ANALYSIS OF NON-TARIFF MEASURES IN AUTOMOTIVE SECTOR OF PAKISTAN

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CERTIFICATE

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ABSTRACT

Although Pakistan's automotive sector contributes significantly to the country's economy, it is still modest by worldwide standards and has a long way to mature and expand. The industry is well-protected, and imports are restricted by non-tariff obstacles in the calculation to high duty rates. The industry's protection result in a significant growth in employment, making the industry monopolistic and severely reducing consumer surplus. The major goal of this research is to assess the competitiveness of Pakistan's vehicle sector, to discover non-tariff measures in automotive sector, and to assess if protection measures are effective. Another goal is to look into the barriers to boosting the industry's competitiveness and propose incentives for companies to produce high-tech products and move the industry toward more value addition. A penal data analysis is used to measure the effects of different variables on exportation of automotive sector of Pakistan. Data from 2003 to 2021 of four major trading partners of Pakistan have been used for this analysis. The results of quantitative and qualitative analysis revealed that protectionism is not only factor to protect and enhance any sector. There are some other factors including GDP, R&D expenditure, import tariffs which play a significant role to boost the exportation.

Key Words: Non-tariff measures, Automotive sector, Geographical distance, EDB, PAMA

LIST OF ABBREVIATION

NTM	Non-tariff measures
PAMA	Pakistan automotive manufacturers association
PAAPAM	Pakistan association of automotive parts and accessories association
APMA	Association of Pakistan motorcycle assemblers
EDB	Engineering development board
PBS	Pakistan bureau of statistics
WITS	World integrated trade solutions
CMI	Census of manufacturing industries
CEPII	French Centre d'Etudes Prospectives et d'Informations Internationales
WDI	World development indicators
EV	Electric vehicles

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CHAPTER 1

INTRODUCTION

Breakthroughs in technology have driven people's well-being across the world and throughout history. The engineering sector is a vital driver of economic growth, and it is widely acknowledged that the automotive industry is main factor of that progress.

There are 29 automobile companies among the world's 500 largest companies. Yet none of these are global companies, which are defined as having at least 20% of their revenues in each of the three regions comprising the large "triad" of the European Union, North America, and Asia. In fact, 23 of the 29 automotive and auto parts companies are home-area centric, with an average of 60.6% of their sales coming from within their home region. These companies are indicative of the 500, as the average intraregional sales for all manufacturing companies is 61.8%[1].

According to Rugman and D'Cruz (2000), the automotive industry operates mostly in clusters of localized activity within each main triad region. There are networks of key suppliers, other suppliers, key distributors, and other partners, and original equipment manufacturers (OEMs) build automobiles using imports from literally thousands of location-bound suppliers. According to the McKinsey Quarterly (2003), this explains why more than 90 percent of the 55 million vehicles produced each year are sold in the country where they are manufactured. Automobile companies are also deeply rooted in a variety of downstream businesses and after-sales industries, including as financing, insurance, maintenance and repairs, parts and accessories, and emergency rescue

[1] Yeung, H. W. C. (2021). Regional worlds: from related variety in regional diversification to strategic coupling in global production networks. Regional Studies, 55(6), 989-1010.

services. According to Ealey and Troyano-Bermuda (2003), these make up a major share of total sales for the larger companies and are extremely locally specialized.

Cultural boundaries between regions are another continuous impediment to a global strategy or automobile. In the United States, spacious, comfortable automobiles are the norm, whereas in Europe, people want vehicles with powerful engines. Even inside NAFTA, the majority of cars in Mexico have manual transmissions, whereas the United States and Canada prefer automatic transmissions. According to Hong et al. (2004), it is impossible to market the same car across regions due to differences in client preferences, and all economies of scale for a model are often obtained inside each major region.

Fuel is a second factor. Diesel remains popular in Europe, although it is being phased out in the United States due to environmental concerns. Instead of phasing out the cheaper gasoline, European automakers are attempting to make it a cleaner option. Each automobile manufacturer's geographical market has its own set of environmental standards. In the United States, automakers are required to design their vehicles in accordance with Environmental Protection Agency (EPA) requirements and state-specific environmental restrictions. Noise control and fuel economy are additional regulations pertaining to automobile design. The industrial processes of the corporations are also tightly regulated by legislation concerning water discharges, air emissions, waste management, and environmental remediation. European and Asia-Pacific markets have distinct environmental regulations that automakers must comply with. For example, the European Union holds all automakers financially accountable for the disassembly and recycling of their own automobiles.

Tariffs, which range from 2.5% in the United States to 10% in some European countries and 100% in other developing nations, represent yet another substantial barrier to globalization. Each region

has its own regulatory and competitive framework in which the world's largest corporations compete for market share. Due to their knowledge of customer preferences, government rules, and market trends, regional rivals are better equipped to address the needs of their respective markets. Foreign firms may hire local employees, purchase local automakers, and conduct significant market research, but companies headquartered in the region are better able to adapt to the changing conditions of the core market.

The automotive industry has an impact on both the economy and technology, making it significant. According to Humphrey and Memedovic (2003), the automotive industry is global, capital-intensive, vertically integrated, and characterized by economies of scale. It has been responsible for the advancement of technological innovation and management, as well as the initiation of a fundamental shift in industrial production processes.

Since the middle of the 1980s, the automotive industry has been through a shift in which indigenous industries adapt to a globalized market. According to the authors, this integration occurred mostly in buyer-supplier relationships, particularly between automakers and their suppliers. Early in the 21st century, globalization, government regulations, concerning energy consumption, emissions, safety and technological developments in electronics, communication, and design are exerting pressure on a mature and highly structured automotive industry (Schulze & Taube, 2015).

Bastin and Rosa (2010) emphasize that governments in many regions of the world, such as Brazil, have been taking efforts to enhance the significance of this issue. For instance, the Brazilian vehicle registration program was designed to increase the energy efficiency of new light vehicles. With emission control regulations in the United States (HC, CO, NOx). The National High Technology Research and Development Program (863 Program) was established in China. In

addition, the adoption of the European Union End-of-Life Vehicle Directive (ELV) in certain European nations intends to promote the recovery of end-of-life cars, thereby reducing waste and enhancing environmental performance.

Globally, the automotive sector generates more than $2.5 trillion in annual income, which equals to nearly 10% of the Gross Domestic Product (GDP) of developed nations[2].

Automotive sector of Pakistan is one of Pakistan's most important private-sector industries, and Felipe (2007) considers it one of the most protected industries. Pakistan's automotive industry is the country's sixth major manufacturing sector, and it is hence critical to the country's financial system. Pakistan's automotive sector commenced in 1953 with the establishment of General Motors. In the beginning automobile manufacturers began looking for local sourcing to reach local content standards of 75%. They also began to provide technical help to car parts manufacturers to guarantee quality and uninterrupted supply, resulting in the growth of the auto retailing business. With a 2.8 percent annual contribution to GDP[3], Pakistan's vehicle industry is the sixth largest industrial subsector with imports of worth US$ 3327.8 million and exports worth US$ 85.9 million in 2020-2021[4]. The sector had contributed 6.2% in overall employment of Pakistan in 2020-21[5]. The automotive industry continues to contribute significantly to the domestic economy through international investments, foreign exchange profits, employment, and revenue generation. There are the 28 significant enterprises that are actively involved in the production of all four types of automobiles: two, three, and four wheelers, buses, agricultural tractors, and trailers[6].

[2] Vaz, C. R., Rauen, T. R. S., & Lezana, Á. G. R. (2017). Sustainability and innovation in the automotive sector: A structured content analysis. *Sustainability*, *9*(6), 880.
[3] Source: Pakistan bureau of statistics (PBS). For further details visit https://www.pbs.gov.pk/content/
[4] Estimated by UN Comtrade Database. For further details visit https://comtrade.un.org/Data/
[5] Pakistan labor Force Survey 2020-21. For further details visit https://www.pbs.gov.pk/content/
[6]Pakistan Automotive Manufacturers Association (PAMA) for details seehttps://www.pama.org.pk/

All the progress is because; Pakistan's automotive sector is effectively protected by tariff and non-tariff obstacles. The goal of this protectionism is to allow the industry to attain the level of indigenization that it desires. Tariffs and non-tariff policies are inefficient economically and alter production incentive. It also makes the system weaker to lobby and raises managerial costs for both the government and businesses. For small manufacturers, these administrative costs can be prohibitively costly. As a result, despite all the efforts made by the government at various times, Pakistani vehicles are less competitive in the worldwide market.

The significance of tariffs as instruments of trade policy is diminishing as tariff rates have decreased significantly during the past two decades. Simultaneously, the variety of non-tariff measures that are implemented is expanding. Therefore, the literature investigates whether these relatively novel forms of trade policy instruments could serve as alternatives for previously negotiated tariff reductions (Beverelli et al., 2014). NTMs cannot be simply compared to tariffs due to their nature. Typically, they serve other functions, such as the preservation of human, animal, and plant life, in addition to their role as trade policy instruments. Consequently, the public expresses concern that trade agreements may result in the deterioration of norms. Not just the general public, but especially economists, are divided on the topic of whether or not NTMs should be on the negotiating table. In view of the recent trade slowdown, economists who believe that more international trade contributes to higher living standards urge for the elimination or harmonization of nontariff measures (NTMs) to promote trade (Cadot et al., 2015). Those who feel that trade harms economic prosperity argue against concluding or ratifying more trade agreements. However, both sides commonly assume that NTMs reduce trade, which is not always the case. Trade economists have only recently begun to recognize that non-tariff measures need not constitute non-tariff barriers (NTBs). Certain NTMs, such as quotas and restrictions, have an

unquestionably negative impact on bilateral trade. However, other NTM categories, such as sanitary and phytosanitary (SPS) measures, have the potential to improve product quality, which could stimulate trade. Similarly, some technical barriers to trade (TBTs) like as labelling laws offer consumers with additional knowledge, potentially influencing consumption habits and fostering greater trust, which may be trade-promoting.

The major goal of this research is to assess the competitiveness of Pakistan's vehicle sector, to discover non-tariff measures in automotive sector, and to assess if protection measures are effective. Another goal is to investigate the barriers to boosting the industry's competitiveness and propose incentives for companies to produce high-tech products and move the industry toward more value addition.

