oil exports was considered the dependent variable. There were thirty observations, with ten for each of the three independent variables. The data of the last 30 years (1993–2022) was examined in the sample. With the analysis, the extent to which subsidies, GNI per capita, and R&D spending account for the variation in non-oil product exports was determined.

In the third part, to test the hypothesis about exchange rate volatility and trade performance, an analysis of a case study pertaining to Azerbaijan's devaluation and economic reliance on it was conducted. The study indisputably demonstrated how, in 2015 and beyond, devaluation affected international commerce and the trade balance. The main purpose of this case study was to demonstrate how devaluation affects Azerbaijan's export volume. The Azerbaijan Statistics Committee database provides historical import and export data for Azerbaijan, which was used to further develop the study. The study presented the responses of the Azerbaijani Central Bank and other authorities in a clear and concise manner, together with the resulting changes in the trade balance.

Case study review about exchange rate volatility was followed by policy analysis. Even though exchange rates and international trade have been the subject of numerous studies, this research highlighted various facets of international trade in terms of exchange rate volatility in connection to non-oil trade in Azerbaijan and policies implemented to avoid FX irregularity impacts to economy, especially to foreign trade.

In addition, policy analysis was conducted to highlight and assess immediate actions taken by the Central Bank after the devaluation in 2016 and the initiatives implemented by authorities to keep the volatility stable. The analysis also emphasized the new policies that are necessary to improve FX stability and increase non-oil trade and open a path for further policy discussions. Monetary policy, inflation, devaluation, exchange rate volatileness, and export performance of Azerbaijan were all covered in the case study and policy discussions.

3.5. Model validation

Before applying the tests, several prerequisites were examined to validate the use of the Vector Error Correction Model.

3.5.1. Optimal lag selection

Several works emphasized the importance of lag length determination. A lag is the value of a variable in a previous time. In other words, time series is shifted by the lag value before comparing it with itself, which is mainly applied in autocorrelation, which is comparing time series data with itself, whereas correlation tests how two time series are similar. Selecting a higher order lag length than the true lag length is likely to causes an increase in the mean-square forecast errors of the model and that lag length generates autocorrelated errors. Therefore, we ran tests to identify optimal number of lags in our model.

There are a few ways to identify optimal number of legs to run cointegration and VECM tests. Lag length is frequently selected using an explicit statistical criterion such as the AIC or SIC.

One of the ways is identify this is Akaike Information Criterion (AIC). Lower the AIC value, the better the model (Franses, 2021). Below, Table 6 illustrates optimal number of lag selection criteria. Based on lag length test result, the optimal number of lags to be used is four. Besides AIC value which our model prioritises, the other values such as Final Prediction Error (FPE), and Hannan-Quinn information criterion (HQ) suggests lag selection of four as well. However, we will apply three lags in VECM analysis. Since the model of the research is VECM, three lags will be applied in further analysis both in Johansen Cointegration and VECM tests. VAR Lag Order Selection Criteria indicates four lag selection is optimal. Because the VECM model is rewriting the VAR by differencing and losing one lag, we must follow p-1 for lag selection. So, if the Vector

Autoregression (VAR) process at level, suggests four lags, applying three lags in Johansen Cointegration and VECM tests is optimal. VAR is specified for original variables, while in the VECM test variables are in their first difference. In other words, VAR(p) model has an equivalent representation as a VEC(p-1) model. The VECM model is estimated using symmetric lags and the same lag length is used for all variables in all equations of the model. VECM model is characterized by their order, which refers to the number of earlier time periods the model will use (Pesaran *et al.*, 2000; Prüser, 2023).

Table 6. VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1256.234	NA	1.48e+37	96.94105	97.13460	96.99678
1	-1174.138	132.6162	9.36e+34	91.85676	92.82452*	92.13544
2	-1150.974	30.29171*	5.96e+34	91.30566	93.04764	91.80729
3	-1130.182	20.79121	5.43e+34	90.93711	93.45330	91.66168
4	-1100.622	20.46483	3.60e+34*	89.89400*	93.18441	90.84152*

Source: Author's computations

*Indicates lag order selected by the criterion

LR: sequential modified LR test statistic

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwartz information criterion

HQ: Hannan-Quinn information criterion

3.5.2. Conversion to stationary data

The other prerequisite to apply VECM model is stationary data. A common presumption in numerous time series methodologies is the requirement for data stationarity. A stationary process is characterized by the constancy of its mean, variance, and autocorrelation structure, which remain unchanged over time. A time series is deemed stationary when its statistical properties or moments, such as mean and variance, remain constant over time. On the contrary, non-stationarity characterizes a time series whose statistical properties undergo changes over time (Diniz *et al.*, 2020; Liang and Schienle, 2019; Pesaran *et al.*, 2000).

In the data utilized for the analysis in this thesis, all variables exhibit non-stationarity at their level form. The data needs to be converted into stationary variables. First differences will be applied to

check whether the data becomes stationary. Correlogram and Q-statistics are used to examine the data.

Below is the illustration of the data in a graph. Since the data is deviates from the range of zero, and having trends as illustrated, we can assume the data is non-stationary. However, we still need to apply Correlogram statistics to prove it.
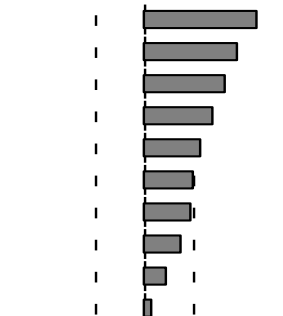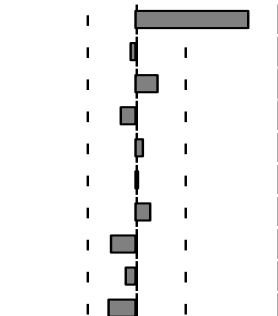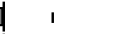
Figure 11. Non-stationary data illustration
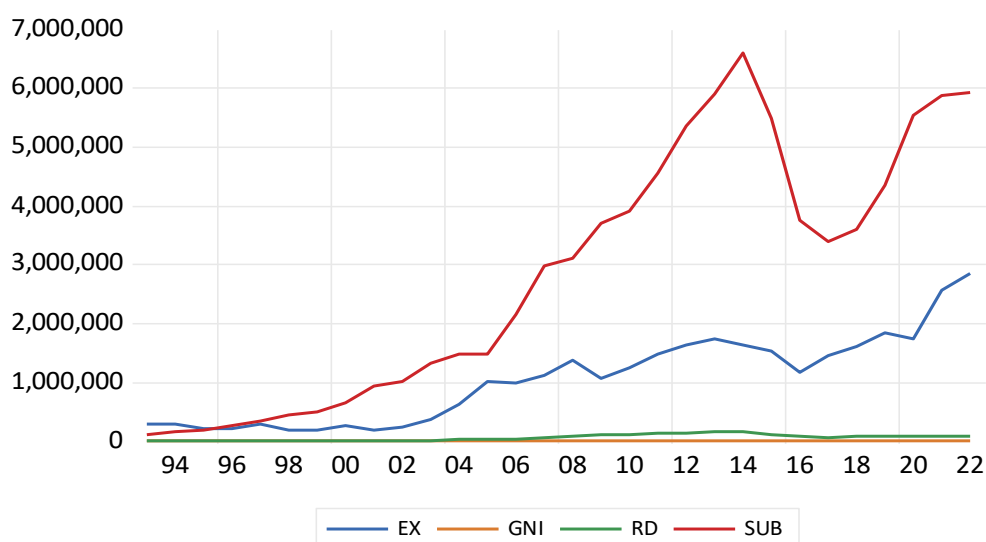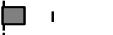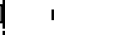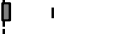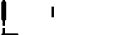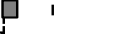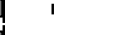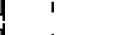

Source: Author's estimates

Correlogram series statistics were run to clarify whether the data is stationary or not. Ten lags were included, which is the recommended optimal number of lags in the Correlogram test due to the sample size. The guideline suggests using one-third of the sample size. Since the sample size in the analysis is thirty, the optimal number of lags is ten.

The null hypothesis for the test is variables are stationary. Below is the result of Correlogram time series test at level. All p values are less than 0.05 which means we need to reject the null hypothesis. Consequently, we consider our data is non-stationary at level and move on to next phase to check the data in first difference.

Table 7. Correlogram time series test at level

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.831	0.831	22.886	0.000
		2	0.678	-0.044	38.637	0.000
		3	0.600	0.157	51.446	0.000
		4	0.501	-0.108	60.715	0.000
		5	0.420	0.043	67.504	0.000
		6	0.363	-0.005	72.765	0.000
		7	0.337	0.101	77.498	0.000
		8	0.263	-0.173	80.508	0.000
		9	0.167	-0.078	81.783	0.000
		10	0.056	-0.204	81.933	0.000

Source: Author's computations

Below graph illustrates the data after converted to first difference. The trend vastly disappeared, and the deviation happens around zero which is indicator of stationary data.
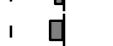
Figure 12. Stationary data illustration
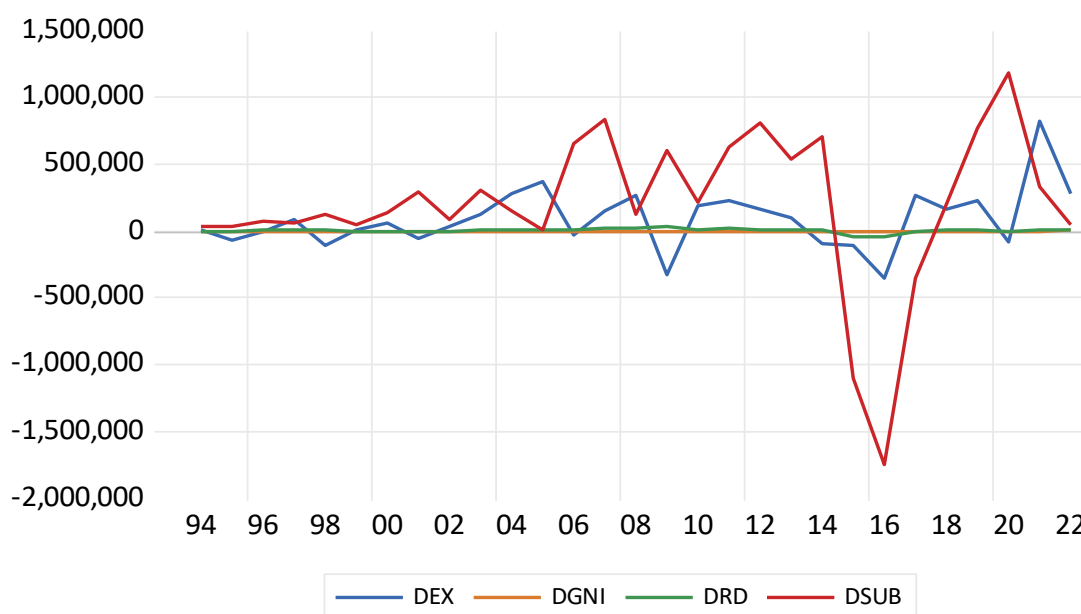
Source: Author's estimates

Below is the result of Correlogram test at first difference. At first difference, 10 lags is used again. All the p values for all ten lags are more than 0.05 which means we cannot reject the null hypothesis which is "variables are stationary". Moreover, the Autocorrelation and Partial Correlation values gradually going down in majority of the cases when the number of lags increased. Additionally, the spikes of Autocorrelation and Partial Correlation values are happening withing the limits of the model as illustrated. This is another indicator of stationary data. Furthermore, Ljun-Box (LB) statistics indicates that the data is stationary after first difference. LB which is taking the last lag p value to analyse the data is stationary or not. Based on Correlogram test results, we can conclude

that the variables are non-stationary at level, however, stationary at first differenced. Having the data stationary at first difference allows us to apply VECM test.

Table 8. Correlogram time series test at first difference

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.034	0.034	0.0367	0.848
		2	0.024	0.023	0.0564	0.972
		3	0.020	0.019	0.0706	0.995
		4	0.016	0.014	0.0802	0.999
		5	-0.228	-0.230	2.0257	0.846
		6	-0.116	-0.108	2.5530	0.862
		7	0.015	0.033	2.5621	0.922
		8	-0.059	-0.047	2.7105	0.951
		9	-0.066	-0.056	2.9075	0.968
		10	-0.037	-0.086	2.9711	0.982

Source: Author's computations

In this section, stationary variables were developed from non-stationary variables, enabling the application of the time series model - VECM. Upon conversion and first differencing, the data became stationary, making it suitable for use in time series models such as the VECM model. The variables are denominated as d(EX), d(GNI), d(RD), and d(SUB) after first differenced. The initial difference in a time series signifies the sequence of alterations from one period to the next one. In other words, If Y_t represents the value of the time series Y at period t, the first difference of Y at period t is defined as $Y_t - Y_{t-1}$.

4. RESULTS

4.1. Assessment of subsidy, country image, and R&D expenditure analyses

In this part, econometric analyses are applied to find out associations and causal relationship between non-trade barriers and non-oil exports using the time series data for the period of 1993 – 2022. Three main non-trade barriers - subsidy implementations, R&D expenditures, and GNI per capita as a proxy for country image are tested. Johansen's cointegration and Vector Error Correction Model (VECM) causality tests were applied to identify the short and long-run connection and causality direction. Moreover, correlation and multiple regression analyses were applied to test any other associations between the variables.

4.1.1. Cointegration test

A cointegration test is used to determine whether there exists a long-term correlation among multiple time series. This concept was initially introduced by Nobel laureates Robert Engle and Clive Granger in 1987, following the publication of the spurious regression concept by British economist Paul Newbold and Granger.

Cointegration tests are designed to recognize situations where two or more non-stationary time series are integrated in a manner that prevents them from deviating from equilibrium over the long term. These tests serve to assess the extent of sensitivity of variables to the same average price over a specified period.

The other advantage of Johansen Cointegration test is that it circumvents the challenge of selecting a dependent variable and mitigates problems arising when errors are propagated from one step to the next. Consequently, Johansen Cointegration test can identify multiple cointegrating vectors, making it a more appropriate method than the Engle-Granger method for multivariate analysis (Johansen and Juselius, 1990).