1.1. Problem Statement

Pakistan's automotive sector is protected by tariff and non-tariff obstacles. The goal of this protectionism is to allow the industry to attain the level of indigenization that it desires. Tariffs and non-tariff policies are inefficient economically and alter production incentive. It also makes the system weaker to lobby and raises managerial costs for both the government and businesses. For small manufacturers, these administrative costs can be prohibitively costly. As a result, despite all of the efforts made by the government at various times, Pakistani vehicles are less competitive in the worldwide market.

1.2. Research Questions

1) What are the non-tariff measures in the Pakistan’s automotive sector?
2) What impact do NTMs have on industry?
3) What policy intervention would incentivize the industry to move towards higher value addition?

1.3. Objective of the Study

Although Pakistan's automotive sector contributes significantly to the country's economy, it is still modest by worldwide standards and has a long way to mature and expand. The industry is well-protected, and imports are restricted by non-tariff obstacles in calculation to high duty rates. The industry's protection resulted in a significant growth in employment, making the industry monopolistic and severely reducing consumer surplus. The major goal of this research is to assess the competitiveness of Pakistan's vehicle sector, to discover non-tariff measures in trade (imports and exports) of automotive sector, and to assess if protection measures are effective. Another goal is to look into the barriers to boosting the industry's competitiveness and propose incentives for companies to produce high-tech products and move the industry toward more value addition.

1.4. Significance of the Study

The automotive sector in Pakistan is at a crossroads, and policymakers now have two options available to them for hastening the process of change. They may follow the road of enhancing consumer choice by allowing car imports, which would have the effect of suffocating the indigenous automobile industry. Alternately, they could increase their commitment to Pakistan's automobile industry by incorporating a comprehensive equilibrium of supporting policies into the existing border protection and committing to a plan that will gradually reduce tariff and non-tariff barriers over the course of time. This would be an alternative way in which they could increase their commitment. The existing system, which consists of enforcing solely tariff and non-tariff protection, is inefficient because it results in the generation of rents and inhibits investment and competition at the expense of customers. Even after decades of tariff and non-tariff protection, the automotive industry is unable to thrive without tariff and non-tariff protection because the status quo of a highly intense sector, small market size, low exports, and limited consumer choice has

prevailed in the vehicle market. As a result, the industry is unable to survive without tariff and non-tariff protection.

In spite of frequent and informal changes in the regulatory environment, as well as a terrible business climate, the automotive industry has been able to develop jobs and engineering capacity throughout its value chain. Additionally, the industry has been able to capitalize on export markets for motorcycles, tractors, and auto components. There is little doubt that the automotive industry possesses the potential to live up to the great promise it holds for becoming a driver of national economic success. The difficulties that the sector is currently experiencing are not insurmountable. No automotive industry in the history of the world has been able to achieve competitiveness without a clearly articulated vision and a stable set of dependable, long-term government policies to encourage it. Pakistan's automotive industry is no exception to this rule. The study will investigate the competitiveness of the industry, the challenges that it faces, and the policies that are necessary to move the industry from its infant stage to its mature stage. This will allow the industry to provide competitive products for domestic consumers and premium manufacturing jobs, as well as fit into global value chains and fuel growth in exports.

1.5. Organization of the Study

The study is comprised on nine chapters. The first chapter include the introduction about the automotive sector of Pakistan. The second chapter is about literature review and third one is based on historical background, policy review and current strategies and specifically about NTM's in automotive sector of Pakistan. The fourth & fifth chapter of this study comprises Data and variables description and methodology required to find the accurate results for the research respectively. The sixth chapter of this study comprises Empirical Results and chapter seven is based on policies overview of automotive sector of Pakistan. Chapter eight is about qualitative analysis and last chapter of this study, chapter nine is about conclusion and policy recommendations of the study.

CHAPTER 2

LITERATURE REVIEW

The global automotive sector is one of the key drivers that propel economies all over the world. In a process similar, one of the most significant industries in Pakistan is the automotive sector. Even though the automotive sector is one of the main private industries in Pakistan, it is mostly protected from the competition that comes from outside the country. The automotive manufacturing industry has, over the course of the eras, made a well-known run-of-the-mill presentation in relationships and connections of continuous and persistent advancement. The production of motor vehicles in Pakistan does not ensure to play a significant role in the overall value growth of the manufacturing industry. Developed countries and international institutions advise developing countries to follow economic policies that have been deemed correct (Chang, 2004). In the development process, these include the adoption of free trade, economic planning, foreign aid financing, and import substitution industrialization policies (Chang, 2004; Yiitdiim, 2012).

2.1 Automotive sector of the World

Sichei, M. M., & Luc Erero, J. (2008) have argued that some nations, including Malawi, Zambia, Kenya, and Malaysia, have export potential. The National Association of Automobile Manufacturers of South Africa (NAAMSA) members are unable to fully utilize these export markets due to a number of obstacles. These include extremely high import duties, the absence of a diplomatic representative from South Africa in the trade partner, and the uncertainty around what will occur when the Motor Industry Development Program (MIDP) expires.

China after the Empire's fall in 1911 plunged into economic difficulties due to uneven trade arrangements he negotiated in the 19th century and endured very difficult days politically and

economically. Politically, it began to improve after the Communists won control in 1949 and established national unity, but economic problems with erroneous policy preferences persisted until 1978. Despite economic challenges, two foreign-tech auto plants were built at this time. After 1978, economic reforms allowed private sector small companies. Foreign corporations can cooperate with local firms and create branches in China to import modern technologies. Since the 2000s, when international firms began dominating the Sunday market, significant local enterprises, especially in the car industry, have been promoted. Along with governmental economic goals, the automotive industry policy, 1994, 2004, 2006, 2010, and other texts aimed to expand the automotive sector and local automobile manufacturing with its own technology and imitation. Innovative entrepreneurs like Chery Automobile, Great Wall Motor, Geely, and BYD emerged in the 2000s, and local auto work began in 2004. At the heart of the novel arrangement is the administrative authority accorded to local governments even during imperial times (Dolanay, S. S. (2021).

China's automotive strategy aims to build a domestic industry. China gives foreign automakers market access in exchange for technology transfer through a 50:50 Sino-foreign equity joint venture. This program hasn't yielded the anticipated results, thus the government continues to supervise the car sector actively. Foreign automakers have guarded their technology from the Chinese, therefore little product development has occurred. Weak intellectual property protection in China is a fundamental factor for the failure of these joint venture agreements, especially as local Chinese partners can hold interests in numerous joint ventures simultaneously.

China makes it difficult to import cars, especially secondhand ones. Importing requires local residency. Only legal residents (holders of "Z" visas) can import cars, therefore business visa ("F")

and tourist visa holders can't ("L"). Only residents with "foreign expert status" from the PSB and visa departments can bring in a vehicle.

Personal car imports into China must meet all regulations. Only returning diplomats or those with an import permission can import a vehicle. Foreigners can import one new car per person if the Customs Office approves. For Chinese customs to authorize the import of a common brand car, it must be less than a year old and in good shape. Rare models not permitted for sale in China may require hefty testing fees.

Pay import charges, VAT, and sales taxes to send a car to China. Car type and size affect monthly costs. In China, import duties on personal vehicles can exceed 200% of the car's worth. Chinese policymakers have used subsidies and tax cuts to boost local auto demand. Recent initiatives include a reduction in vehicle purchase taxes from 10% to 5% and the introduction of rebates for rural residents who buy cars with engines less than 1.6. Mini-commercial cars and light pickup trucks will be subsidized. Chinese automakers will benefit from growing demand.

Environmental protection is another policy to help local industry. China will develop 5 million New Energy Vehicles using government subsidies to boost its auto industry. The government will also build 12,000 new charging stations and 4.8 million charging piles. As an emerging industry, it receives greater subsidies, breaks, and assistance. All this, together with other policy tightening, means local players will dominate China's auto business.

Due to the delayed growth of R & D talent in the nation, local automobile firms still lag behind worldwide conventional automotive manufacturers in terms of technology, despite the Chinese government's incentives to do R & D work locally. Due to this, Chinese manufacturers have chosen

to participate in overseas markets by acquiring foreign brands and acquiring cutting-edge technologies (Qiu, 2013).

India's auto industry has enormous scale economies. It's technologically advanced and exports varied automobile items to many countries. These exports make up 5% of India's total exports. India's trade surplus in the sector is around $10 billion. India is the 10th-largest exporter of automobile items, per WTO. Pakistan had declared in the past that it will award India MFN status due to the trading possibilities between the two nations, but political rivalries and Azad Jammu & Kashmir prevented this. India exports more vehicles (49%), parts and accessories (19%), trucks, vans, motorbikes, tractors, and buses (4%) than Pakistan. In addition to Europe and the US. Imports are predominantly auto-parts and accessories (71%) and luxury autos. The Indian automotive industry is self-sufficient and can export a wide range of products (Imran, M., & Khan, A. (2015).

In order to protect domestic industry, Pakistan maintains a negative list of 1,209 Indian goods. 181 vehicle products are included in Chapter 87, which represents for 15% of the items on the negative list. In contrast, India has placed only one item of automotive ('tanks and other armored war vehicles, motorized, whether or not armed, and parts of such vehicle' HS code: 87100000) on the negative list it maintains for all trading partners (Ahmed, V., & Batool, S. (2017).

In recent years, India's auto industry has grown rapidly. This amazing growth is due to policies that have safeguarded and promoted local industry's competitiveness. India has created an adequate protection framework with tariff and non-tariff barriers. The government also has regulations that discourage auto imports and promote localization.

Importers must get government license to import CBU automobiles, which is a lengthy process. Importing just right-hand-drive cars. Left-hand drive cars are banned (except for consulates and

some other special categories). The Indian government bans the import of 1000-2500 cc automobiles. Used cars can only be imported from Mumbai, not Calcutta or Chennai. Used cars can't be older than 3 years (from the date of manufacture). The 2001 Exim policy eased used automobile import limits.

The most popular route to import an automobile to India is under the "Transfer of residence" clause, which allows Indians who have lived abroad for at least 12 months to ship their cars to India. Car can't be sold for 2 years after import (from the date of import). To qualify for this condition, the non-resident Indian importing the car must have lived abroad for at least 2 years, paid for the car abroad, and imported it within 6 months after arriving in India. Also, customs duty must be paid in foreign currency. A handicapped person may pay the car's customs duty in Indian rupees. Car sales in India require approval.

Cars costing more than $40,000 don't need Automotive Research Association of India homologation (ARAI). If the car's value is less than USD 40,000, it must be tested by the Vehicle Research and Development Establishment (VRDE), Ahmednagar, of the Ministry of Defense, the ARAI, Pune, the Central Farm and Machinery Training and Testing Institute, Madhya Pradesh, or another government-approved testing agency. The importing agency must present a certificate from a testing agency (notified by the central government) stating that the second-hand car was tested immediately before shipment and adheres to the Motor Vehicles Act, 1988[7].

Used vehicles imported into India must be roadworthy for at least five years from the date of import, with service facilities available in India during that time. At the time of importation, the

[7] See Table 2.1 (Appendix)

importer must provide a declaration specifying each vehicle's roadworthiness term, along with a certificate from one of the testing agencies notified by the central government.[8]

Ceravegna, L. (2003) claimed that Pakistani producers concern that scale economies will make India advantage more from the liberalization of trade in automotive products, while tariff and non-tariff barriers will prevent Pakistan from increasing its exports to India (including high environmental and safety standards). Therefore, they recommend that Pakistan negotiate the entry of its automotive products through a buy-back agreement for automotive products with value-added. An example of such a deal is the vehicle trade between Argentina and Brazil.

Japan is one of the leading country globally in automotive sector[9]. As (Grădinaru, C., Toma, S. G., & Zainea, L. (2020) have depicted the actual, fierce competition between Japanese and German automakers by using 2019 data to support metrics such as revenues, earnings, and the number of employees, and by underlining significant contrasts in their production methods. They asserted that the automobile industry will continue to be dominated by colossal firms that are in continual competition with one another in their goal of industry dominance. The article demonstrates that there are numerous criteria to consider when deciding whether Japanese or German companies will be the global automobile sector victor. Only one thing is certain: the chase will get more difficult as competition intensifies[10].

[8] See Figure 2.1 (Appendix)
[9] See Figure 2.2 (Appendix)
[10] Table 2.2 (Appendix)

2.2. Automotive sector of Pakistan

According to Ul Haque et al., (2021) the global automobile sector is one of the driving forces of global economies, with the United States, China, Germany, and Japan leading the sector in terms of manufacturing and exports. Shahrukh Mirza & Manarvi (2011) investigated that the industry's challenges include rapid model changes, better fuel efficiency, cost reductions, and improved user comfort without sacrificing quality. They suggested that the industry devise a strategy for improving both productivity and quality. This should not be limited to human resource development alone but should also include technology infusion and diffusion. This should improve vehicle quality and user friendliness, resulting in increased competitiveness.

Qadir, (2017) have discussed the technological capabilities development in Pakistan's automotive industry and concluded that industry performance is plagued with low levels of productivity and quality.

According to Qadeer et al., (2014) the automotive sector is substantially sheltered from the external race, while being one of Pakistan's most important private sectors. Uzair Kayani & Sikander a Shah, (2014) have discussed the tariff and non-tariff barriers of trade comparison. They claimed that tariffs are levies on trade, but non-tariff barriers are non-monetary restrictions of many kinds, such as documentation obligations, technical or safety specifications, and packaging obligations. According to them China, India, and Sri Lanka have all imposed greater non-tariff barriers (NTBs) than Pakistan. They also claimed that NTBs do not appear to have a big influence on imports therefore they advise that government should cut NTB's on automotive sector to lower prices and free trade.

Ghodsi et al., (2017) suggested that study of non-tariff measures in trade is most significant since the role of tariffs as trade policy tools is declining as tariff rates have already considerably dropped over the last two decades. Here the question arises that if the NTB's are beneficiary or not, Beghin et al., (2013) assumed that NTMs are in favor of trade as Imran & Khan, (2015) found that the protection to the industry resulted in large increase of employment, making the industry monopolistic and hugely suffering the consumer surplus. Dean et al., (2006) explained that NTMs on imports increase domestic prices, while Li & Beghin, (2012) demonstrated that NTMs had a negative effect on imports using the Gravity Model. Din et al., (2003) discussed that there is a beneficial association between international trade openness and economic growth. Openness is assumed to influence economic growth through a few different channels.

Opening the economy to more international trade for emerging countries, according to Shabbir, (2021) is a natural way to boost business innovation. Literature and research suggest that Pakistan's automotive sector is well-protected in terms of non-tariff measures. According to the ADB, (2008) the automotive industry is largely held by the private sector and has 18 joint venture automobile assembly plants. There are also 47 motorbike production units. In comparison to other Asian economies that have taken advantage of the automobile industry's catalytic role in driving broad-based manufacturing sector growth, its contribution to GDP and employment is likewise modest. This is due to several factors, including the fact that it continues to be protected with high import duties. As a result, the Asian development bank determined that "these regulations inhibit domestic and foreign competition, allowing tiny, inefficient, but profitable local automotive companies to flourish.

CSF, (2006) investigated the protection granted to Pakistan's motorcycle industry, as well as the causes for the industry's rapid expansion over the last five years and the issues that have arisen

along the value chain. According to the report, the industry has reached critical mass, resulting in a 30% drop in average output prices over the last five years.

2.3. Conclusion

Since independence, the automobile sector has been one of Pakistan's most important manufacturing sectors, with tariff and non-tariff barriers in place. However, the data suggests that the sector's performance is inadequate when compared to adjacent and leading countries in the field. Non-tariff barriers have become more relevant and crucial because of the WTO and other international norms lowering tariff barriers, it is critical to understand what non-tariff measures are important for the automobile industry. So the purpose of this research is to investigate non-tariff measures and their impact on the automobile industry. The analysis also compares the sector's competitiveness to that of other countries to determine whether protection measures are beneficial. Finally, the study will suggest what incentives companies need to manufacture high-tech products and move the industry toward more value addition.

CHAPTER 3

AUTOMOTIVE SECTOR OF PAKISTAN

3.1. History of Automotive Sector:

The automobile industry in Pakistan made major progress in 1950 when General Motors of America started assembly operations in Pakistan and founded National Motors Limited, a public limited company. This was a watershed moment for the country's automotive sector. Under the General Motors brand name, the corporation manufactured both passenger cars and vehicles used for commercial purposes. The first vehicle ever built in Pakistan was a Bedford truck, which was done so in the year 1950. After that, a single assembly factory produced automobiles, buses, and light trucks, among other vehicle types. Before the 1990s, the industry was subject to stringent regulations and had very little competition. Nevertheless, the sector has been free of most regulations since 1990. As a result of deregulation, major Japanese manufacturers entered the market, initiating a period of unprecedented competition within this sector of the economy. After deregulatory measures were put into place, HINO truck and Mazda truck assemblers, as well as Toyota (1993) and Honda (1994) in particular, entered the market. At the beginning of the 2000s, vehicles such as Daihatsu and Hyundai cars, in addition to a variety of light commercial vehicles (LCVs) and mini trucks, were put together at an assembly plant. In 1983, Suzuki launched production of the FX 800 cc with the goal of appealing to consumers with middle-incomes. This marked the beginning of the normal car industry in the country. With the release of the Khyber 1000 cc and Margalla 1300 cc motorcycles in 1992, Suzuki was able to attract a broader range of customers. Since the company's inception, Suzuki has consistently dominated the global markets for both passenger cars and light commercial vehicles. Suzuki's primary competitors in the high-priced segment of the market were Indus Motor (Toyota), which began operations in Pakistan in

1993, and Honda Atlas, which began operations in 1994. (i.e. 1300 cc - 2000cc range). Assembling activities for commercial vehicles were initiated by Hino Pak in 1986; by that time, the company held the market share leadership position in the industry.

The progression of the industry can be loosely broken down into the following four phases:

1. Nascent period (1949 – 1971)

2. The time of nationalization, which lasted from 1972 until 1982.

3. Collaboration with organizations from the commercial sector (1983–1990)

4. Post-privatization (1991 to present)

3.1.1. Nascent period (1949 – 1971)

The period of infancy, which lasted from 1949 until 1971; The General Motors & Sales Co. constructed the first vehicle facility in May of 1949. This business began as an experiment, but it expanded so quickly that it turned into an assembly line for Vauxhall and Bedford trucks. The other three top automakers in the United States partnered with Pakistani businessmen to establish Ali Automobiles in assembling Ford products in 1955, Haroon Industries in assembling Chrysler's Dodge cars in 1956, and Chrysler's Dodge cars in 1956, and Kandawalla Industries in assembling those of American Motor in 1962.This was done in order additionally; Hyesons initiated the construction of the Mack Trucks facility in the year 1963. Only semi-knocked-down (SKD) units could be produced at any of these sites, and assembly work was the only thing they did. After being sold to Ghandhara Industries Limited in 1963, the former General Motors plant finally started producing Bedford trucks and buses the following year, after receiving authorization to do so the year before. Lack of organized component manufacturing facilities, a lack of technological

know-how, and insufficient ancillary facilities for the design and production of tools, jigs, and fixtures all hindered the localization process. These all had a part in the lack of suitable facilities. Apart from that, little was done to advance technology or expand capability. A lack of professionalism was present in the management of the majority of the aforementioned types of businesses.

3.1.2. The time of nationalization, which lasted from 1972 until 1982:

Manufacturing of motor vehicles was one of the businesses that were nationalized as part of the Economic Reform Order of 1972. Both the names of the units and the functions that they performed were renamed during this process. A Board of Industrial Management was set up so that national industrialization strategies could be defined, and it also has the responsibility of supervising and coordinating the operations of the newly nationalized enterprises. Because this was such a vast undertaking, numerous organizations had to be established in order to coordinate the activities of the various significant industrial sectors, such as the production of autos, cement, fertilizers, and engineering, etc. The mechanisms that were utilized to construct this strategy, however, lacked the requisite commitment, as it looked that businesses demonstrated that the public sector could only manage sectors if it produced a significant amount of money.