In this part, Johansen Cointegration test has been applied to check whether the variables are cointegrated or having long-run association. In other words, cointegration test is used to analyse whether there is a correlation between several time series in the long term. The Johansen test is used to test cointegrating relationships between several non-stationary time series data gathered. The number of lags used in this test is three. The test is applied at level (original data) but not at first difference which is the requirement for Johansen Cointegration test. The other prerequisite to apply Cointegration test is that data must be integrated of the same order which means all variables become stationary at first difference (Johansen, 1988). Through Johansen Cointegration test, original data is analysed to find out whether there is cointegration and based on the outcome, time

series model is identified for causality analysis. Below is the outcome of Johansen Cointegration test for the gathered data. Null hypothesis is "there is no cointegration".

Table 9. Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.771983	73.42884	47.85613	0.0000
At most 1 *	0.527013	34.99216	29.79707	0.0115
At most 2 *	0.443553	15.52629	15.49471	0.0495
At most 3	0.010921	0.285501	3.841465	0.5931

Source: Author's computations

Trace test indicates three cointegrating eqn(s) at the 0.05 level.

* Denotes rejection of the hypothesis at the level 0.05

** Mackinnon-Haug-Michelis (1999) p-values

Table 10. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.771983	38.43668	27.58434	0.0014
At most 1	0.527013	19.46588	21.13162	0.0841
At most 2 *	0.443553	15.24079	14.26460	0.0349
At most 3	0.010921	0.285501	3.841465	0.5931

Source: Author's computations

Max-eigenvalue test indicates two cointegrating eqn(s) at the 0.05 level.

* Denotes rejection of the hypothesis at the level 0.05

** Mackinnon-Haug-Michelis (1999) p-values

As illustrated in the above tables, both Trace Statistics and Max-Eigen Statistics suggest the existence of cointegration equations for the data. MacKinnon-Haug-Michelis (1999) p values proves these suggestions (Mackinnon *et al.*, 1999). At None* assuming there is no cointegration or error term, the p value is less than 0.05, therefore, the assumption must be rejected. Proceeding to the subsequent stages of analysis in detail, the p-values in the Trace test were below 0.05 for three cointegrating equations, while the Maximum Eigenvalue test identified two cointegrating equations, leading to the rejection of the null hypothesis of no cointegration. This indicates that

VECM rather than VAR could be applied to analyse the data. For determining the number of cointegrating equations to be used in VECM test, the model will rely on Trace statistics. Trace statistics found out three cointegrating equations, while Max-Eigen statistics indicated two. Since Trace statistic considers all the smallest eigenvalues, it holds more power than the maximum Eigenvalue statistic (Kasa, 1992; Serletis and King, 1997). In addition, Johansen and Juselius (1990) recommend applying Trace statistic results in case of conflicting results on the number of cointegrating equations between Trace and Max-Eigen statistics. Therefore, the result of Trace statistics of three cointegrating equations will be used as input in VECM test. The guiding principle suggests that in case of cointegration existence between variables, VECM model from time series can be applied. Otherwise, we would run Vector Autoregressive Model (Carlucci and Montaruli, 2014).

4.1.2. Vector Error Correction Model (VECM) Test

The Granger causality test is a statistical hypothesis test used to assess whether one time series provides valuable information for forecasting another time series. Vector Error Correction Model falls within the realm of multiple time series models, often applied to data where the underlying variables share a long-run common stochastic trend, a phenomenon known as cointegration (Aye Khin *et al.*, 2017). VECM represent a theoretically driven method that is used to estimate both short-term and long-term effects of one or multiple time series on another. The term "error correction" is tied to the idea that the deviation from a long-run equilibrium in the last period, referred to as the error, influences the short-run dynamics. Consequently, VECM directly estimate the speed at which a dependent variable returns to equilibrium following changes in other variables (Pesaran *et al.*, 2000; Zou, 2018).

Yule (1926) and Granger and Newbold (1974) were pioneers in highlighting the issue of spurious correlation and proposing solutions for addressing it in time series analysis. When dealing with two entirely unrelated yet cointegrated time series, conducting a causality analysis using Vector Autoregressive Model (VAR) can lead to the emergence of a seemingly statistically significant relationship. This situation might lead to misleading evidence of a genuine relationship between the variables. Ordinary least squares (OLS) is no longer consistent in such cases, and commonly used test-statistics become invalid. To avoid such misleading results, Vector Error Correction Model (VECM) has been developed since VAR or Engle-Granger models suffers numerous weaknesses in case of cointegrated variables. These shortcomings can be mitigated by running Johansen's Cointegration test. Notably, it checks for multiple cointegrating relationships, treats all variables as endogenous, and facilitates tests related to long-run parameters. The model derived

from this procedure is commonly referred to as a VECM. To apply VECM, data must be stationary and cointegration must exist (Granger and Newbold, 1974; Yule, 1926).

The Vector Error Correction Model is a type of cointegrated Vector Autoregressive (VAR) model that considers the cointegrating relations among the variables. The concept involves a VAR model of order p - 1 on the differences of the variables, along with an error-correction term derived from the established cointegrating relationship. In this part, short-run and long-run causality of the variables will be analysed using VECM (Haslbeck *et al.*, 2020; Prüser, 2023).

The Granger-causality test was conducted to investigate the causal connection between non-oil exports and various indirect trade barriers. The test is executed following a Vector Error Correction Model (VECM) estimation, assuming cointegration between variables. This approach facilitates the examination of Granger-causality in both the short and long run. The chi-squared statistic is employed to determine short-run causality, while long-run causality is assessed based on the significance of the Error Correction Term (ECT) (Carlucci and Montaruli, 2014; Nguyen *et al.*, 2021).

The data used in the analysis is integrated of same order, at level they are non-stationary, however, when converted to first difference, they became stationary. This is a prerequisite of VECM; thus, it is verified that the the model could be applied.

4.1.3. Long-term causality test

The equation of the VECM analysis is as follows from which residual of the cointegrating equations can be derived when EX is dependent variable.

D(EX) = C(1)*(EX(-1) - 0.346557945264*SUB(-1) - 23564.274973) + C(2)*(GNI(-1) - 0.00124809812887*SUB(-1) + 344.163888482) + C(3)*(RD(-1) - 0.0238080880942*SUB(-1) + 1217.52656499) + C(4)*D(EX(-1)) + C(5)*D(EX(-2)) + C(6)*D(EX(-3)) + C(7)*D(GNI(-1)) + C(8)*D(GNI(-2)) + C(9)*D(GNI(-3)) + C(10)*D(RD(-1)) + C(11)*D(RD(-2)) + C(12)*D(RD(-3)) + C(13)*D(SUB(-1)) + C(14)*D(SUB(-2)) + C(15)*D(SUB(-3)) + C(16)

Using the equation estimation with Least Squares method (Gauss-Newton/Marquardt steps), the probabilities is identified to prove causality.

Table 11. Least Squares method probabilities (Gauss-Newton/Marquardt steps)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.115270	0.607606	0.189713	0.8533
C(2)	-1377.492	682.5165	-2.018254	0.0712
C(3)	40.01890	31.12152	1.285891	0.2275
C(4)	-0.750782	0.743651	-1.009589	0.3365
C(5)	-0.567981	0.619075	-0.917468	0.3805
C(6)	-0.748042	0.471807	-1.585484	0.1439
C(7)	1085.281	587.0895	1.848579	0.0943
C(8)	572.6403	442.1612	1.295094	0.2244
C(9)	440.8241	273.0039	1.614717	0.1374
C(10)	-19.39193	21.99359	-0.881708	0.3986
C(11)	-15.74214	16.64236	-0.945908	0.3665
C(12)	2.731270	11.32552	0.241161	0.8143
C(13)	-0.365087	0.259984	-1.404267	0.1905
C(14)	-0.414615	0.292208	-1.418901	0.1863
C(15)	-0.375243	0.221839	-1.691512	0.1216
C(16)	213904.5	70208.95	3.046684	0.0123

R-squared	0.80316	Mean dependent var	101319.3
Adjusted R-squared	0.507899	S.D. dependent var	234021.1
S.E. of regression	164165.5	Akaike info criterion	27.1304
Sum squared resid	2.70E+11	Schwarz criterion	27.90461
Log likelihood	-336.6951	Hannan-Quinn criter.	27.35334

Source: Author's computations

R squared in VECM model indicates to what extent the model is performing or how well the predictions match the real results. A higher R-squared means the model is doing a better job predicting (Khan, 2023). In the model, the R-squared is 0.8 (more than 80 percent) which means the predictions match the real results.

Speed of adjustment towards long run equilibrium (C1) is positive and the probability is more than 0.05 which is not significant. To consider the long-run causality in VECM model, the speed of adjustment must be negative, and the probability must be significant (Shojaie and Fox, 2022). Thus, there is no long-run causality. The analysis shows that there is no long run causality from the independent variables to dependent variable. In other words, GNI per capita, R&D expenditure, and subsidy expenses have no influence on non-oil exports in Azerbaijan. In other words, there is no long-run causality running from GNI per capita, R&D expenditure, and subsidy expenses as proxies for non-trade barriers to non-oil exports.

4.1.4. Short-term causality test

In this section, short term influence from GNI per capita, R&D expenditure, and subsidy expenses on non-oil exports in Azerbaijan is tested. Wald statistics is applied to analyse short-run causality between each independent variable with dependent variable. The Wald test (Wald Chi-Squared Test) is a parametric statistical measure to confirm short term causality and whether each independent variable present in a model is significant or not (Friston *et al.*, 2014; Rosoł *et al.*, 2022).

Wald test result of GNI per capita independent variable found out the Chi-square probability is 0.0765. Thus, null hypothesis cannot be rejected since it is more than 5 %. Therefore, it can be concluded that there is no short-run causality from GNI per capita to export.

Null hypothesis: C (7) = C (8) = C (9) = 0

Table 12. Wald test 1

Test Statistic	Value	df	Probability
F-statistic	2.287111	(3, 10)	0.1408
Chi-square	6.861334	3	0.0765

Normalized Restriction (= 0)	Value	Std. Err.
C(7)	1085.281	587.0895
C(8)	572.6403	442.1612
C(9)	440.8241	273.0039

Source: Author's computations

To check short term causality from RD to EX, equation for coefficient diagnostics of Wald test is as follows:

Null hypothesis: C (10) = C (11) = C (12) = 0

In this scenario, we cannot reject the null hypothesis. As per the Wald test result, we can say that there is no short run causality from R&D expenditure to non-oil exports.

Table 13. Wald test 2

Test Statistic	Value	df	Probability
F-statistic	0.786533	(3, 10)	0.5283
Chi-square	2.359598	3	0.5012

Normalized Restriction (= 0)	Value	Std. Err.
C(10)	-19.39193	21.99359
C(11)	-15.74214	16.64236
C(12)	2.731270	11.32552

Source: Author's computations

The coefficients to test short run causality between SUB and EX are C13, C14, and C15. Coefficient diagnostic equation is formulated as follows:

Null hypothesis: C (13) = C (14) = C (15) = 0

Table 14. Wald test 3

Test Statistic	Value	df	Probability
F-statistic	1.409156	(3, 10)	0.2969
Chi-square	4.227467	3	0.2379

Normalized Restriction (= 0)	Value	Std. Err.
C(13)	-0.365087	0.259984
C(14)	-0.414615	0.292208
C(15)	-0.375243	0.221839

Source: Author's computations

4.1.5. Model evaluation

To check whether the model has any statistical error or not, Serial Correlation LM test is applied. Serial correlation can occur when the assumptions of a model regarding causality are inaccurate. Errors emerge in a model when it lacks full precision, leading to variations in outcomes during real-world applications. If error terms from different and usually adjacent periods are correlated, the error term is serially correlated. In time-series analyses, serial correlation occurs when errors linked to a specific period persist into subsequent periods (Tank *et al.*, 2022).

Table 15. Breusch-Godfrey serial correlation LM test

Null hypothesis: No serial correlation at up to three lags

F-statistic	0.272306	Prob. F(3,7)	0.8436
Obs*R-squared	2.717165	Prob. Chi-Square(3)	0.4373

Source: Author's computations

As per the Serial Correlation LM test result, since the chi-square p value is 0.44, there is no serial correlations in the model which means that there is no statistical error in terms of serial correlation to predict current values through past values.

The other way to check statistical error in the model is heteroskedasticity test. If there is heteroscedasticity in the data, the variance differs across the values of the explanatory variables, thereby violating the underlying assumption. As a result, estimator will be unreliable due to bias. Thus, it is imperative to test for heteroscedasticity and apply corrective measures in case of presence. Heteroskedastic describes a situation where the variance of the residual term or error term in a model exhibits wide variations. In contrast, homoscedastic refers to a condition where the variance of the error term in a model remains constant. One of the ways to detect heteroscedasticities is Breusch-Pagan test (Halunga *et al.*, 2017).

Breusch-Pagan-Godfrey heteroskedasticity test is applied and below is the result.

Table 16. Heteroskedasticity test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	0.654425	Prob. F(16,9)	0.7799
Obs*R-squared	13.98200	Prob. Chi-Square(16)	0.6001
Scaled explained SS	2.762784	Prob. Chi-Square(16)	0.9999

Source: Author's computations

As per Breusch-Pagan-Godfrey heteroskedasticity test results, heteroskedasticity does not exist. Chi-square probability which is 0.6 is the proof, therefore, existence of heteroskedasticity is rejected and homoskedasticity accepted. Thus, model is homoscedastic which refers to a condition in which the variance of the error term in the model is constant.

Last but not least, Jarque-Bera statistics test is applied to check distribution of residuals. The Jarque–Bera statistic examines skewness and kurtosis simultaneously. In the context of single-equation results, it tests the null hypothesis that the disturbances for that specific equation follow

a normal distribution. In other words, it checks whether residuals of the model is normally distributed (Chen and Kuan, 2003).