3.1.3. Collaboration with organizations from the commercial sector (1983–1990)

In the 1980s, it became widely acknowledged that collaboration between the public and private sectors was necessary to successfully achieve the desired level of national development. It was vital to have a high degree of competition in order to guarantee that neither customers nor the economy of the nation would suffer. This led in the reorganization of a variety of already existing entities, in addition to the establishment of new organizations in both the public and commercial

sectors. In order to initiate the progressive production of Suzuki automobiles, particularly the 800cc passenger cars, the Pak-Suzuki Motor Company Ltd. was renamed Awami Autos and given new ownership. Al-Ghazi Tractors Ltd, a new joint venture that is controlled by the Habib Group Republic Motors Co., has been given responsibility for the production of Fiat automobiles. It was transformed into a partnership that was run by the private sector. Another factory, this one going by the name Ghandhara-Nissan, has been given the go-ahead to begin production of trucks in a progressive manner. To facilitate the production of automobile castings and wheels, PACO developed a total of five additional facilities: two in the private sector and three in the public sector, located adjacent to one another. The two-wheeler industry followed the same trajectory of development as previously described.

3.1.4. Post-privatization (1991 to present)

The auto industry was in desperate need of a new manufacturer in the middle of the 1980s. However, the sanction was not implemented until 1989 because the administration was unable to reach a consensus. Permission has been granted to the House of Habib and the Toyota Motor Corporation of Japan to build a cutting-edge, contemporary facility that will be utilized to produce some of Toyota's most popular autos, including the Corolla passenger cars and other well-liked vehicles. The first assembly factory for the component supplier Industry was built at this time. The first auto parts manufacturing facility was created in Lahore in 1942 with the goal of offering after-sales support. Tractors, buses, and automobile parts were the core focus of the industry from 1950 to 1970, along with meeting the needs of the aftermarket for a range of various cars. However, Suzuki's decision to start manufacture in Pakistan for the first time resulted in a period of significant expansion for the sector throughout the 1980s. Several other manufacturers in the automobile and motorcycle industries formed certified vendors after Suzuki set the precedent.

Because of this, there was an increase in the number of local enterprises entering the industry of producing auto parts.

The deletion program, which was also referred to as the Localization Policy, began in 1987 and lasted until 2004. It mandated mandatory localization for the automotive sector with the intention of increasing the amount of locally sourced content found in vehicles.

The deletion program for the auto sector was phased out starting in 2004 and replaced with the Tariff Based System in order to bring the sector into compliance with Trade Related Investment Measures (TRIMs) under the WTO system beginning on July 1, 2006 and continuing forward (TBS). As of July 1, 2006, this took place.

3.2. Sales and production in Automotive Sector of Pakistan[11]

3.2.1. Passenger cars:

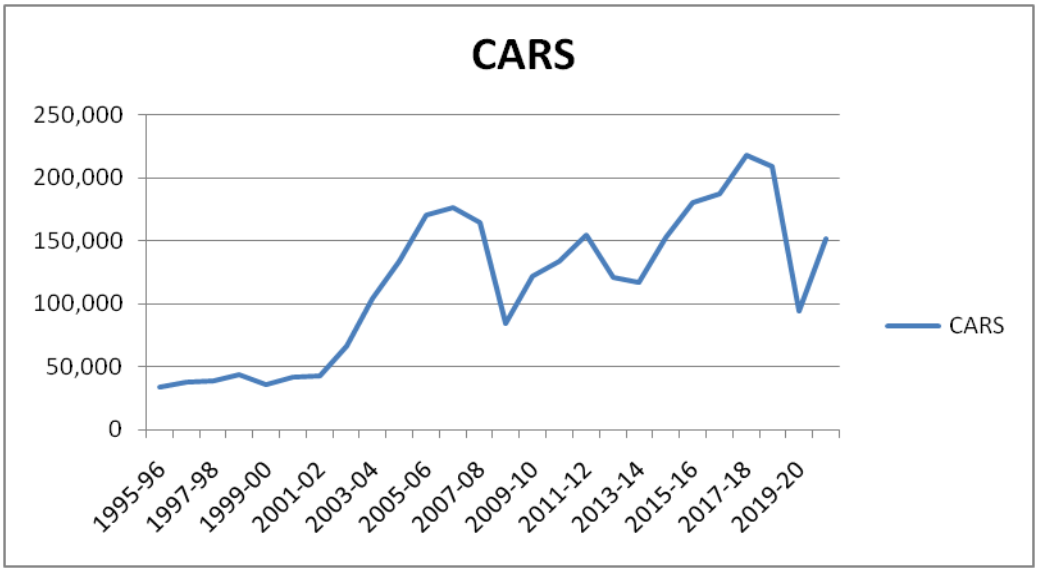

Figure 3.1: Production of Cars

[11] Data table has been given in Appendix. See Table 3.2

The structure of the market for passenger vehicles is one of extreme concentration. The three Japanese original equipment manufacturers that hold the largest market share are Toyota, Honda, and Suzuki. There have been multiple attempts made, but none of them have been successful, to enter the market. Depending on the model, the percentage of locally sourced components in the automobiles that are built might range anywhere from 40 to 75 percent. Automobiles are manufactured in Pakistan, and their engine displacements can range anywhere from 800 to 1800 cc. Between the years 2000-01 and 2005-06, the number of automobiles manufactured surged by a factor of more than four due to the robust economy. After that, by 2009-2010, it had declined by 29 percent due to a halt in the rise of income. Since that time, the output has increased at a rate that is equivalent to an exponential growth of more than 25 percent each year. Jeeps, pickup trucks, and light commercial vans all follow a pattern that is strikingly similar. It comes as a surprise to learn that the largest portion of output is comprised of automobiles with engine capacities ranging from 1300 to 1800 cc. This is probably a result of two things: first, the disparity in household incomes; and, second, the higher profitability of huge cars because of more effective protection. These two elements unquestionably influence the trend.

The expansion of the market for passenger cars is hampered by a number of factors, including the following:

1. The local demand is significantly lower than what is required for economies of scale, and both the home market and regional market will need to be targeted in a more efficient manner in order to facilitate a passenger automobile sector that can support itself. The lack of a leasing market that is appealing contributes further to the depressed state of domestic demand.
2. The nature of the policy environment, which is defined by frequent ad hoc changes, has been a significant obstacle to the process of investment planning in this industry. The car

industry requires large-scale investments to be made a few years in advance of the debut of a new model, and for this reason, it is essential that there be consistency in policy.

3. The lack of a regulatory body that establishes and enforces standards is another significant obstacle, as it means that there is no check on vehicles that are not road worthy, with the exception of those that are engaged in voluntarily by the OEMs. This means that there is no way to prevent unsafe vehicles from being sold.

At this time, Pakistan does not export automobiles. This is due to a number of factors, including the following:

1. The markets to which Pakistani assemblers are permitted to export their products are determined by the franchise agreements they have with Japanese principals. Local manufacturers often have price floors imposed on them by the companies who operate as their principals.
2. As a result of protection, there is a bias against exporting. The local market is where assemblers make their money, thus selling there is profitable for them.
3. An absence of innovative models, fuel-efficiency regulations, safety standards, and technological advancements.

3.2.2. Motorcycles:

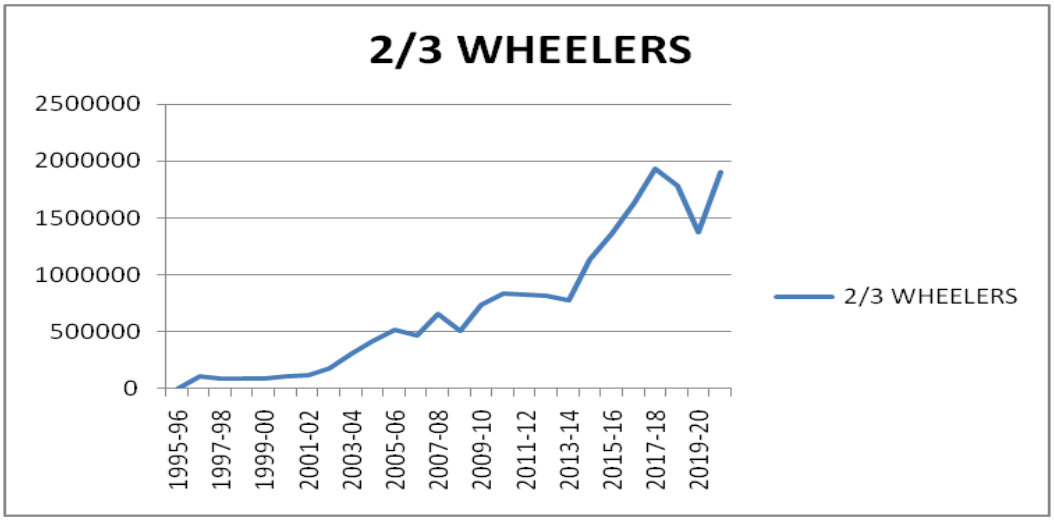

Figure 3.2: Production of Motor Bikes

The motorcycle sector has witnessed a large increase in volume equivalent to a thirtyfold growth over the course of the last fifteen years. The most notable results have been the achievement of economies of scale, high degrees of localization, and cheap pricing, all of which have prompted future market size expansions. This has led to a rise in total market size. Even though there are a great number of other active motorcycle manufacturers and assemblers, the market is extremely fragmented between Honda, which offers a product of greater quality at a higher price, and the remaining manufacturers, who offer a product at a cheaper cost. The market is extremely consolidated, with only a few major firms controlling the vast majority of the volume, despite the fact that there are a large number of manufacturers. Because there is no exclusivity in the supply chain, and because it is possible to buy materials on credit, there are very low barriers to entrance. However, due to the fierce price competition among the assemblers of cheaper motorcycles, there is a high rate of businesses closing their doors. There is a widespread availability of motorcycles with a capacity of 70 cc, which is a capacity that is generally lacking in most other parts of the world. This is another fascinating aspect of the motorcycle market.