Figure 13. Jarque-Bera statistics
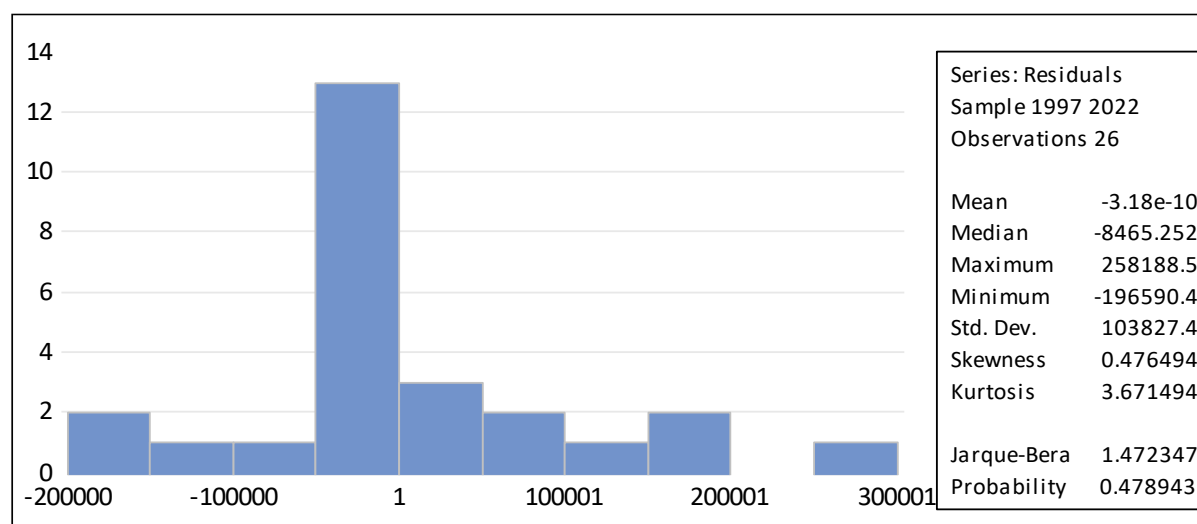
Source: Author's estimates

The result indicates that the Jarque-Bera (J-B) value is 1.47 and the probability of the test is 48 percent. The critical value for J-B is 5.99 and the confidence level is 5 percent. Since J-B value is less than critical value and the p-value is more than 0.05, it can be concluded that the data conforms normal distribution.

4.2. Assessment of subsidy, country image, and R&D expense in conventional analyses

4.2.1. Correlation assessment

In this section correlation analyses of non-oil product exports with R&D expenditure, GNI per capita, and subsidies expenditure are discussed respectively. Correlation coefficients are used to measure the strength and direction of a linear relationship between two variables. Using the below equation, model is formulated to find out the correlation coefficient (Akoglu, 2018).

$\rho xy = Cov\ (x,y)\ /\ \sigma x\ \sigma y$,

where: ρxy is Pearson product-moment correlation coefficient;

Cov (x,y) is covariance of variables x and y;

σx is the standard deviation of x;

σy is the standard deviation of y.

To find out whether there is a correlation between non-oil exports and R&D expenditure, we applied above equation as follows:

Cov (R&D expenditure, non-oil exports) = 30921931061.9768

σ (R&D expenditure) = 51069.53527

σ (non-oil exports) = 746802.1066

$\rho xy = Cov (x,y) / \sigma x\ \sigma y$

$\rho xy = 30921931061.9768 / (51069.53527*746802.1066)$

$\rho xy = 0.81$

Pearson product-moment correlation coefficient between non-oil product exports and R&D expenditure is 0.81. This is considered strong correlation coefficient. This means there is positive correlation between non-oil product exports and R&D expenditure which means when R&D expenditures increase, the non-oil product exports of Azerbaijan is likely to increase as well. The scatterplot below represents the spectrum of Pearson correlation coefficient of 0.81.

Figure 14. R&D expenditure and non-oil exports correlation illustration
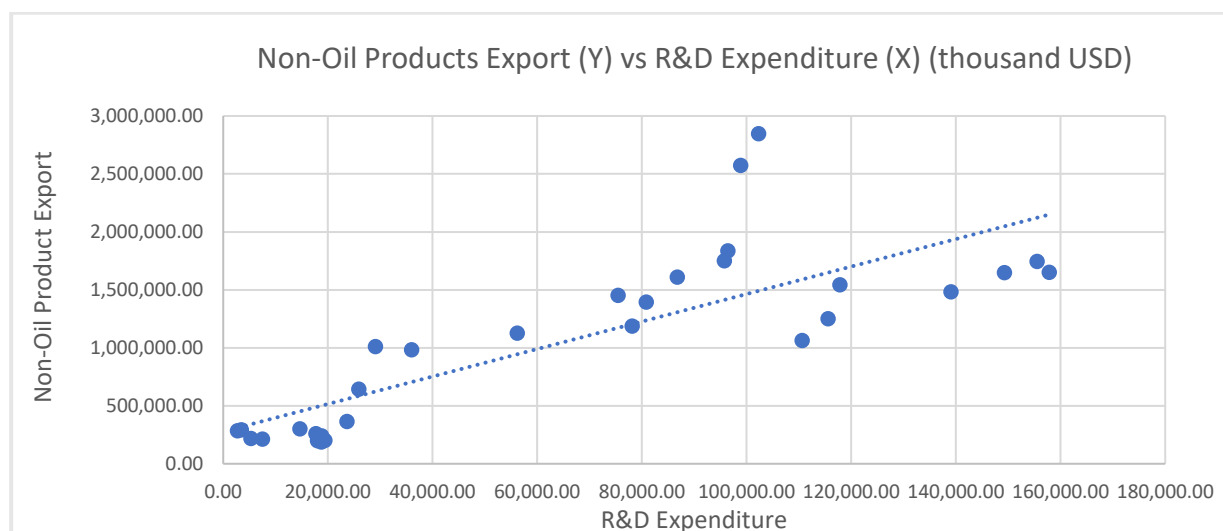
Source: Correlation analysis, author's estimates

If we apply the same formula above for subsidy transfers and non-oil product exports, we get the below results.

Cov (subsidy and other transfers, non-oil exports) = 1487695522512.02

σ (subsidy and other transfers) = 2160401.581

σ (non-oil exports) = 746802.1066

$\rho xy = Cov (x,y) / \sigma x\ \sigma y$

$\rho xy = 1487695522512.02/ (2160401.581*746802.1066)$

ρxy = 0.92

Correlation coefficient between non-oil exports and subsidy transfers is 0.92. This level of positive correlation is considered statistically strong correlation which means that when subsidy and other transfers (X) increase, the level of non-oil exports (Y) is very likely to increase as well. The below graph illustrates the increase nuances.

Figure 15. Subsidy incentives and non-oil exports correlation illustration
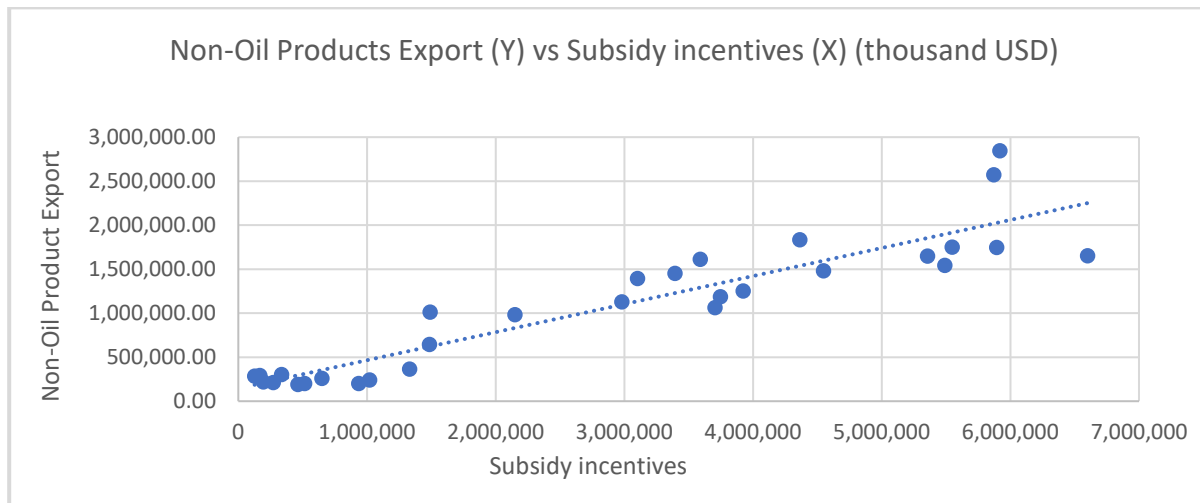
Source: Correlation analysis, author's estimates

Since GNI per capita is one of the main indicators of economic strength, we consider GNI per capita as a base for country image shaping factor. Thus, it is of further interest to examine the relationship between non-oil exports and the GNI per capita of Azerbaijan. In an intercountry context, the correlation between these variables may be taken to reflect the indirect effects of GNI per capita through changes in export level. To calculate the correlation, below equation is used.

Cov (GNI per capita, non-oil exports) = 1728158.093

σ (GNI per capita) = 2.626083449

σ (non-oil exports) = 746802.1066

ρxy = Cov (x,y) / σx σy

*ρxy = 1728158.093/ (2.626083449*746802.1066)*

ρxy = 0.88

Correlation coefficient between GNI per capita and subsidy transfers is 0.88 which is considered as strong correlation coefficient. Below scatterplot indicates the increase spectrum between two variables.

Figure 16. GNI per capita and non-oil exports correlation illustration

Non-Oil Products Export (Y) vs GNI per capita (X) (thousand USD)
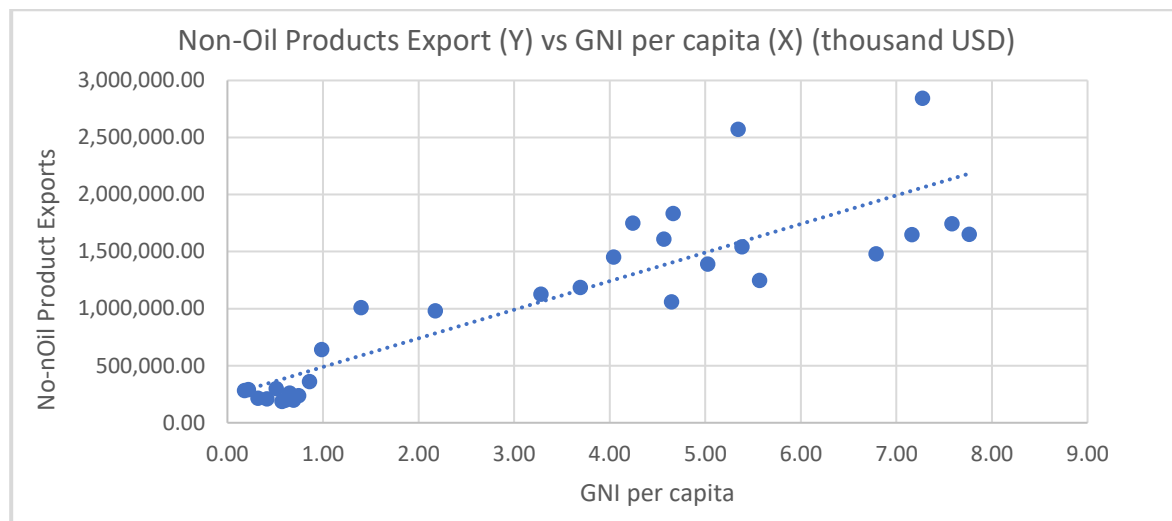
Source: Correlation analysis, author's estimates

The results obtained as regards the relationship between non-oil products export and subsidies, R&D expenditures, and GNI per capita indicates that there is positive correlation in all three cases. Therefore, above mentioned independent variables are directly proportional with non-oil product exports and might have an impact on the level of total exports of Azerbaijan indirectly.

Gross National Income (GNI) per capita is positively correlated with exports since the equation of GNI per capita includes total exports in it.

GNI per capita is a measure of the average income or economic well-being of the residents in a country. GNI per capita is calculated by dividing the total Gross National Income (GNI) of a country by the country's total population. GNI includes not only the income earned in the country's borders but also income earned by its residents abroad, excluding the income earned by foreigners within the country. Gross National Income includes wages, salaries, profits, rental income, interest, and other forms of income. GNI per capita is often used in economics to evaluate economic development and prosperity of a nation. GNI per capita is the main indicator to get insights about economic disparities, income distribution, and the overall quality of life of a country. The equation for GNI per capita is as follows.

GNI per capita = Gross National Income (GNI)/Total Population

GNI considers the international aspects of income. It reflects not only the economic activity that occurs in a country but also the income generated by its residents abroad. Therefore, GNI indicates more comprehensive picture of a country's overall economic performance. The equation for GNI is as follows.

GNI = GDP + Net income earned from abroad. In other terms,

$GNI = GDP + (EXfs – IMfs),$ where,

EXfs: money flowing from foreign countries,

IMfs: money flowing to foreign countries.

As per above equation, to calculate the net income earned from abroad, the income earned by foreign residents within the country deducted from income earned by a country's residents from foreign investments and work. It is called as net factor income from abroad as well. Net income earned from abroad equation accounts for the income that flows into or out of the country from international economic activities.

To calculate GNI, Gross Domestic Product (GDP) needs to be identified first which is another indicator to measure overall size of an economy and its performance. GDP and GNP are two of the most used measures to evaluate an economy. GDP is an indicator of the national economy, however, GNI represents how its nationals are contributing to the country's economy. For that reason, it's important to note that GNP does not include the output of foreign residents. While GNI calculates income, GDP is used to identify output. It is used to measure the economic output or production of a country. GDP represents the total value of all the goods and services produced within a country's borders in a specific period. GDP is calculated as follows:

$GDP=C+I+G+(X−M)$, where,

C represents consumption that is the total spending by households on goods and services.

I represents investments,

G stands for government spending on public goods and services, and

X - M represents net exports. X is the total value of exports, and M is the total value of imports

As shown in the equation, GDP includes total exports. Moreover, GDP is included in GNI as well as GNI per capita calculations. Consequently, exports directly impact a nation's GNI and GNI per capita. In other terms, higher exports of a country will lead to an increase of its GNI per capita. We conclude that GNI per capita and exports are positively correlated, as indicated by the equations, aligning with the results of the correlation analysis conducted above. Exports and GNI per capita is positively correlated.

4.2.2. Assessment of regression analysis

In this part, regression analysis was applied to find out to what extent independent variables in the correlation analysis can predict the non-oil product exports of Azerbaijan. Non-oil exports is taken as dependent variable while subsidies, GNI per capita, and R&D expenditures are categorized as

independent variables. The sample size of the analysis is thirty, having ten observations for each three independent variables. In the sample, the data of last 30 years (1993-2022) is analysed. Through the analysis, how much variability in export of non-oil products is explained by subsidies, GNI per capita, and R&D expenditures is found out.

Below is the statistics summary of the multiple regression analysis. The number of the observations is 30, data between 1993-2022.

Table 17. Regression statistics 1

Regression Statistics	
Multiple R	0.970863983
R Square	0.942576873
Adjusted R Square	0.935951127
Standard Error	188999.7717
Observations	30

Source: Author's computations

First, the analysis finds out that the significance value of our model (p value) is 0.000. The confidence level in the analysis is 95%. The model is statistically significant since the p value is less than 0.05. Given the p value is very close to zero, the null hypothesis is rejected. In other words, GNI per capita, subsidy transfers, and R&D expenditures predict non-oil products exports. The significance model of the analysis is shown below:

$F (3, 26) = 142.260, p = 0.000$,

where 3 is degree of freedom of regression (k-1) and 26 is the residual (n-k) degrees of freedom of analysis. And total degree of freedom of the analysis is 29 which is n-1. 142.260 is the F value of the analysis.

Second, with finding adjusted R square, we can see the comparison of the explanatory power of regression model that contain different predictors. Adjusted R square is 0.94 which is indicating model accuracy measure. Adjusted R square improved by the added predictor variables (Sperandei, 2014). In other words, 94 percent variance in the target field which is exports of non-oil products is explained by the predictor variables which are GNI per capita, subsidies, and R&D expenditures.

The below table indicates the coefficients and p values for each independent variable. P value for each of the predictor variable is very close to zero which means the model is statistically significant for each variable. The formula of the multiple regression is as follows:

$Y = a + b_1X_1 + b_2X_2 + b_3X_3$

Y is the dependent variable,

X variables are indicators of predictor (independent) variables,

"a" is constant,

"b" variables are the slope coefficients.

"a" is constant which is Y intercept is 204224.7365 as per below computations.

The regression model equation of the analysis based on the outputs from below findings is as below:

$Y=204224.7365 + 364.4588128* X_1+ (-21.88378057* X_2) + 0.384846253* X_3$

Table 18. Regression statistics 2

|	*Coefficients*	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	204224.7365	58335.37766	3.500872793	0.001692455	84314.65044	324134.8226
GNI per capita (USD)	364.4588128	72.30800647	5.040365938	3.02107E-05	215.8275769	513.0900488
R&D expenditure (thousand USD)	-21.88378057	3.384712424	-6.465477072	7.49157E-07	-28.8411566	-14.92640454
Subsidies and other transfers (thousand, USD)	0.384846253	0.0560551	6.865499361	2.74467E-07	0.269623345	0.500069161

Source: Author's computations

To interpret the table above in detail, it is necessary to examine the outcomes of each predictor value. As evident from the table, the p-value for each independent variable is very close to zero, indicating that the model is significant, and these variables are suitable for predicting the dependent

variable. The unstandardized coefficients for GNI per capita and subsidies are positive numbers. For every one unit increase in GNI per capita and subsidies, the non-oil products export will increase by the beta coefficient value, adding constant coefficient as well. GNI per capita has the most contribution in terms of unit change and it has significant impact on changes in non-oil products export. The coefficient of subsidies in the analysis is close to zero which means one unit change in subsidies impact the non-oil exports by 0.39. Since a unit and more change in subsidies is more likely to occur due to volume of the spending, the impact can be significant in case of high amount changes in subsidies. Different than these two variables, R&D expenditure coefficient is negative meaning that a unit change in R&D expenditure is triggering non-oil exports to decrease by 21.9. It is important to emphasize that the model is multiple regression which considers all three independent variables and find the common interaction point for all three of the variables together with showing impact coefficients separately. Even though R&D expenditure and non-oil product exports are positively correlated, since it is not linear regression, however, multiple independent variables are analysed to predict the non-oil products exports, the model found out the Beta coefficients for each predicting variables contributing to the change in independent variable.

Fitted line plots are used to display the fitted values for all independent values in observation separately. These plots are assessing model fit by comparing how well the fitted values follow the observed values. These are illustrations of how the fitted values are in line with observed values.

Figure 17. GNI per capita and non-oil exports line fit plot
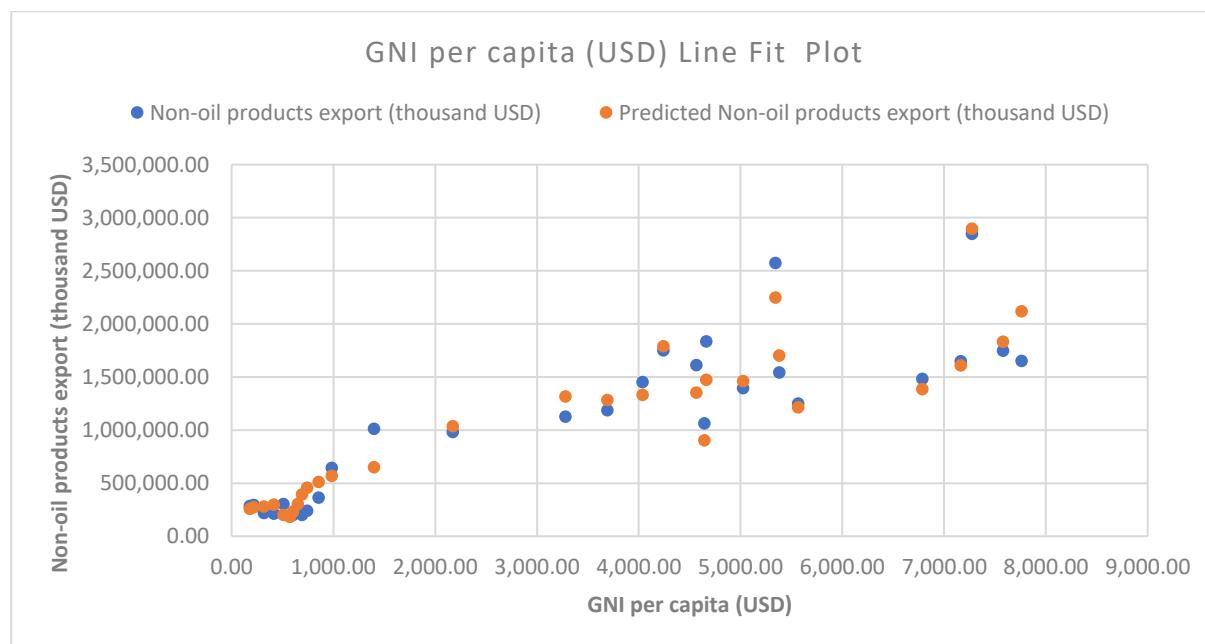
Source: Regression analysis, author's estimates

Figure 18. Subsidies and non-oil exports line fit plot

Subsidies and other transfers (thousand, USD) Line Fit Plot
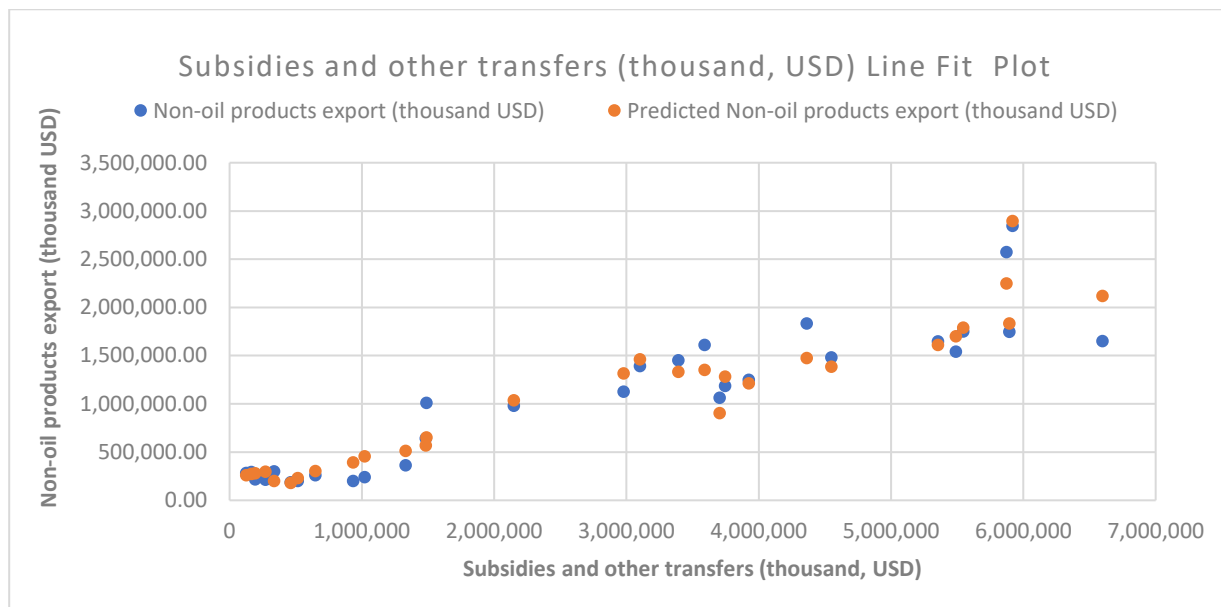
Source: Regression analysis, author's estimates

Figure 19. R&D expenditure and non-oil exports line fit plot

Research and development expenditure (thousand USD) Line Fit Plot
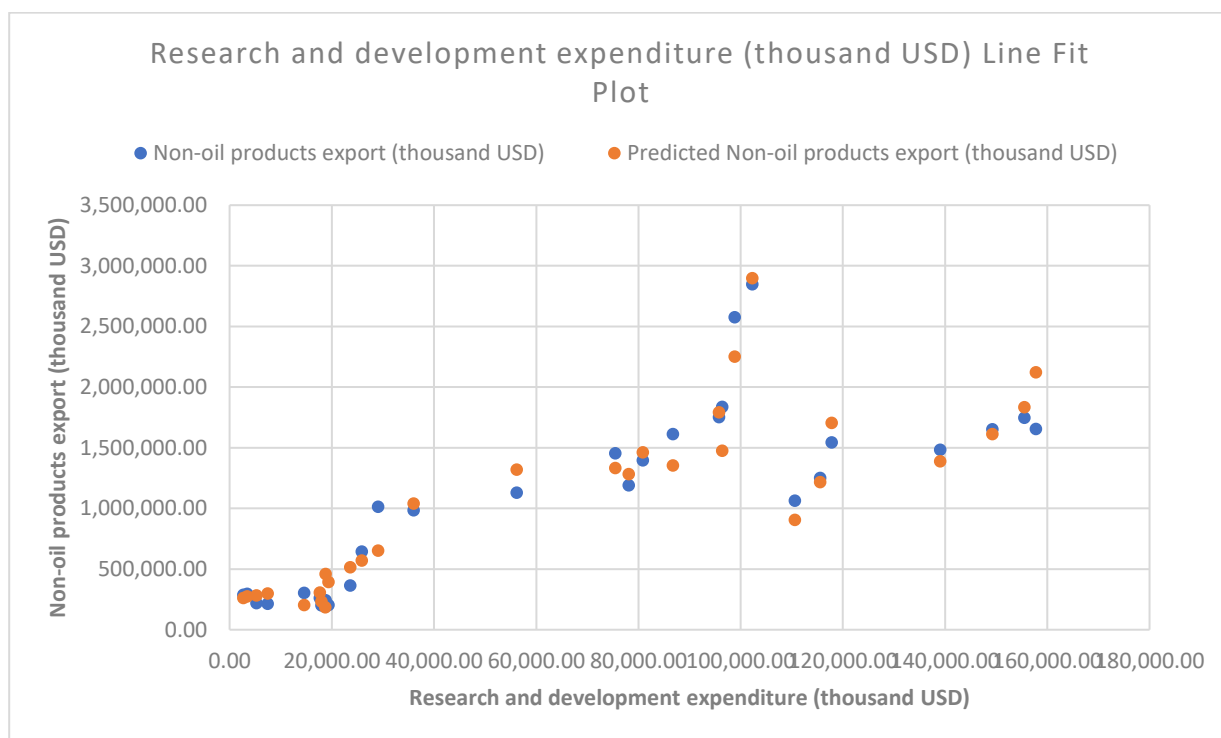
Source: Regression analysis, author's estimates

4.3. Comparison of causality and traditional analyses

Correlation and regression analysis have historically been used to determine relationship between variables. These historical approaches measured associations between variables through linear relationship. In 1980, Clive Granger and Paul Newbold mentioned that these historical statistical

methods might lead to spurious correlation or results in time series data. Especially, with non-stationary data the correlation and regression analysis yield spurious results. Spurious correlations are while two time series data lack causal relationship, they are correlated. In other words, correlation and regression do not mean causation (Johansen, 2011, 2012).

Azerbaijan specific findings of the analysis suggested that subsidies, GNI per capita as a proxy for country image, and R&D expenditures have some degree of associations with non-oil exports, however, they do not cause non-oil export level change. The thesis demonstrated that each above-mentioned variable is highly correlated with non-oil exports through correlation analysis, and through regression analysis, it was proven that these variables are collectively able to predict the variability in non-oil exports. However, these indirect barriers do not cause non-oil export balance change neither in the long or short run in Azerbaijan.

The correlation analysis results reflect reasonable outcome as, for instance, in case of less subsidization on a sector or product in a year, the export level of those items is likely to be less as well. The presence of an exceptionally high level of subsidization is acknowledged as a non-trade barrier to foreign trade. It is necessary to have a policy on the subsidy aims since extreme level of subsidization on a single sector or product can lead to unfair competition in foreign market. In other words, existence of extreme level of subsidization is recognized as non-trade hindrance to international trade. Thus, authorities should follow a policy on subsidization on sectors or products that suffices local market, increases the exports, however it should not result in distortion of international trade fairness. Otherwise, the country might face some regulative measures including sanctions. Azerbaijan follows totally fair level of subsidization that benefits local market and has no impact on international trade measures distortion.