The following are the primary factors that are preventing expansion in the motorbike market:

1. Smuggling: The majority of "Honda clone" assemblers employ illegal Chinese parts, despite the fact that motorcycle volumes are now sufficiently high to take advantage of economies of scale and for technological transfer to the value chain.
2. Ineffective domestic standards implementation and the resulting market dominance of low quality Smuggling, despite the fact that motorcycle sales are now sufficiently high to take advantage of economies of scale and permit the transfer of technology to the value chain. Pakistani manufacturers of automobile parts are unable to invest in the nation since these unregulated imports are frequently of low price and terrible quality. The indirect result of this is a loss of revenue for the exchequer.
3. The value of an import is determined based on its total weight, with the value varying according to the country of origin. The government and both types of motorbike assemblers have been at odds on how to calculate the tariffs, which has been a source of contention. In order to maintain a level playing field for the business, it is essential that imports be priced in an accurate and transparent manner.
4. SROs are another factor that contributes to tension in the industry since they place an unfair burden on smaller assemblers. A further incentive to engage in illegal activity is created when it is combined with the relative simplicity of smuggling inputs. People are frustrated with the administrative complexity.
5. Obstacles posed by procedures and bureaucracy in the process of obtaining export clearances.

3.2.3. Tractors:

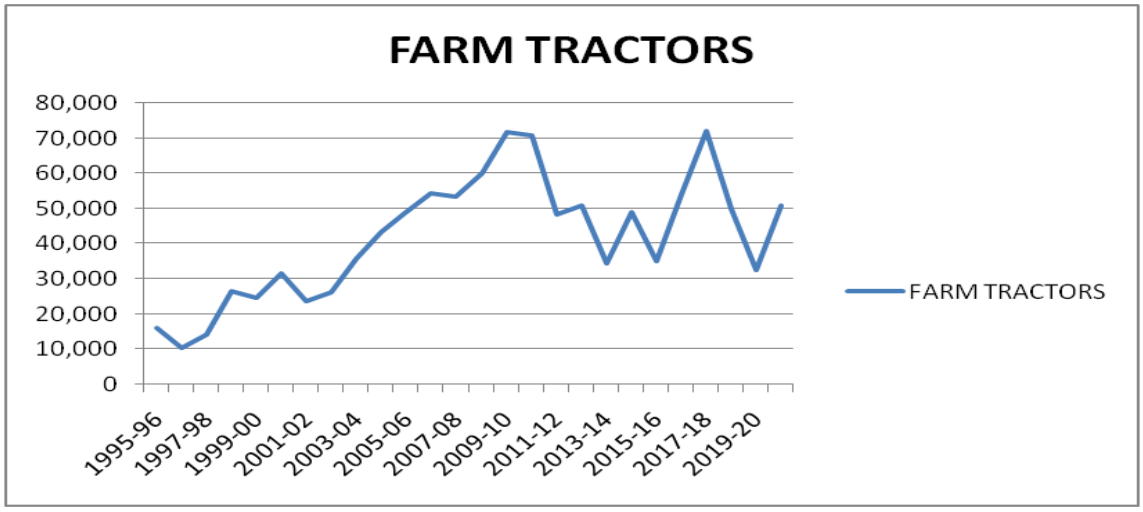

Figure 3.3: Production of Tractors

In contrast to the production of automobiles, the production of tractors has been quite successful during the past few years. This is because rural earnings have significantly increased in recent years, as a result of factors such as, for instance, the growth in the price of wheat and cotton. The market for tractors is almost entirely controlled by just two manufacturers: Al Ghazi and Millat. The market share held by the remaining few manufacturers is less than thirty percent. Because of the glacial pace of change that characterizes the Pakistani market, tractor production in Pakistan has seen the highest amount of localization of any of the vehicles that have been produced there. In contrast to the market for passenger automobiles, in which new models are introduced every few years, tractor models have not been updated in decades. This has allowed for the recovery of fixed investments despite the relatively low volume of sales. Pakistani tractors are sold at prices that are competitive in the international market, and they are typically exported in an unofficial capacity after being purchased by middlemen rather than being shipped directly by the producers, mainly to Afghanistan.

Tractor makers must contend with a number of obstacles, including the following:

1. Similar to the situation with passenger cars, there are no quality standards or emission regulations in place in Pakistan. In comparison, tractors around the world are currently on the seventh generation of technology, whereas Pakistan's tractors are only on the second generation. Diesel of the grade required for Euro II engines is not currently accessible, which is another factor that reduces the incentive to create an engine that complies with emissions standards.
2. The licensing requirement of the principals (Massey Ferguson in the case of Millat and New Holland in the case of Al-Ghazi) is one of the primary obstacles to exporting tractors. This need permits the Pakistani manufacturer to produce just for the local market in Pakistan. Al Ghazi was recently successful in negotiating a special license that is applicable exclusively to Afghanistan; however, exports cannot be sent straight from the makers in any other circumstance.
3. Problems with infrastructure and logistics can also have an impact on the ability to export goods. Tractors are not permitted to cross into India through the Wagah-Attari border at this time and must instead use seaports as their point of entry. If they were allowed to do so by land, Pakistani producers could be able to take advantage of any price differences that exist within India due to the country's huge size.
4. Uncertain government policies, such as the introduction of and changes to General Sales Tax, have a significant impact on both the price of the tractor and the number of units sold. In addition, because of unanticipated delays in the implementation of announced initiatives, farmers are continuing to withhold their participation in the scheme. This results in decreased volumes for the manufacturers in the interim and leads to the termination of jobs and the closure of businesses all along the value chain.
5. Under-developed finance sector for farmers further dampens demand.

Forging, casting, sheet metal molding, and plastic molding are just few of the manufacturing processes that Pakistani auto part manufacturers specialize in when it comes to producing vehicle components. There are two submarkets that make up the automotive parts industry: the value chain of domestic original equipment manufacturers (OEMs), and the replacement market. Several different manufacturers of auto parts are competitive enough in the aftermarket replacement industry to already have export markets in place. There are a lot of technical assistance agreements with global Tier 2 corporations that promote technological spillovers to Pakistan. As a result of these arrangements, Pakistani auto part manufacturers have been able to design more complicated parts as the market has grown. However, when considered in the context of global value chains, Pakistani auto parts are still in the manufacturing and assembly portion of the spectrum, rather than the higher value-adding processes like as research and development, innovation, and branding. In addition, they are limited to the value chains of domestic original equipment manufacturers (OEMs), rather than the global value chains of parent OEMs.

Entry into global value chains is a step-by-step process, and the Pakistani auto parts sector is now in the beginning stages of this process. In order to make progress toward the goal of successful GVC integration, there must first be favorable conditions for conducting business, as well as logistics that run smoothly and can be relied upon, which must include adequate physical infrastructure. The businesses in Pakistan adhere to the standards established internationally by the OEMs because Pakistan does not have its own set of locally produced standards. Due to the fact that Japan is the only country in which automobiles are made, the country's suppliers almost always adhere to Japanese International Standards (JIS).

3.2.3.1. Obstacles within the sector:

1. The market is swamped with low-priced parts of unregulated quality, and there are significant problems with under-invoicing and outright smuggling. This has a devastating

impact on legitimate firms, and because the legitimate customs processes are completely sidestepped, the government loses out on revenue from tariff payments. Because of this, the size of the domestic market for producers is severely constrained, local businesses are unable to achieve economies of scale, and there is a disincentive to invest in high-quality production.

2. The usage of diesel generators raises prices, which is a major hurdle to obtaining greater levels of competitiveness. This is due to the fact that there is no supply of power or gas.
3. The acquisition of technology is hampered by a lack of money. The machinery that is imported is almost always used, having been discarded by multinational corporations as they progress to more advanced forms of technology.
4. The federal excise duty that is placed on the royalty and licensing fees that local producers are required to pay to technology providers stifles technological innovation. This duty is levied by the federal government.
5. Customs laws and inconsistencies are a big source of frustration for both the manufacturers of auto parts and the legitimate traders who sell them. Importers contend that the import duties, which are computed by weight for many different types of commodities, do not reflect increased production and input costs because the tariffs are based on weight. Additionally, the rate at which the substance is valued is arbitrary and does not reflect the rates that are prevalent internationally.
6. Traders claim that customs employees intentionally place roadblocks in the path of customs clearance in order to generate side payments. Customs officials have the authority to exercise discretion in their actions. In comparison, unofficial commerce is not only less expensive but also more dependable. These transaction expenses, which can include delays, can be viewed as a barrier to formal trade.

3.3. Institutional framework of automotive sector of Pakistan:

The institutional structure that surrounds the automobile industry is made up of numerous associations that represent various industry stakeholders as well as state entities that were set up with the intention of directing and promoting the industry's development as it grows. Numerous entrepreneurial associations have been established in the nation in order to represent the interests of various groups in communications with the government and to advance their aims and objectives in the formation and implementation of policies. These associations exist all around the country.

3.3.1. Pakistan Automotive Manufacturers Association (PAMA)

PAMA is a politically powerful organization that was created in 1994 with the purpose of protecting the interests of its members by taking part in the process of formulating government policy and also lobbying the state. PAMA's membership is comprised of the industry's most prominent automakers, representing all of the sector's sub industries. When it comes to the domestic market for four-wheel vehicles, PAMA members collectively account for 99.9 percent of the market share.

3.3.2. Association of Pakistan Motorcycle Assemblers (APMA)

Motorcycle assemblers and manufacturers who joined the domestic market in the 1990s and are working with Chinese brand manufacturers have chosen not to join PAMA and have instead created a loose alliance among themselves.

3.3.3. Pakistan association of automotive parts and accessories manufacturers

Manufacturers of automobile components and accessories in Pakistan have formed an organization (PAAPAM). In 1988, came together to form PAAPAM with the purpose of representing the interests of component manufacturers at the state level and providing its members with support in the areas of management and technology. PAAPAM emerged out of an ongoing sense of discontent with the manner in which the deletion/localization policy was implemented and with the lax manner in which it was enforced, and the primary demand of the association has been and will continue to be for greater openness on the part of the government.