The subsidy expenditures do not determine non-oil exports of Azerbaijan. Aggressive subsidization is a threat to foreign trade in international market. Azerbaijan do not follow aggressive subsidization policy. Even though subsidy implementation on several sectors has led to exports level to increase in the recent years, it is not a threat to foreign market as it remains at sufficient level to fulfil internal market and increase exports slightly. Obviously, subsidies are provided by the governments with the purpose of increasing production and consequently exports. From the domestic economy point of view, subsidies tend to impact the trade surplus positively. However, aggressive subsidization in an economy negatively impacts international trade. Especially, if massive amount of subsidization provided on a specific product or sector, consequently, because of export price decrease, economies with comparative advantage are likely to be impacted negatively. Subsidies support the manufacturers and farmers, consequently production increases which suffice the local market.

The absence or lack of R&D is considered trade barrier. As per the correlation analysis results, the more R&D expenditure, the more non-oil exports even though the relation is weak. However, not always R&D expenditure can result in increased non-oil exports since they might not be spent on market and economy research. It is important that total R&D expenditure should partially be aimed at international market research, economic growth consulting, as well as foreign trade studies. R&D investments might benefit other fields significantly but exports slightly. R&D expenditure could perhaps directly benefit national security.

GNI per capita as a proxy for country image is positively correlated with non-oil exports in Azerbaijan. Obviously, total exports of a country ads up to formulate GNI per capita. Thus, increased GNI per capita means higher non-oil exports if other variables of GNI per capita formation are constant. Moreover, even if GNI per capita is increased due to increase of other variables that formulate it, it is more likely to lead to increase of non-oil exports as country image advances in global arena. For country reputation enhancement, Azerbaijan has initiated plenty of programs in the last couple of years such as hosting first European Games in 2015, Islamic Solidarity Games in 2017, FIA Formula One World Championship since 2016, as well as hosting the 18th Summit of the Non-Aligned Movement and initiating The Caspian Sea-European Union Green Energy Corridor project. In addition, the government has demonstrated extraordinary leadership in terms of humanity policies implementation, responsiveness to public needs and adherence to democratic principles in global arena. All these projects add up to country reputation which ultimately will indirectly have impacts on export performance of the country. However, enhancing country reputation in that level which could have enormous impacts on exports volume is a long process and investment. Azerbaijan has been implementing such long-term policy together with encouraging non-oil industries which will ultimately lead to increase of exports.

Since the significant portion of the total exports are oil driven, the other industries are lacking development in terms of mass production and exports. Large amount of industries' production is only sufficient in the local market. It is a fact that if the same analysis is applied on a different nation's economy which is not affected by Dutch Disease, the results could be different. Thus, the results are only applicable to Azerbaijan. However, it is important to mention that the results could be contrasting in the future if Azerbaijan's non-oil exports portfolio and volume increased.

All in all, the study also emphasized the importance of applying the most reasonable analyses methods to avoid spurious results. As while analysed non-trade barriers were found to have some degree of correlation and they could be accounted for variability in non-oil exports volume in

Azerbaijan using the regression test, the causality test applied on stationary data proved no actual causal associations on the same variables. Thus, traditional analyses can play a pivotal role in data analyses, however, the data quality and type must be taken into consideration to draw reliable results as the study provided a great example for such differences. It was found out that there is high degree of correlation and cointegration between non-oil exports and non-trade barriers. However, existence of such associations do not imply causality. Regression and correlation analyses might produce erroneous conclusions, particularly when dealing with non-stationary data. Two time series data can have spurious correlations even when there is no causal relationship between them. The other difference between these two analyses is that cointegration checked the existence of long-run relationship between indirect barriers and non-oil exports while the correlation does not necessarily predict long-run associations. Thus, causality test using VECM was applied.

4.4. Assessment of exchange rate volatility analyses

This part of the thesis is encouraged by the discussed literature. Although there have been many studies conducted about exchange rates and foreign trade, this analysis shows different aspects of foreign trade in terms of exchange rate volatility relation to non-oil trade in Azerbaijan. In the literature, monetary policy, exchange rate volatility, inflation, devaluation are discussed. Hypotheses are elaborated through the literature and analysed through case study and policy discussions.

4.4.1. Case study overview

For the first time since 2006, manat (AZN), the currency of Azerbaijan, depreciated against the US dollar in February 2015. The country's official currency, the manat, was worth 33.86 percent more when the exchange rate was fixed before the depreciation happened. Before the devaluation, the exchange rate of AZN against USD was 0.78 (AZN/USD) and it became 1.20 (AZN/USD) with the devaluation in 2015.

The Central Bank of Azerbaijan has been grappling with the decision of whether to implement a gradual devaluation of the manat or a sudden one ever since the global oil market collapsed in 2014. In fact, the events that transpired a year later damaged the Central Bank's and the banking industry's reputations, as the government had pledged a steady devaluation to gradually achieve predetermined objectives. In addition to raising budget revenues in manat, it would have raised the bank's acting expenses. However, a devaluation of less than 30 percent would not have been sufficient to meet the shortfall in the state budget as long as the price of crude oil remained low. For this reason, the Central Bank opted to sharply devalue the national currency (CESD, 2015).

Some of the main reasons of the sharp devaluation is listed below. In the beginning of 2016, for the first time in its long history as a pegged currency, the manat switched to a floating exchange rate. As a result, manat faced another devaluation which resulted in losing its value by 52 percent in a few weeks after the announcement (Mukhtarov *et al.*, 2021).

4.4.2. Reasons of devaluation

65 percent of Azerbaijan's total revenue in 2015 came from State Oil Fund of Azerbaijan (SOFAZ). The monthly oil export revenue fell as the oil prices fell, even though the monthly exports had not decreased. Given that the state was mostly dependent on the export of natural gas and oil, this had a detrimental impact on the economy of Azerbaijan. Nevertheless, the government was able to benefit from the situation immediately. Prior to the devaluation of manat, the state was required to contribute USD 2.91 billion in oil revenue to the overall budget; nevertheless, this sum only amounted to USD 2.15 billion. In this instance, the government was able to save USD 760 million solely from direct oil income (CESD, 2015).

The country's steady economic downturn from 2011 was one of significant factors contributing to Azerbaijan's severe currency devaluation in 2015. Since 2011, the economy of Azerbaijan has been gradually contracting, despite stable or slightly rising oil prices. Azerbaijan's economy is heavily reliant on oil due to the abundance of natural resources, particularly crude oil, in the nation. In 2015, there was a notable decline in oil prices, with an average price drop of 48% when compared to 2014. Given that the economy is primarily dependent on oil exports, this was the primary cause of the economic downturn. The Azerbaijani Central Bank implemented regulatory measures aimed at maintaining and enhancing the nation's economic stability. The currency was devalued as a result (Hasanov *et al.*, 2018).

Expenses and expenditures of SOFAZ are expressed in manat, even though its revenue is expressed in US dollars. Thus, the fund was able to save billions of US dollars in 2015 due to the devaluation of the currency, and SOFAZ was able to meet its budgetary goals for the same year.

Following the Central Bank's announcement of the devaluation, there was a sharp spike in the demand for US dollars across the whole nation. Investors withdrew their savings from the bank as a result, and the percentage of manat deposits fell from 63 to 45 percent. The Central Bank would have lost all its reserves in a matter of months if the devaluation had been delayed any further. Consequently, devaluation prevented long-term decrease of Central Bank's savings (Aliyeva, 2020; Yildirim and Arifli, 2021). The other reason of quick and profound devaluation was aiming further liberalising the domestic market.

It is a fact that economy of Azerbaijan suffered Dutch Disease-related consequences as with a rate of less than 10 percent, non-oil products make up a very small portion of total exports. The government determined that economic diversification should be the focus over the long run. In other words, non-oil industry and exports would be encouraged. It could be achieved somewhat, however, because the currencies of Azerbaijan's principal trading partners had depreciated prior to devaluation of manat, which was making it more costly to export non-oil goods to those nations in USD terms.

In manat terms, the GDP increased because of the Azerbaijani currency's devaluation versus the US dollar. However, in the short run, the country's economy did not much improve because of the increase in exports of several non-oil products. As a result, agriculture industry specifically, cotton have received more attention. The government offers subsidies and other incentives to farmers to boost exports and growth (Huseynov *et al.*, 2021). Export diversification has had stronger long-term effects, which have increased non-oil industry export levels.

The steep increase in import prices resulting from the manat's value correction resulted in inflation. There was significant reduction in private consumption expenditure in 2015 due to the high base year for household consumption, which was officially estimated to have increased by 8 percent in 2015 and 2016. To encourage both domestic and foreign investment in the economy, the Central Bank has been driving up the inflation rate. The inflation rate went up by three times in 2016 in comparison to 2015 and was reported 12.4 percent (World Bank, 2017).

Furthermore, Central Bank of Azerbaijan (CBA) reserves decreased from $13.8 billion at the end of 2014 to $4.3 billion by the end of June 2015, due to sales of foreign exchange. Moreover, from 23 percent of the non-oil GDP in 2005 to 63 percent in 2015, the share of total credit has nearly tripled. Credit to households climbed from 6.5 to 24.5 percent of GDP (not including oil) throughout the same time. Construction sector and mortgages were the main components of the credit growth.

4.4.3. Impacts of devaluation on the economy of Azerbaijan

Several unfavourable shocks have hampered Azerbaijan's economic growth. Reduced oil prices, weak regional expansion, exchange rate devaluations swiftly diminished the substantial current account surplus the nation had during the oil boom years.

The government has taken several actions. The CBA depreciated the manat and switched to a managed float exchange rate since reserves decreased significantly and external shocks grew more severe. In addition to implementing new macroprudential lending limits on dollar loans, the authorities shut troublesome banks. Moreover, to protect vulnerable populations and encourage

growth, public sector pay, total pensions, and social protection expenses have all increased. The CBA tightened its monetary policy in 2016 and increased the refinancing rate by 1,200 basis points to 15 percent to reduce inflationary pressures. Although the devaluations harmed bank balance sheets and boosted dollarization, they aimed increasing competitiveness.

The economy's performance was damaged because of series of shocks. Weak regional growth, falling oil prices, and currency fluctuations swiftly eliminated a sizable current account surplus. The Central Bank (CBA) devalued the currency by 25 percent in February 2015 and another 32 percent in December 2015 to maintain reserves. CBA moved to a managed floating exchange rate regime. Growth slowed to 1.1 percent in 2015 and 3.4 percent in the first half of 2016, because of decreased state investment, a halt to credit activity, and stability in oil production. Averaging 4.1 percent in 2015, inflation increased to almost 11 percent by the middle of 2016, which was a result of exchange rate pass-through effects (ERPT) (Mukhtarov et al., 2019).

Near-term economic prospects was weak and after policies implemented, growth was slow in the next few years as expected. However, inflation gradually decreased. Significant fiscal surpluses during the oil boom years were replaced by deficits in the following three years. Due to the devaluations, which restricted imports and encouraged non-traditional exports, the account balance improved. To ensure sustainable growth, the authorities developed strategy to rapidly diversify the economy by creating a more business friendly environment and pursuing structural reforms.

Because 70 percent of the national debt of Azerbaijan was held in foreign currencies, the debt sustainability analysis (DSA) showed that the debt to GDP ratio increased from 11% in 2014 to roughly 38% in 2016 as a due to the devaluations and borrowing plans. CBA reserves went down from $13.8 billion at end of 2014 to $4.3 billion by the end of June due to foreign exchange (FX) sales. CBA tightened monetary policy to reduce inflationary pressures. Initially, the CBA changed the interest rate corridor and raised its refinancing rate by 650 basis points (bps) to 9.5 percent in three phases, in February, March, and August. To remove liquidity, the CBA had conducted manat deposit auctions since the middle of 2016. Exchange rate volatility has increased because managed float and recurring foreign exchange auctions were implemented. Due to the sluggish economy, mismatches in banks' currency holdings, and forecasts of more devaluations, credit growth became negative in 2016 (International Monetary Fund, 2016).

Authorities moved to a managed float exchange rate regime and interest rate was increased aiming at containing inflation. Increased exchange rate flexibility made it possible to adopt the policy rate as a nominal anchor, protect international reserve buffers, and modernise the monetary and exchange rate regimes. The other important initiatives that were implemented were monetary transmission and functioning of foreign exchange market's operation and the flow of money.

Banking system has been monitored ever since and problems are addressed frequently. In other words, banking supervision was strengthened, and the macro-prudential framework was implemented.

The economy continued to adjust, putting pressure on Azerbaijan's banking sector, fiscal position, and balance of payments even as the country's policy buffers held steady. To ensure macroeconomic and financial stability and advance a diverse economy driven by the private sector, it was necessary to move forward with reforms.

Spending cuts have been applied, while protecting priority social spending and enhancing the efficiency of capital expenditure. As a result, after a couple of years new tax policy as well as new minister was appointed aimed at fostering non-oil activity and revenue, to reduce tax exemptions and strengthen tax administration. Furthermore, careful debt management and pension reform plan helped to preserve fiscal sustainability.

On the other hand, in 2016, there was a 10 percent increase in public sector wages, total pensions, and social protection expenditures, which accounted for 3 percent of non-oil GDP. The state budget could get room for an extra 3.5 percent of non-oil GDP in capital spending to finish ongoing projects after an external $1 billion Southern Gas Corridor (SGC) bond was issued in March (International Monetary Fund, 2016).

The economy had to be diversified away from oil toward non-traditional sectors. Creating a private sector leading and non-oil economy requires reforms to further remove barriers to competition and reduce the costs of doing business.

4.4.4. Effects of devaluation on exports of Azerbaijan

The below table shows the exports of Azerbaijan between 2008 and 2022. Obviously, the exports is mainly dependent on oil prices in Azerbaijan. Non-oil sector exports are only less than 10 percent of total exports in each year. In the following years after devaluations in 2015 and 2016, there has been improvement in export performance of non-oil products. In terms of non-oil exports versus previous years, the increase is higher. However, in terms of percentage of total exports, there is not sufficient improvement (Mehtiyev *et al.*, 2021). Clearly, the increase in local currency terms have been significant due to value depreciation which indicates one of the aims of devaluation which was to encourage exports has been partially successful. Table 19 indicates the dependence of exports of Azerbaijan on mineral fuel, lubricants, similar materials. Devaluations have evidently led to a significant increase in non-oil sector exports, indicating that the trade policies implemented following the 2015 and 2016 devaluations have been partially effective but require further continuation and enhancement.

Table 19. Exports of Azerbaijan between 2008-2022

Year	Total export (USD)	Oil and oil products export (USD)	Non-oil export (USD)	Non-oil export (AZN)
2008	47,756,040	46,362,868	1,393,172	1,142,401
2009	14,701,359	13,639,469	1,061,890	849,512
2010	21,360,210	20,110,120	1,250,090	1,000,072
2011	26,570,898	25,089,288	1,481,611	1,170,473
2012	23,907,984	22,259,198	1,648,786	1,302,541
2013	23,975,417	22,229,819	1,745,598	1,361,567
2014	21,828,609	20,177,193	1,651,416	1,288,104
2015	12,729,139	11,187,120	1,542,019	1,588,280
2016	13,457,592	12,270,160	1,187,432	1,899,891
2017	15,319,977	13,867,052	1,452,925	2,499,031
2018	19,489,068	17,878,567	1,610,501	2,737,851
2019	19,635,203	17,800,171	1,835,032	3,119,555
2020	13,732,637	11,981,306	1,751,331	2,977,263
2021	22,207,975	19,634,974	2,573,001	4,374,101
2022	38,146,630	35,300,195	2,846,434	4,838,938

Source: The State Statistical Committee of the Republic of Azerbaijan, 2023

Exports by sectors are illustrated in the below chart. Non-oil exports have been increased significantly 2021 and 2022. A notable increase has been on the exports of agricultural products and live animals, and chemical products and analogous items. Exports of both categories were

close to 800 million USD in the last 2 years. Some other sectors have been fairly increased in the last two years.

Figure 20. Exports by sectors
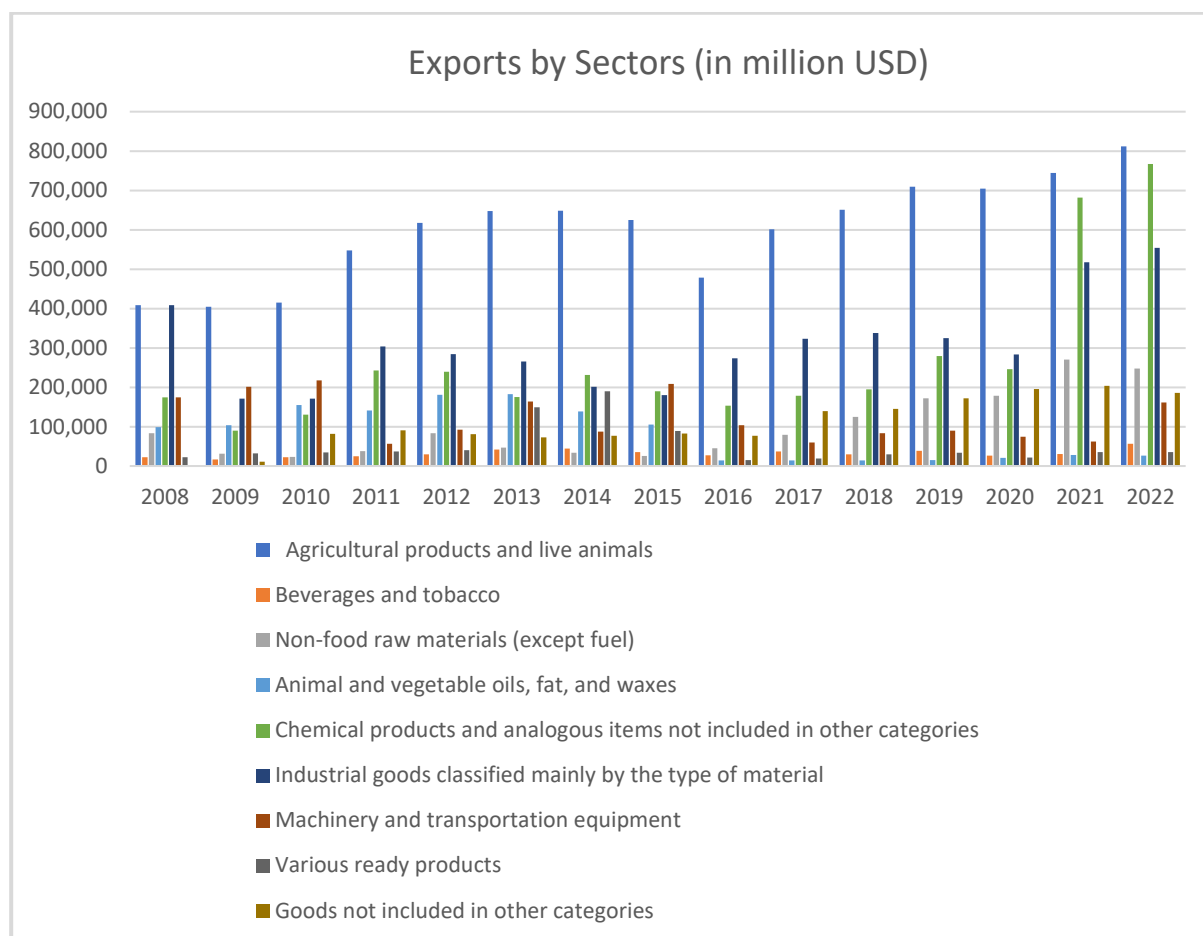
Source: The State Statistical Committee of the Republic of Azerbaijan, 2023

While the nation's oil GDP fell by 2.7 percent in 2022, the non-oil GDP grew by 9.1 percent. 51.1 percent of GDP came from industry, 8.2 percent from trade and automotive repair, 6 percent from transport and logistics, 4.8 percent from construction, 4.8 percent from agriculture, forestry, and fisheries, 1.6 percent from hospitality services, 1.4 percent from information and communications, and 7.4 percent from taxes. Azerbaijan recorded a 55.4 percent rise in foreign trade activities of $52.7 billion in 2022. There was a rise in overall net exports at the same time, with imports rising by 23.9 percent to $14.5 billion and exports rising by 71.6 percent year over year to $38.1 billion. Iron and steel, machinery, automobiles, and food items are the top imports (International Trade Administration, 2023).

Below charts illustrates the average of oil and non-oil export shares in total exports for 2008-2015 and 2016-2022 periods. There has been slight increase for the latter in comparison to the former.

Moreover, it is a fact that non-oil exports as a share of non-oil GDP have increased in the last years, especially after 2016.

Figure 21. Average oil and non-oil exports between 2008-2015

Average oil and non-oil exports between 2008-2015 in percentage terms

6.94%

93.06%

■ Average (2008-2015) Oil exports   ■ Average (2008-2015) Non-oil exports
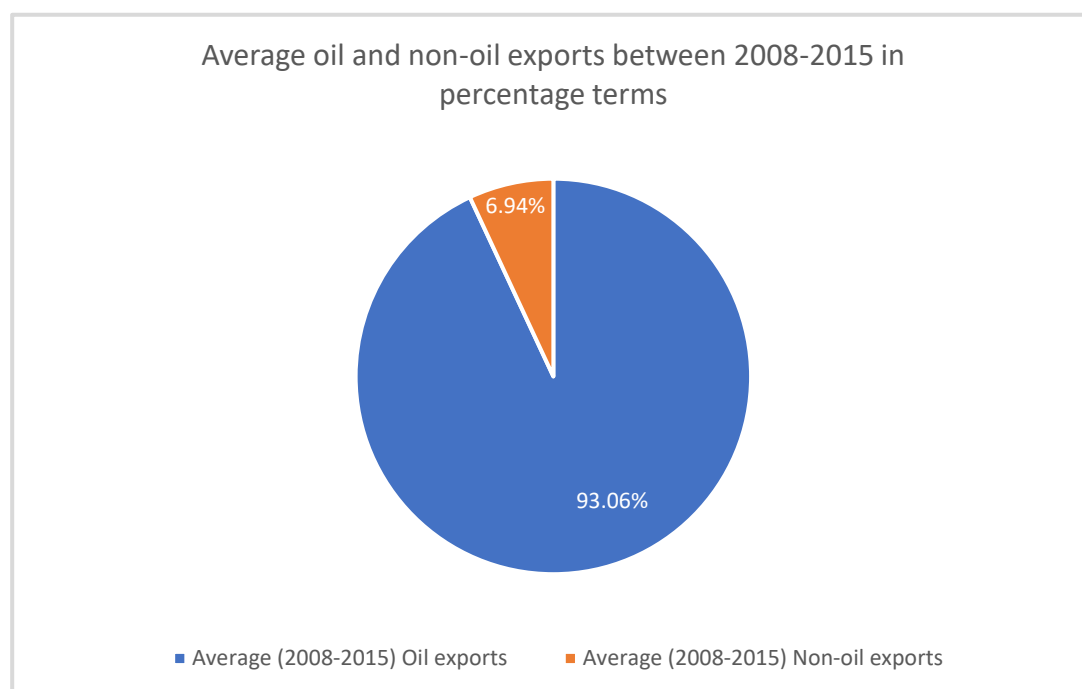
Source: The State Statistical Committee of the Republic of Azerbaijan, 2023

Figure 22. Average oil and non-oil exports between 2016-2022

Average oil and non-oil exports between 2016-2022 in percentage terms

9.66%

90.34%

■ Average (2016-2022) Oil exports   ■ Average (2016-2022) Non-oil exports
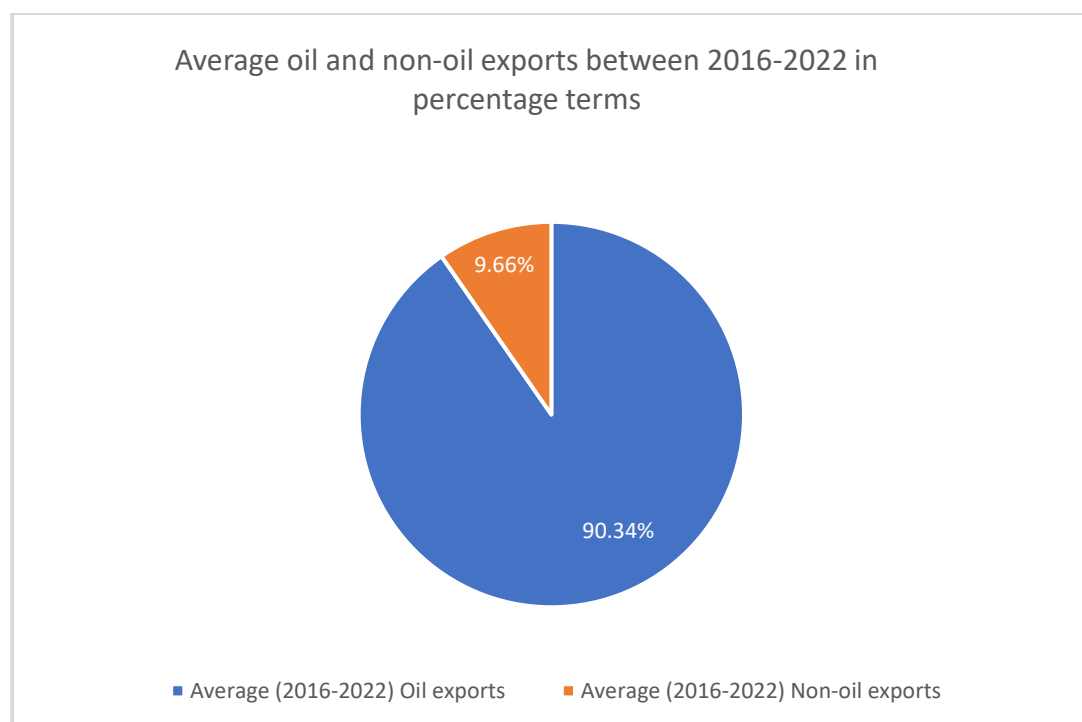
Source: The State Statistical Committee of the Republic of Azerbaijan, 2023

4.5. Devaluation and inflation associations

The price of inputs like labour and materials is directly impacted by rising inflation, which has an impact on exports. These higher costs will therefore have a big influence on exports' ability to compete in the context of world trade (Barguellil *et al.*, 2018; Lal *et al.*, 2023).

As per the findings of Mehtiyev et al. in 2021, inflation significantly predicts devaluation. Regression analysis applied to a set of data for 130 countries using World Bank data. The results indicated that 52 percent of the variance in devaluation rate can be explained by inflation rate. Significance model is reported as follows:

$F(1,128) = 139.799$, $p = 0.000$

**Table 20. Devaluation and inflation association**

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
					R Square Change	F Change
1	0.723	0.522	0.518	4.621	0.522	139.799

Source: Mehtiyev et al., 2021

Moreover, a per the model summary above, the analysis found out that there is correlation existing between inflation and devaluation rates. The Pearson Correlation coefficient between the variables is 0.723 which is higher than 0.5 which is considered as high degree of correlation.

A vector auto-regression (VAR) model applied by IMF (2016) indicated that nominal exchange rate shocks impact inflation. In the VAR model, the log first differences of oil prices, nominal effective exchange rates (NEER), government expenditures, base money, and the consumer price index (CPI) were included. As per the results, one standard deviation Cholesky shock to the NEER increased inflation rates by 0.45 percent initially and diminished by the third month as illustrated by the impulse response function in Figure 23. The VAR model predicted an 18 percent increase in inflation in 2015 due to the approximately 40 percent depreciation of NEER (International Monetary Fund, 2016). Increased inflation had impacts on exports as well by directly affecting the price of inputs like labour and materials.