3.3.4. Chambers of commerce and industries (CCI) at the regional level

This includes both manufacturers of automobiles and manufacturers of component parts.

3.3.5. All Pakistan Motor Dealer Association (APMDA)

Automotive sales representatives and dealers in Pakistan came together to create the all Pakistan motor dealers association (also known as APMDA) with the intention of representing their collective interests in transactions with the government.

3.4. Non-tariff Measures and the Automotive Sector

A non-tariff barrier is a method of restricting trade that is not centered on tariffs. Fines, taxes and quotas are the best examples of nontariff barriers. Some governments regularly utilize nontariff barriers to restrict the extent of business they commence with other nations as part of their diplomatic or economic plan. Non-tariff barriers are constantly used in the international trade. A country's political coalitions, along with the widespread accessibility of goods and essential services, influence when non-tariff barriers are enforced. There are two major types of non-tariff barrier i.e., technical such as sanitary and phytosanitary (SPS), pre-shipment clearance and non-technical measures including price control, licenses, quotas, prohibition, and other quantity control measures[12].

3.4.1. Quantification of Non-tariff Measures

Despite the growing relevance of non-tariff measures in international trade, few econometrically acceptable data on non-tariff measures exist. Numerous scholars create their own NTM databases to answer their study questions regarding particular items, NTM categories, and nations (Li and Beghin, 2014). Antidumping was one of the first NTMs for which a comprehensive database encompassing a wide variety of nations and traceable items was compiled. The World Bank provides the databases developed by Bown (2007) on antidumping measures and subsequently on additional temporary trade restrictiveness indicators (Bown, 2016). Recent efforts have been made by the World Bank, UNCTAD, ITC, the WTO, and regional development banks to gather data on new types of NTMs and a broader group of countries, with a particular emphasis on bridging data

[12] World trade organization. For details seehttps://www.wto.org/english/

gaps for developing nations. One of these efforts resulted in the cross-sectional CEPII dataset 'NTM-MAP', which is used to assess the effect of non-tariff measures (Cadot and Gourdon 2016).

The WTO's Integrated Trade Intelligence Portal (I-TIP3) is a potential data source that also supports a panel layout for NTM data. It is designed to serve as a repository for all WTO-compiled information on trade policy measures, including regional trade agreements, WTO membership commitments, tariffs, and non-tariff measures.

3.4.1.1. NTM's in automotive sector of Pakistan

First objective of this study is to quantify and reveal the prevailing NTM's in automotive sector of Pakistan. There are seven legal tools have been used in Pakistan to build non-tariff measures. In advance to the import and export policy orders, statutory regulatory orders (SRO's) have been employed at the highest. The federal government's bureau in control of trade law is the Ministry of Commerce. It oversees Pakistan's Trade Development Authority, and several other organizations. The Ministry of Commerce has the authority to regulate trade under the Imports and Exports Control Act of 1950. By issuing Statutory Regulatory Orders (SROs), the Ministry of Commerce exercises the subject statutory authority to regulate trade. Over time, several SROs have been used to limit imports[13]. There are two major types of non-tariff measures, which the Pakistani exporters of automotive sector are facing. One of them is trade-related managerial non-tariff measures like issues with public transportation, SPS measures, clearance processes, payments, inspection prior to shipment and second one is import and export licenses like technical

[13] http://engineeringpakistan.com/

trade barriers, origin rules, quotas, documentation required by customs, valuation by customs and safeguards[14].

Table 3.1: NTMs in Automotive sector of Pakistan

NTM Code	NTM Description	NTM Coverage ratio[15]	NTM affected product - count[16]	NTM affected trade ($)[17]
B	Technical barriers to trade	54.02	30	1678612.97
B150	Registration requirement for importers for TBT reasons	45.84	27	1424378.06
B830	Certification requirement	23.29	11	723638.34
C	Pre-shipment inspection and other formalities	4.06	3	126251.6
C300	Requirement to pass through specified port of customs	4.06	3	126251.6
E	Licenses, quotas, prohibitions and other quantity control measures	5.83	5	181228.95
E311	Full prohibition (import ban)	5.83	5	181228.95

Source: WITS[18]

Automotive sector of Pakistan is protected by seven types of NTM's. Data revealed the truth that technical barriers to trade is most efficient tool, which is covering more than 54% of the sector's trade. We can see that import ban is also implemented in the sector to protect domestic industry.

There are some other sectors where the Pakistan have implemented the NTM's and automotive sector is one of the major part of them, as we can see below.

[14] http://engineeringpakistan.com/wp-content/uploads/2021/01/25012021

[15] The coverage ratio is calculated by determining the value of imports of each commodity subject to NTMs, aggregating by applicable HS commodity group, and expressing the value of imports covered as a percentage of total imports in the HS commodity group.

[16] Count of traded HS 6 digit products that are subject to one or more NTM measures.

[17] Sum of gross imports or gross exports that are affected by one or more NTM measures.

[18] World Integrated Trade Solutions. See https://wits.worldbank.org/

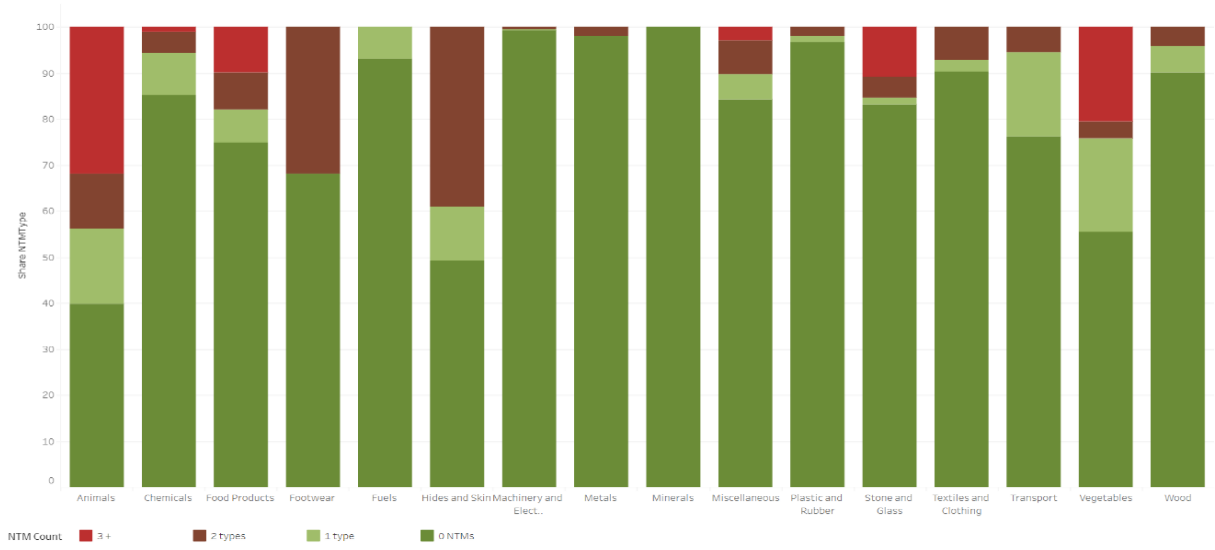

Figure 3.4: NTM's in Different Sectors of Pakistan[19]

According to the data presented in this table, there are seven distinct NTMs that are now prevalent in the industry, and specific trade concerns (STCs) have been expressed regarding two of the NTM varieties. Public debates on non-tariff measures (NTMs) and consumers' concerns typically focus on sanitary and phytosanitary (SPS) measures, which primarily aim at the agri-food sector, and technical barriers to trade (TBTs), which to a large extent aim at the manufacturing sector. Both of these categories of NTMs are known as trade barriers. The body of research on the effects of these measures is expanding rapidly, with the majority of studies concentrating their attention on a single product and/or location (e.g. Dal Bianco et al., 2016; Arita et al., 2015; Gelan and Omore, 2014; Peterson et al., 2013).

The primary objective of SPS measures, which can be implemented in a variety of ways, is to safeguard human, animal, and plant life. Countries have the ability to impose temporary prohibitions or limitations on products or characteristics of those products if they constitute a

[19] World integrated Trade Solutions. See https://wits.worldbank.org/

hazard to the health of humans, animals, or plants. One example of this is in the situation of areas that have been impacted by avian flu. Standards, such as tolerance limits for residues of chemicals in foodstuffs, labeling requirements, or hygienic criteria linked to food safety, are another possible shape that they can take. However, actions to improve food safety don't have to focus on a single product or a particular exporting nation. For instance, the European Union (EU) has implemented preventative measures to curb the propagation of communicable diseases like spongiform encephalopathies.

Technical barriers to trade, often known as TBTs, might take the same kinds of shapes as standards for the protection of consumers and workers (prohibition, labeling requirements, etc.), but they have a different objective. For instance, there should be a requirement that storage cabinets, particularly those that are used for refrigeration, come with energy labels. By increasing the amount of information that is available to end-users, the European Union (EU) hopes to achieve its stated goal of moving the market in the direction of more ecologically friendly products. TBTs often have an effect on the manufacturing sector, particularly on machinery and electrical equipment, whereas SPS policies mostly target the agricultural and food processing industries. It is clear to observe that TBTs hold the largest stake in this industry as well, which accounts for 54% of the total coverage provided by NTMs.

We also take into consideration the special trade concerns (STCs) that were brought up in the WTO's SPS and TBT committees. Countries that are members of the World Trade Organization (WTO) have the ability to voice concerns about other WTO members' proposed NTMs or their implementation of NTMs. Unfortunately, the reporting of NTMs to the WTO is not complete, and the country that imposes the NTM may be hesitant to provide notification of the measure. This is particularly the case when the measure is extremely restrictive to trade, or when it is covering up

some form of discriminatory protectionism. As a result, it is not an easy task to match all of the notifications regarding STCs to their respective enforced NTMs that are immediately notified to the WTO.