Figure 23. Impulse response function - response of CPI to a one standard shock to NEER
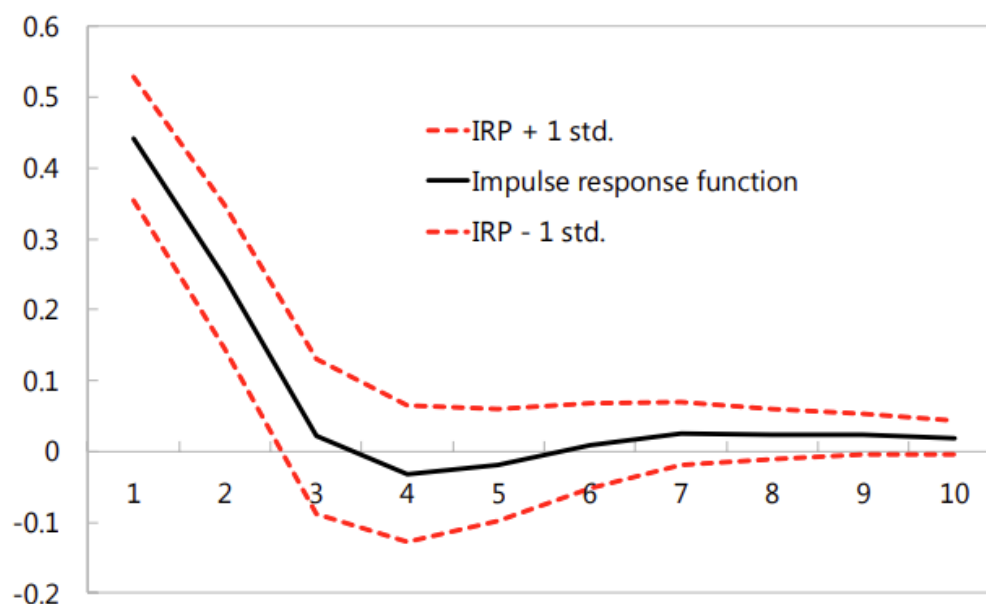
Source: Kim et al., 2021

These estimates are roughly consistent with the results of inflation in the first part of 2016, the low level of inflation before the devaluations, the tighter monetary policy of the CBA to lessen the impact of the second round, and the diminished pressure on prices due to weak domestic demand in a highly dollarized economy.

4.6. Policy analysis

There are three primary components to the framework of Azerbaijan's fiscal policy:

1. An ad-hoc rule to save half of oil revenue abroad in a well-managed oil fund.
2. Using 75 percent of transferred oil-fund revenue to finance investment.
3. Broad coverage of fiscal accounts, underpinned by three-year budget plans.

In 2016, increased exchange rate flexibility led to avoid shocks. In the long term, increased clarity in the Central Bank exchange rate policy aims and management method would lead to FX market performance enhancement and prevent policy errors. Following the full market determination of the exchange rate, the CBA used the policy rate as a nominal anchor in the following years.

The degree of exchange rate volatility experienced under the new FX regime was satisfactory in 2016. Obviously, the exchange rate markets were narrow and dominated by SOFAZ oil flows. AZN/USD rate had been able to move within a wide range, too much variability could still negatively impact fragile bank and private sector balance sheets (International Monetary Fund, 2016).

Exchange rate volatility can impact trade activities directly and indirectly. In terms of indirect impacts, all currency trades except AZN and USD are indirectly impacting trade flows since Azerbaijan is following managed float exchange rate regime on USD basis. One of the negative results of this regime is that if enterprises conducting trade activities on euro basis, exchange rate volatility could have significant impacts on trading partners if volatility is high during trading time.

Some examples of initiations to improve and control exchange rate volatility were opening new e-government service centre, simplifying customs clearance, increasing electronic payments, creating regional industrial zones, trade diversification. These have been implemented in the framework of "2020 Development Strategy", however, could be enhanced further.

The economy lacks focus on long-term non-oil sustainability. It is based on excessive public spending and closely tied to oil prices. Rule-based framework to promote fiscal discipline and managing expectations is another essential policy to be implemented (Hasanova, 2023).

One of the reasonable consumption-savings policy could be guided by a modified permanent income model that is based on a non-resource primary balance (NRPB) as a percentage of non-resource GDP (Gushkhani, 2019).

In Azerbaijan, public investment as a percentage of GDP averaged 15.5 percent between 2008 and 2016. The modified permanent income model computes a long-term net national product balance objective of 26 percent, considering projected oil prices, fiscal revenues, and the depletion of natural resource wealth by 2035. The NRPB for 2016 was expected to be 38 percent (International Monetary Fund, 2016).

Considering the non-oil field has not been improved significantly although there have been investments, the new projected NRPB should be less that 26 percent, realistic ration would be around 22 percent.

Capital spending levels were high and needed to decrease because expenditures have been inefficient. Therefore, new pension legislation and temporary public employment recruitment came into effect and resulted in lowering pension deficits and prevented long term public employment and cost. Notably, some increased expenditures which incurred because of devaluations have been diminished. In addition, the non-oil tax base was gradually expanded via investment incentives, which raised non-oil income.

In April 2022, a new governor to Central Bank of Azerbaijan has been appointed after 27 years. Despite short period of time in management, new set of guidelines have been introduced by CBA aiming monetary growth in the long run.

CBA became sole seller of FX through regular auctions. A tighter monetary stance helped to limit inflationary exchange rate effects and pressure on the currency.

Key monetary and exchange rate policy recommendations is as follows:

- Reidentifying intermediate and operational monetary targets formally.
- Liquidity planning and forecasting implementation. To satisfy short-term commercial and financial responsibilities, banks should keep cash and other assets on hand.
- Policy rate should be set considering liquidity management operations.
- Expansion of debt securities market.
- Eliminating market distortions to avoid pressure on the exchange rate.
- CBA's monetary and exchange rate policy framework should be clearly communicated to other authorities.

Longer-term planning, budgeting, and forecasting (PBF) is essential for managing exchange rate volatility, controlling spending on subsidies and R&D, and raising GNI per capita as a measure of a country's prosperity and reputation. Planning and budgeting would lead to improved credit and debt management, in-country investments, and budget management. PBF should specifically be used to forecast for the next five years or more at the end of each year. To monitor and modify variations in sensitivity to economic performance, oil prices, and any other element that was included in initial plans, budgeted predictions should also be evaluated on a quarterly basis.

Azerbaijan is striving to expand the green energy, agriculture, tourism, logistics, and information and communication technology sectors in addition to continuing to push for economic diversification away from hydrocarbons.

Azerbaijan's economy has slightly been diversified away from oil towards non-traditional industries like tourism and agriculture. Additionally, efforts are being made to improve the business-friendly environment and integrate regions by establishing industrial and agriculture parks. Further advancements in these fields would encourage inclusive and sustainable growth. Improving economy and trade governance, cutting operating expenses, and removing obstacles to competitions are all necessary for the development of a non-oil economy and exports driven by the private sector. Until core productivity issues are resolved, attempts to diversify the economy toward low-productivity industries are unlikely to grow (Mukhtarov et al., 2019).

The Azerbaijani government is attempting to develop the country's renewable energy industry, which has enormous wind and solar potential. Azerbaijan intends to put in 1500 MW of renewable energy by 2030, partly to help with the export of green electricity and green hydrogen to European markets in the future (Hamidova *et al.*, 2022; Mustafayev *et al.*, 2022). The restoration of

Azerbaijan's returned territories is now in progress. In those areas, Azerbaijan is likewise moving toward producing sustainable energy with the aim to export in the future (International Trade Administration, 2023). The Caspian Sea-European Union Green Energy Corridor will serve for exporting Azerbaijan's renewable energy to Europe.

The Caspian Sea-European Union Green Energy Corridor is another project that Azerbaijan initiated. A deal has been made by Azerbaijan, Georgia, Hungary, and Romania to advance a project that would use renewable energy sources in Azerbaijan to produce green energy, which will then be exported to Europe via a subsea cable beneath the Black Sea. Large-scale initiatives linked to the generation and export of renewable energy are being implemented with the aim of achieving Azerbaijan's strategic goals connected to its growth as a green energy country and contributing to the energy security and green transition of Europe. This project is another initiation to enhance country reputation and upon completion of the project, Azerbaijan will increase non-oil exports further as a result (Mehtiyev *et al*., 2024).

Additionally, the development of Azerbaijan's east-west and north-south trade and transit corridors is still ongoing. Baku International Sea Port, in other words, The Port of Alat, and the adjacent Free Trade Zone (FTZ) are becoming major centres for regional logistics and transportation because of the significant trade increase on the Middle Corridor. The FTZ is an extraterritorial, legally autonomous zone that targets investors in high-value manufacturing with an emphasis on exports. It is necessary for at least 75% of all goods produced there to be exported (International Trade Administration, 2023). This project is the biggest initiative aiming to increase exports as well as economic growth after the Contract of the Century which was signed in 1994. This project is very likely to increase non-oil exports significantly by 2030.

4.7. Discussion

Policy recommendations, exchange rate volatility, inflation and export performance related findings of the research are in line with the International Monetary Fund 2016 Article IV Consultation - Press Release which was completed on 25th of August 2016, by IMF staff team after discussions with the officials of the Republic of Azerbaijan on economic developments and policies.

As per the policy analysis, one of the crucial policies that needs to be put into place is a rule-based framework that encourages budgetary restraint and expectation management. Budgetary restrain encouragement has been being implemented in the last a few years, yet there is room for further effective management and relative framework implementation to diversify the public investments and assure constant growth (International Monetary Fund, 2016).

Extended non-oil sustainability lacks sufficient constant growth. Growth and public spending are mainly relied on oil prices. Despite some investments on projects related to non-traditional sectors, the non-oil sector has not improved greatly yet. The investments would bring successful results in the following years due to the nature of non-traditional fields, however, it is a must to see initial positive results after five years of investments. Therefore, non-oil sector needs to be effectively invested, further public aid and support are crucial, on the other hand, private investments should be encouraged through government incentives as well.

Removing market distortions to keep the exchange rate from being under pressure. Minimizing obstacles to competition, establishing private sector export driven economy would shrink pressure on exchange rate volatility.

Implementing forecasting and planning for liquidity is another crucial policy to further enhance. Banks should maintain cash and other assets to meet short-term financial and commercial obligations.

However, other than above mentioned policy recommendations, different than the IMF Article IV, this research suggests implementation of effective fiscal planning, budgeting, and forecasting for longer terms including quarterly adjustments.

The study discovered that devaluation is significantly predicted by inflation. The findings showed that the inflation rate could explain 52 percent of the variation in the depreciation rate. Furthermore, the investigation revealed correlation coefficient of 0.723, a high degree of correlation between the rates of inflation and devaluation. These results are of set of 130 countries' data applied for a single year. Likewise, International Monetary Fund 2016 Article IV Consultation - Press Release found out that any shocks to exchange rate impacts consumer price index, in other words causes inflation. Azerbaijan was used as focus country in the analysis, and it found out that 40 percent depreciation of manat causes inflation rate to go up by 18 percent.

Since inflation is directly linked to cost of goods and services, it impacts export performance as well as trade balance of country. Both findings support the proposed hypothesis that exchange rate volatility impacts exports performance.

Moreover, there is no widely accepted approaches for capturing non-trade hindrances that limit market access. Researchers assessed and run empirical analyses for the most restrictive barriers through frequency measures derived from the databases, exporter surveys pulled from WTO Trade Policy Reviews. Studies such as Andriamananjara *et al*, 2011; Michalopoulos, 1999; Deardorff, 2012, have well documented analysis and approaches about NTBs (Andriamananjara *et al.*, 2011; Deardorff, 2012; Michalopoulos, 1999). The analyses of above listed researchers have well

documented above mentioned approaches which are about NTBs. However, non-trade barriers among NTBs have not been differentiated so far (Mehtiyev and Magda, 2021). Thus, the results of the dissertation pertaining to NTB features are consistent with the above-mentioned studies with difference of non-trade barriers and their characteristics identification in this study.

The study identified the key features of non-trade barriers and distinguished them from (NTBs) and enumerated their features. Although most non-trade barriers fall under the category of NTBs, their effects and characteristics may differ greatly (Staiger, 2020). Similarly, these findings are in line with the work of Staiger (2020) as well as the public policy based on UNCTAD report in 2013. As per UNCTAD report in 2013, all identified non-trade barriers in this study falls under section of NTBs. However, non-trade barriers have never been differentiated from NTBs neither in UNCTAD report in 2013 nor in any other public policy reports on trade barriers. Thus, this research contributes to foreign trade policies by differentiating and studying non-trade barriers for the first time.

In 2021, Mukhtarov *et al.* looked at the effects of oil prices on macroeconomic variables in the example of Azerbaijan from January 2005 to January 2019. They discovered that while oil prices have a negative impact on the exchange rate, they have a favourable impact on exports, inflation, and economic growth. Using the Vector Error Correction approach, Mukhtarov *et al.* (2021) also demonstrated that increasing oil prices had a beneficial long-term effect on inflation.

Azerbaijan, being an oil-exporting nation, is extremely vulnerable to fluctuations in oil prices. As a result, it highlights the value and significance of putting economic policies into place that govern the nation in a way that ends its reliance on oil extraction and points it in the direction of more sustainable growth. Azerbaijan and other oil-exporting nations that are comparable to it need focus more on policies against external shocks to oil prices affect their economies and how they can use policy instruments to create a more diversified, private sector-focused economy that is less dependent on oil.

In 2021, Mukhtarov *et al*. investigated the effects of oil price shocks on GDP per capita, currency rates, and total trade turnover with applying SVAR technique on time series data from 1992 to 2019. According to the estimation results, oil prices have a positive effect on GDP per person and overall trade turnover, which, in the case of Azerbaijan, has a negative effect on the exchange rate. Therefore, the exchange rate and GDP per capita are more strongly impacted by oil prices. Unlike them, though, it has less impact on trade in general. (Mukhtarov *et al.*, 2021). Since 90 percent of Azerbaijan's overall trade is oil exports, it can be concluded that overall trade of Azerbaijan has significant impact on exchange rate of national currency of Azerbaijan.