A third category is made up of the so-called counteracting measures, which are also referred to as dependent protection measures. Their goal is to temporarily mitigate the adverse effects that greater imports will have on the economy of the country that is doing the importing. Antidumping, often known as ADP, is the most widely used trade policy instrument in this category. It is utilized to counteract predatory dumping, which is a practice that is harmful to the domestic industry of the country that is doing the importing. In the event of price dumping (and evidence of the damage to the domestic industry), the country that is doing the importing has the ability to impose antidumping charges, which would result in an increase in the price of imports while simultaneously reducing the volume of imports.

The WTO regulations also prohibit the practice of subsidizing exports, which is regarded as an "unfair" activity. In this particular scenario, the corrective actions are referred to as countervailing duties (CVDs). Safeguard measures, also known as SGs, are temporary non-discriminatory policies that apply to a particular product but to all exporters of that product. The goal of these policies is to make it easier for the economy of the importing country to adjust to a significant increase in imports. Safeguard measures are sometimes abbreviated as SGs. Agricultural products may be subject to special safeguards, sometimes known as SSGs, on a bilateral basis if there is an increase in the volume of imports or a decrease in the price of imports.

In addition to the relatively new types of non-technical measures that have been described above, there are also traditional non-technical measures that include things like licensing, quotas, or

prohibitions. We refer to these traditional non-technical measures collectively as quantitative restrictions (QRs), and they make up a significant portion of protection.

3.4.2. Quantitative Methods to Assess the Impact of NTMs

An objective of this study is to assess the impacts of NTM's in automotive sector of Pakistan. The economic study of non-tariff measures is closely related to that of trade facilitation. This should be obvious, but it is not usually regarded as such. NTMs make trading more difficult; eliminating them facilitates trade. Trade facilitation, facilitates trade by eliminating obstacles that impede it. Consequently, NTMs and trade facilitation are mirror copies of one another. For the purposes of compiling a list or database of policies, it may be practical to classify policies as NTMs and trade facilitation. In terms of their economic effects, however, the elimination of NTMs is sometimes a synonym for "trade facilitation," and vice versa.

Nonetheless, comparable challenges exist when assessing the effects of trade liberalization measures or the elimination of NTMs. Are trade flows less than they would be otherwise? Are import costs greater than they would be otherwise? What implications would a change in the policy have on trade, economic wellbeing, GDP, production, and employment? These areas of inquiry require quantitative techniques such as price gaps, gravity models, and other econometric tools and simulation approaches to examine both sets of problems, with the details of applying the tools frequently being quite similar.

The potential economic effects of non-tariff measures and trade facilitation are substantial. Comparative quantitative evaluations of the effects of NTMs and tariffs are uncommon. According to Fugazza and Maur (2008), the ad valorem tariff equivalent of NTMs estimated using the results of Kee, Nicita, and Olarreaga (2006) is greater than the average rate in 14 of 26 global regions. In

research focusing on specific products and markets, the effect of NTMs is frequently found to be comparable to or even greater than that of tariffs.

Information regarding NTM policies can be obtained through official sources or traders' complaints and concerns. The former tends to exclude less transparent measures, whereas the later is frequently vague regarding the measure in question. NTM analyses mainly rely on the UNCTAD TRAINS database. The fact that TRAINS delivers data on policy actions based on the Harmonized System of tariff and trade nomenclature is one of its chief advantages. The line-by-line methodology utilized in the TRAINS database typically includes information on items designated at the national level in categories that are more specific than the globally recognized HS6 subheading level. Analysts were able to calculate coverage ratios, reflecting either the proportion of lines or the percentage of trade covered by informed NTMs, by having access to line-level data. UNCTAD statistics have also been utilized for the study.

CHAPTER 4

DATA AND VARIABLE DESCRIPTION

A generalized gravity model was first built utilizing all of the variables reported in the literature, but the final optimized model was obtained by investigating the effect of GDP, geographical distance, import tariffs and R&D expenditure on exports of automotive sector of Pakistan to trading partners. SAARC membership and common border have been used as control variables. These variables have been selected from the literature where different researchers have used them for analyses of trade and specifically analysis of NTM's through Gravity model[20].

4.1. Sample and Data Collection

The data of Pakistan and four partner countries including India, China, Japan and South Africa has been derived from UN COMTRADE Database, World Integrated Trade Solution (WITS) and World Development Indicators (WDI) covering the nineteen years from 2003 to 2021. Data of exports have been derived at HS06 level.

The trading partners have been selected according to their trade in automotive sector with Pakistan as major imports and exports of Pakistan in automotive sector have been reported with these countries.

[20] Khouilid & Echaoui, (2017)

The following Table 4.1 contains a list of variables, their definitions and description.

Table 4.1: Description of Variables

Variable	Description	Source
Dependent Variable		
Exports	Exports of Pakistan to trading partners in automotive sector	WITS[21]
Independent variables		
gdpP	GDP of Pakistan	WDI[22]
gdpT	GDP of trading partners	WDI
rndP	R&D expenditure of Pakistan	WDI
ntm	Import tariffs as dummy of NTM's	WDI
rndT	R&D expenditure of trading partners	WDI
distance	Geographical distance between Pakistan and trading partners	UNCTAD[23]
Control Variables		
cl	Common language between Pakistan and trading partners	CEPII[24]
Cb	Common border between Pakistan and trading partners	CEPII
Saarc	SAARC membership of partner countries	CEPII

[21] http://wits.worldbank.org/
[22] https://databank.worldbank.org/
[23] https://comtrade.un.org/
[24] http://www.cepii.fr/

4.2. Conceptual Framework

The below Figure presenting the theoretical framework used in this research work with final target at the Exports. GDP of Pakistan and partner countries, Geographical distance between Pakistan and trading partners, NTM's (import tariffs in trading partners) and R&D expenditure of Pakistan and trading partners are used as independent variables. SAARC membership of partner countries and their common border have been used as control variables. Common Language and SAARC membership have been used as dummy variables.

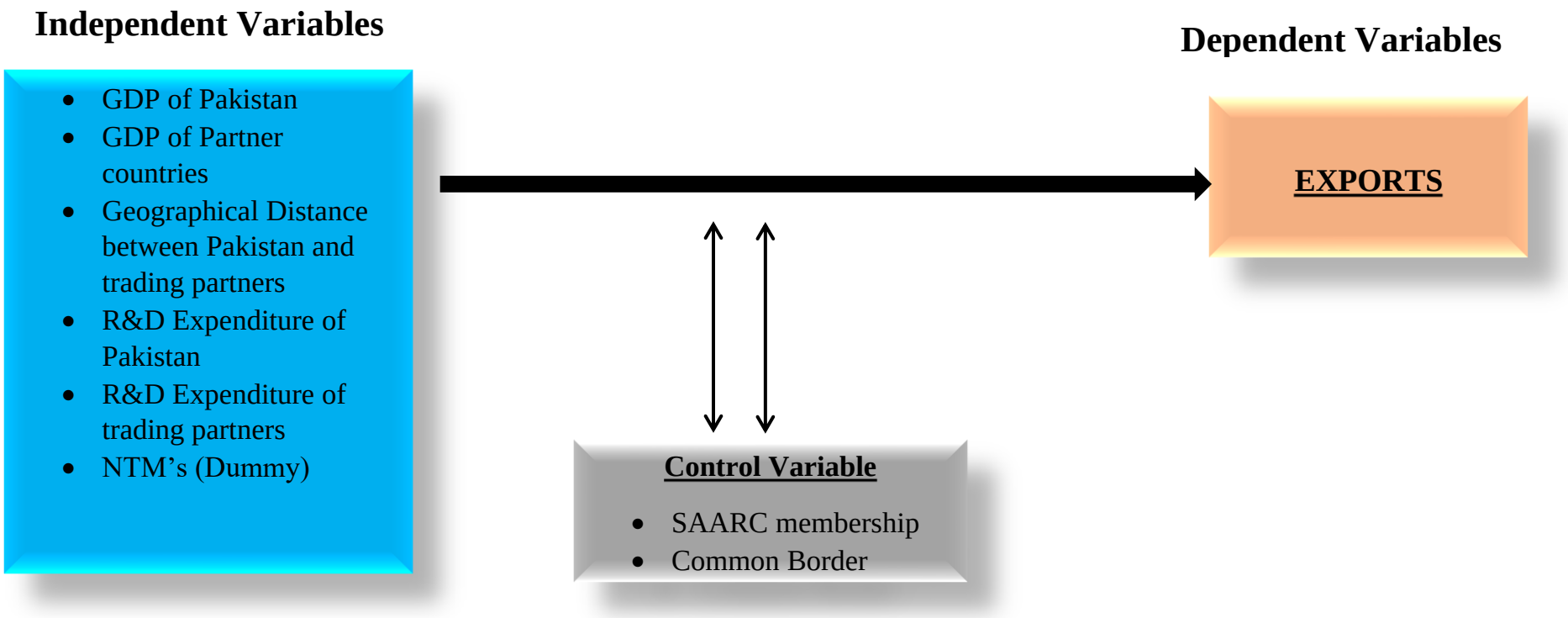

Figure 4.1: The Study Framework

CHAPTER 5

METHODOLOGY

5.1. Model Specification

5.1.1. Panel Data and Models:

The cross-sectional and time series dimensions of a panel data collection, commonly referred to as longitudinal data, are both present. All cross-sectional units are tracked over the full time period.

xit, i=1,.....,N, t=1,...,T. T is usually small.

The repetition of observations results in the creation of potentially very large panel data sets.

When N units and T time periods are used, the result is the total number of observations is NT.

– An advantage is the large sample size. Excellent for estimating.

– Disadvantage: Reliance on others! Observations are most likely not independent of one another.

When modeling the potential dependence, different models are generated.

A fixed panel is a type of balanced panel that is a special case of the balanced panel. We require that all individuals be present at all times in this situation.

An unbalanced panel is one in which individuals are observed a different number of times than they should be, for example, as a result of missing data. We are only interested in panels that are balanced and fixed.

Overall, panel data models outperform cross-sectional data models in terms of 'efficiency,' because the observation of a single individual over a longer period of time reduces variance when compared to repeated random selections of individuals.

5.1.2. Panel Data Set:

The National Longitudinal Survey of Youth (NLS) is an example of a longitudinal study. From 1979 to 1994, the same respondents were interviewed on a year-to-year basis. Since 1994, they have been interviewed every two years, and this has continued until today. Panel data enables a researcher to investigate cross section effects – that is, variation across firms along the N-axis – and time series effects – that is, variation across time along the T-axis.