According to a recent study in 2022 conducted by Yoganandan and Vasan, cointegrations and Granger causality tests were applied to identify causal relationship between FDI, GNI, and exports of India was tested. The results of the cointegration test proved the existence of long-term relationship between the variables and the Granger causality test results indicated a bi-directional relationship between FDI, GNI, and exports. Both GNI and FDI play crucial roles in country image formation and at the sime time, country reputation leads to increase of GNI per capita and FDI inflows. Thus, this study tested some variables as proxies for country reputation with exports. Different than our study, the research found out that GNI and exports of India have bidirectional causal associations in both short and long term. However, in Azerbaijan's case, GNI per capita has no causal relationship with non-oil exports neither in the short or long term. Obviously, there are some differences between these two studies such as populations size, exports volume, and petroleum exports. Firstly, Yoganandan and Vasan did not include population size but only tested GNI rather than GNI per capita. In addition, they have included total exports while our study only focused on non-oil exports. If the same analysis applied for Azerbaijan, the results would be different. This is a great example to emphasize the causal relationship between non-trade barriers should be country specific as every nation has its own unique economic structure and macroeconomic indicators.

Huseynov (2022) conducted a study to investigate the impact of R&D and innovation on the economic development of the Republic of Azerbaijan. For this purpose, causality test with using time series analysis was applied on R&D expenditure and the GDP data as an indicator of economic development. As per the results, causality from R&D expenditures to economic growth in the long run has not been determined (Huseynov, 2022). The results of our study and research of Huseynov indicates that R&D expenditures impact neither economic growth nor non-oil exports of Azerbaijan. While nonexistence or lack of R&D investments is considered indirect trade barrier, in Azerbaijan's case they have no impacts on exports of non-oil products and GDP as a proxy for economic growth.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Trade barriers have been discussed for a while, and governments and policymakers have implemented several steps to decrease the impacts of such hindrances and preserve free international trade. Furthermore, initiatives i.e., as reducing tariff barriers and applications against the negative impacts of non-tariff barriers to ensure foreign trade are some proves of the importance of further studies and applications to avoid or decrease potential issues in trade.

The goal of this research was to learn characteristics of non-trade barriers, differentiate them from other NTBs, illustrate the effects of some of such hindrances on economy and foreign trade.

This research investigated the relationship between non-trade obstacles and Azerbaijan's non-oil exports using time-series data from 1993 to 2022. The short- and long-run connections as well as the causality direction were determined using Johansen's cointegration and the Vector Error Correction Model causality tests. In these econometric analyses, as proxies for non-trade barriers, subsidy implementations, R&D expenditures, and GNI per capita as a proxy for country reputation were used. The cointegration test findings demonstrated that non-trade obstacles and non-oil exports are correlated. On the other hand, the VECM results showed no causal associations between Azerbaijan's non-oil exports, R&D spending, subsidies, and GNI per capita as a measure of country reputation.

Additionally, through case studies and policy analysis, the study further examined currency rate volatility, another indirect trade barrier, to determine its effects on Azerbaijan's export performance and possible countermeasures. With the findings, it is emphasized that the policymakers should take into consideration any possible volatility to maximise the trading benefits for the country.

On of the main results of policy discussions suggests that longer-term planning, budgeting, and forecasting is essential for managing exchange rate volatility, controlling spending on subsidies and R&D, and raising GNI per capita as a measure of a country's prosperity and reputation.

To systematically assess the research findings, Table 21 presents the hypothesis testing results, showing whether the proposed relationships were supported or rejected based on empirical analysis. Table 22 follows with a summary of the key novel findings, highlighting the impact of non-trade barriers, exchange rate volatility, and the limitations of traditional analytical methods in evaluating trade dynamics. These insights contribute to a deeper understanding of Azerbaijan's

non-oil export performance, the role of non-trade barriers, and offer valuable implications for policymakers and researchers.

Table 21. Summary of hypothesis testing

No:	Hypothesis Statement	Status
H1	Non-trade hindrances to international trade exist and indirectly affect Azerbaijan's export volume.	Accepted
H2	Correlation and regression analyses are insufficient for accurately assessing the impact of non-trade barriers on Azerbaijan's non-oil exports, as they fail to capture complex causal relationships and qualitative factors.	Accepted
H3	Exchange rate volatility, particularly currency devaluation, significantly influences Azerbaijan's export performance and inflation dynamics.	Accepted
H4	Subsidy incentives, R&D expenditures, and country reputation, as proxies for non-trade barriers, do not significantly impact Azerbaijan's non-oil export volume in the short run.	Accepted
H5	Subsidy incentives, R&D expenditures, and country reputation, as proxies for non-trade barriers, significantly impact Azerbaijan's non-oil export volume in the long run.	Rejected

Source: Author's own work

Table 22. Summary of novel findings

No:	Summary of Novel Findings
1	Non-trade barriers (R&D expenditure, subsidies, and country reputation) have no long-term impact on Azerbaijan's non-oil exports, nor do they individually affect exports in the short run.
2	Significant correlations exist between non-oil exports and R&D expenditure, GNI per capita, and subsidies, with these factors explaining 94% of export variance.
3	Correlation and regression analyses are inadequate for assessing non-trade barriers' impact due to their inability to capture complex causal relationships.
4	The transition to a floating exchange rate regime encouraged non-oil exporters, leading to a gradual increase in export volume.

Source: Author's own work

In consideration of the novelty of the study, this research will be one of the pioneering works which will be considered as a direction for future research works. The findings will assist future researchers to develop their scientific research on distinguishing the indirect trade barriers from other NTBs and help policymakers to alter their strategies for eliminating the obstacles in foreign trade and increasing export volume.

The study's findings have significant theoretical and managerial ramifications. All in all, this study's findings shed new light on trade hindrances.

5.2. Recommendation and implications

This study shows that the relationship between indirect trade barriers and export volume is a substantive and empirically valid topic. For public policy makers looking to stimulate exports to a specific country, analysing the indirect trade hindrances appears to be as viable as other factors (e.g., trade negotiations, free trade agreements). For business leaders at international companies, the findings suggest that companies may consider indirect trade barriers as a factor when analysing ways to expand their export volume. Other than the direct trade barriers, indirect barriers should be considered as key influencing factors.

The study's empirical outcomes suggest that country reputation, subsidisation, and R&D expenditures do not have impacts on non-oil export level of Azerbaijan. Thus, the policy makers

with intention to increase overall exports of the country other than oil and gas exports may benefit from the findings. For instance, as any subsidization application applied with the aim to increase overall exports or increasing R&D investments with pure intention to enhance the overall export volume would not have significant or not any positive outcomes. As a result, the other indirect trade barriers other than the ones analysed in this study could be tested initially and based on the results further implications could be made whether those NTBs should be focused; either invested more or prevented, so desirable outcomes – increased export level of the country could be achieved.

The study's other empirical findings demonstrate how significantly the exchange rate affects global trade. In this sense, businesses and governments alike should design trade policies with the impact of fluctuating currency rates on international trade in mind.

Exchange rate applications will undoubtedly have an indirect impact on global trade activities and balance, even though central banks implement them with distinct goals in mind. Control over foreign exchange plays a significant role in a nation's trading activities. It can be regarded as one of the most significant elements in international trade given the implications that have been examined. Exchange rate volatility as a proxy for non-tariff barrier is the issue of exchange rates. In some ways, it is regarded as a non-trade barrier because it could have an indirect impact on trade besides its direct impacts. In conclusion, exchange rate volatility affect international trade; they can have both positive and negative effects, and they heavily depend on the conditions of the transaction as well as the actions of the trading nations. All in all, in any type of currency applications, the trade balance should be taken into consideration and prioritized by policymakers.

The findings open a path to further trade policy analysis. Responsible authorities could benefit from the findings, especially in terms of increasing exports of non-oil products. Some other authorities should take into consideration reviewing expenditures on non-trade barriers whether they are invested with the main purpose of increasing the exports or not. If significant portion of R&D and subsidy expenditures are being spent with the purpose to increase overall exports, we can say that it is ineffective in the short run. However, if these expenses are being invested proportionally with distinct aims, the results could be analysed separately to draw conclusion whether expected results could be achieved in the long run.

5.3. Limitations and future research directions

As every study or research is bound to have some limitations, so this study also realized some limitations. One of the limitations of the study is that three indirect barriers were analysed at a time in VECM model. Even though the sample size of the data was thirty due to availability of data,

having ten per each variable, the results could be better predicted using less variables at a time or accessing to more enhanced data. Alternatively, in the future, non-trade barriers used as variables in this research could be analysed separately to find out detailed impacts on exports of Azerbaijan.

The other limitation is that in case of country image, the study only tested GNI per capita as a proxy for country reputation. However, other indicators such as literacy rate, IQ level, human development index and other variables as indicators of country reputation could be used to test any impacts or cause on exports.

Moreover, the data of the study considered the total amount of subsidization in Azerbaijan. The other future research direction is that subsidies provided on a specific sector or industry can be identified and analyses can be implemented on the export level of the same industry to find out more specific associations.

Due to limited resources, time constraints, and restrictions on data availability, this study could not examine the impacts of non-trade barriers on local companies engaged in international trade. Hence, studies can be done using different statistical approach to further analyse the same or other indirect trade barriers on the trade activities of export companies. Furthermore, several other theories and econometric analyses like grounded theory, factor analysis model can be employed to reach the desired objectives.

The study also raises issues for future discussion regarding preventive measures against non-trade barriers and strategies for eliminating or lessening their effects. This makes the study's findings more amenable to further investigation and analysis.

6. NEW SCIENTIFIC RESULTS

This study presents novel scientific findings derived from research data and results. These insights contribute to the advancement of future studies by building upon the analytical approach and incorporating additional constructs into the model. The key findings are outlined below.

1. I validated the absence of a causal relationship between non-trade barriers and Azerbaijan's non-oil exports, demonstrating that R&D expenditure, subsidy implementations, and country reputation collectively have no long-term impact, while each factor separately has no short-term effect on export performance. This conclusion was reached by employing Granger causality analysis within the VECM framework to examine whether non-trade barriers - GNI per capita (as a proxy for country image), R&D expenditures, and subsidies drive Azerbaijan's non-oil exports.

2. I verified significant correlations between Azerbaijan's non-oil exports and R&D expenditure, GNI per capita (as a proxy for country reputation), and subsidies individually. Additionally, 94% of the variance in non-oil export volume can be explained by GNI per capita, subsidies, and R&D expenditures. In the analysis, correlation coefficients are used to measure the strength and direction of a linear relationship between non-oil exports and three non-trade barriers. The direction of the correlation is positive in all three cases which means in case any of three variables increased, non-oil exports are likely to increase or vice versa. Moreover, Multiple Regression analysis was applied to find out to what extent non-trade barriers as independent variables - subsidies, GNI per capita, and R&D expenditures can predict the non-oil exports of Azerbaijan. Statistically significant results suggested that GNI per capita, subsidy transfers, and R&D expenditures as a proxy for non-trade barriers can predict Azerbaijan's non-oil exports.

3. I confirmed that correlation and regression analyses are insufficient for accurately assessing the impact of non-trade barriers on Azerbaijan's non-oil exports due to their inability to capture complex causal relationships and qualitative factors. Even though significant level of associations were found between Azerbaijan's non-oil exports and subsidy incentives, R&D expenditures, GNI per capita (as a proxy for country image) through Pearson Correlation Coefficient and Multiple Regression Model, there is no causal relationship between these variables. In other words, it has been validated that these non-trade barriers do not cause Azerbaijan's non-oil export volume.

4. I verified that exporters of non-oil products in Azerbaijan were encouraged following the transition to a floating exchange rate regime, and the volume of non-oil exports has gradually increased ever since. Regarding the indirect effects of exchange rate fluctuations,

negative volatility (currency depreciation) favoured exporters but adversely impacted importers, as they were required to accumulate and remit higher amounts in local currency to vendors. The practical implication is that a currency's strength influences export levels, and the results suggest that exchange rate volatility should be kept under control to ensure trade balance growth. Since consumer price inflation and devaluation is correlated, the other implication is that to keep the exchange rate volatility in balance, the inflation should be kept in the loop. Besides, planning, budgeting, and forecasting (PBF) for longer periods is a must to control exchange rate volatility, manage subsidization and R&D expenditures, increase GNI per capita as a proxy for the nation's prosperity and country reputation. Effective planning and budgeting would not only benefit above mentioned fields, but also would result in better management of SOFAZ budget, in-country investments, as well as credit and debt management.

7. SUMMARY

This research investigated the causal relationship between non-trade barriers and non-oil exports of Azerbaijan, as well as their trends, utilizing time-series data spanning a 30-year period from 1993 to 2022. The thesis utilized time-series-based econometric analysis using the EViews and R software as the analytical tools. Johansen's cointegration and Vector Error Correction Model (VECM) causality tests were employed to determine the short- and long-run relationships as well as the direction of causality. Moreover, correlation and multiple regression analyses were applied to test any other associations between the variables. In these econometric analyses, as proxies for non-trade barriers, subsidy implementations, R&D expenditures, and GNI per capita as a proxy for country reputation were used. The results of the cointegration test proved the existence of a correlation between non-trade barriers and non-oil exports. The VECM results indicated no causal relationship between subsidy, R&D expenditures, GNI per capita as a proxy for country reputation and non-oil exports of Azerbaijan.

The study further analysed the other indirect trade barrier – exchange rate volatility through case study and policy discussions which found out impacts on export performance of Azerbaijan and potential policies to implement to keep the volatility effects at minimum. The results of this study provided new insights into non-trade barriers.

In addition to highlighting the role of non-trade barriers, this research provides a nuanced understanding of the structural and institutional challenges that influence Azerbaijan's non-oil export sector. The analysis not only sheds light on the limitations of existing trade policies but also emphasizes the importance of integrating targeted R&D support, fostering innovation, and improving the country's reputation through strategic economic and diplomatic initiatives.

The results of this study provided new insights into non-trade barriers and highlighted the broader implications for economic diversification in resource-rich economies like Azerbaijan. Furthermore, the outcomes of this study offered robust theoretical and managerial implications, serving as a foundation for future research and policy development aimed at enhancing non-oil exports and reducing dependency on oil revenues.

The findings provide valuable insights for future research and policymaking, highlighting the importance of addressing indirect trade barriers to improve trade and economic performance.

8. APPENDICES

8.1. References

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8.2. List of Tables

8.3. List of Figures

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