Cross Sections

$$\text{Time Series} \begin{bmatrix} y_{11} & y_{21} & \cdots & y_{i1} & \cdots & y_{N1} \\ y_{12} & y_{22} & \cdots & y_{i2} & \cdots & y_{N2} \\ \vdots & \vdots & \ddots & \vdots & & \vdots \\ y_{1t} & y_{11} & \cdots & y_{it} & \cdots & y_{Nt} \\ \vdots & y_{11} & & \vdots & \ddots & \vdots \\ y_{1T} & y_{2T} & \cdots & y_{iT} & \cdots & y_{NT} \end{bmatrix}$$

Notations of Panel Data Sets:

$$y_1 = \begin{bmatrix} y_{11} \\ y_{12} \\ \vdots \\ y_{1t} \\ \vdots \\ y_{1T} \end{bmatrix}; \ldots . y_i = \begin{bmatrix} y_{i1} \\ y_{i2} \\ \vdots \\ y_{it} \\ \vdots \\ y_{iT} \end{bmatrix} X_1 = \begin{bmatrix} x_{11} & x_{21} & \cdots & x_{k1} \\ x_{12} & x_{21} & \cdots & x_{k2} \\ \vdots & \vdots & \cdots & \vdots \\ x_{1t} & x_{2t} & \cdots & x_{kt} \\ \vdots & \vdots & \vdots & \vdots \\ x_{1T} & x_{2T} & \cdots & x_{kT} \end{bmatrix}; \ldots . X_i = \begin{bmatrix} w_{11} & w_{21} & \cdots & w_{k1} \\ w_{12} & w_{21} & \cdots & w_{k2} \\ \vdots & \vdots & \cdots & \vdots \\ w_{1t} & w_{2t} & \cdots & w_{kt} \\ \vdots & \vdots & \vdots & \vdots \\ w_{1T} & w_{2T} & \cdots & w_{kT} \end{bmatrix}$$

A standard panel data set model stacks the y_i's and the x_i's:

$y = X\beta + c + \varepsilon$

X is a $\Sigma_i T_i x k$ matrix.

β is a kx1 matrix

c is $\Sigma_i T_i x 1$ matrix, associated with unobservable variables.

y and ε are $\Sigma_i T_i x 1$ matrices.

5.1.3. Panel Data Regression Models:

With panel data, we can investigate a variety of topics:

• Cross sectional variation vs. time series variation (not apparent in time series data) (unobservable in cross sectional data)

Panel data gives more degree of freedom, less collinearity, more information, and more efficiency. Panel data employed three basic techniques and these models talk about intercept behavior.

5.1.3.1.Common Effect Model

The common Effect Model is also known as the pooled OLS method. In this model, both slope and intercept remain constant over the time series and cross-section.

5.1.3.2. Fixed Effect Model

Fixed Effect Model (FEM) is applied when there is a possibility that the issue of association may arise between the individual-specific intercept and the other regressor.

$$\boldsymbol{Cov}\,(\,\boldsymbol{\alpha_i},\,\boldsymbol{X_{i,t}}) \neq \mathbf{0} \qquad \textbf{(5.1)}$$

This model uses fixed dummies to solve the problem of heterogeneity.

The equation for the fixed effects model is as follow:

$$\boldsymbol{Y_{it}} = \boldsymbol{\beta_o} + \ \boldsymbol{\beta_1 X_{1it}} + \boldsymbol{\beta_2 X_{2it}} + \cdots + \ \boldsymbol{\beta_k X_{kit}} + \boldsymbol{\alpha_i} + \ \boldsymbol{u_{it}} \qquad \textbf{(5.2)}$$

Where, Y_{it} is a dependent variable, β_o is intercept, X_{1it} is the first independent variable, X_{2it} is the second independent variable, α_i is unobserved heterogeneity, and u_{it} is a combined cross-section and time-series error term. In FEM, α_i is an individual-specific intercept.

5.2. The Gravity Model

The Gravity model has been used to investigate how non-tariff restrictions have affected Pakistan's vehicle trade. According to the economic size and distance between two units, the gravity model of international trade in international economics predicts bilateral trade flows.

5.2.1. Theoretical Foundations

Pöyhönen (1963) used Newton's gravity model to analyze international trade flows. National incomes and distance between countries affect trade flows. Many have criticized the gravity model for lacking a solid theoretical foundation, despite its popularity and ability to appropriately evaluate international economic flows (Bergstrom 1985). Due to flimsy theory, economists ignored the gravity model for 20 years. Anderson (1979) was the first to theoretically support the gravity model. He derived a reduced-form gravity equation using a Cobb-Douglas CES expenditure system. His viewpoint believed that buyers differentiated things by country. Anderson said his model may replace budget cross-sections.

Bergstrand (1985) employed a partial equilibrium sub-system to get a reduced-form gravity equation. His gravity equation used price-weighted averages of bilateral transit costs for importers and exporters instead of Cobb-Douglas. He established that commodities aren't perfect equals and that imports are better substitutes than domestic goods. His research used monopolistic competition paradigm. Brown et al. (1995) established that the Heckscher-Ohlin (H-O) model can be utilized to get a fundamental gravity equation without product differentiation. First, producers and consumers have no preference for trading partners in unfettered commerce of homogeneous items. The second scenario comprises countries making different items and Cobb-Douglas or CES preferences. Anderson et al. (2003) used a general equilibrium model using CES preferences to create a simple gravity equation.

The study will employ following model, taken from Khouilid & Echaoui, (2017).

$$\ln exports_{ij} = \alpha_0 + \alpha_1 \ln GDP_i + \alpha_2 \ln GDP_j + \alpha_3 \ln Distance_{Geo_{ij}} + \alpha_4 R\&D_{EXPi} + \alpha_5 R\&D_{EXPj} + \alpha_6 Import_{Tariff_j} + \alpha_7 Common_{Language_{ij}} + \alpha_8 Common_{Border_{ij}} + \alpha_9 SAARC_J + \delta_{ij} \quad \textbf{(5.3)}$$

$exports_{ij}$: Exports of Pakistan automotive sector to trading partners

α_0: Constant

GDP_i: GDP of Pakistan

GDP_j: GDP of trading partners

$Distance\_Geo_{ij}$: Geographical distance of Pakistan with trading partners

R&D_EXPi : R&D expenditure of Pakistan

R&D_EXPj : R&D Expenditure of trading partners

Import_Tariffj : Import tariffs in trading partners

Common_(Languageij): Common language between Pakistan and trading partners

Common_Borderij: Common border between Pakistan and trading partners

SAARC_J: SAARC membership of trading partners

α_1 *to* α_9: Effect capture parameters of the various variables δ_{ij}: Error term

5.3. The Estimation Techniques

The study have used five different estimation techniques: pooled OLS, GLS, PPML, fixed-effects PPML and System GMM in levels and differences. The pooled OLS provide a first indication of how the data are correlated without controlling for country fixed effects, and therefore, overestimate the coefficient on the lagged dependent variable. The OLS fixed effect estimators controls for country effects but biases the coefficients in presence of lagged dependent variable; in this case the time-invariant variables, Distance and Language, are automatically excluded from the regression. The GMM estimators in levels and differences control for potential endogeneity and provide consistent and unbiased estimates. Estimations by ordinary least squares (OLS) can be inconsistent (because dependent variable and error term are correlated), and the country-specific effect will disappear so the study also included the generalized method of moments (GMM). The study have also used Poisson pseudo maximum likelihood (PPML) regression, which is widely used in the international trade to estimate the gravity equation. . Unlike most of the existing methods in the literature, it does not require strong parametric assumptions on agents' expectations, thus it can accommodate macroeconomic and policy shocks. Also it takes care of issue of zero values, trade policy measurement flaws and heteroscedasticity problems. Dynamic panel models (those containing the lagged dependent variable) cannot be estimated by OLS, which in those cases is biased. Instead, study should employ GMM. That's why, the study have included GMM also.

CHAPTER 6

RESULTS AND DISCUSSION

6.1. Descriptive Statistics

This segment of the research proposed the descriptive statistics including the central tandency measure which are mean as well as the median. It also offers the information of standard deviation, minimum and the maximum values of the dependent as well as the independent variables. Similarly, overall observaltions reflected also. So, descriptive analysis of all the dependent, focused and contol variables including exports, GDP, R&D expenditure, import tariffs, common language, common border and SAARC membership in the following table.

Table 6.1: Descriptive Statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
lexp	76	16.66	3.333	9.457	20.911
lgdpP	76	26.031	.379	25.242	26.574
lgdpT	76	28.364	1.26	26.007	30.348
lrndP	76	1.175	.355	1.641	.458
lrndT	76	.304	.624	-.468	1.239
impt1	76	5.232	3.501	1.18	22.96
ldistance	76	8.123	.965	6.527	9.004
cb	76	.5	.503	0	1
cl	76	.5	.503	0	1
saarc	76	.25	.436	0	1

Note: This table summarizes the descriptive statistics for the variables including the model for non-tariff meausers in automotive sector of Pakistan, from2003 to 2021. These are the values assigned to the variables Exportation (exp), GDP of Pakistan (gdpP), GDP of trading partners (gdpT), R&D expenditure of Pakistan (rndP), R&D expenditure of trading partners (rndT), import tariffs in trading partners (impt1), geographical distance (distance), common language (cl), common border (cb) and SAARC membership (saarc).

The table 6.1 shows that across the 76 observations, GDP of Pakistan and partner countries are major factors in exports with 26% and 28% average respectively. Geographical distance has 3rd highest average with 8% then import tariff with 5% average and 3.5 standard deviation. All three dummy variables have low average and standard deviation.

6.2. Correlation Statistics

Table 6.2 Correlation matrix stated that exports is positively associated or correlated with focused (independent) variables including GDP of Pakistan and trading partners, R&D expenditure of Pakistan and trading partners and geographical distance of Pakistan with partner countries. When the coefficients of variables are correlated positively, it indicates that exports increases as well. By contrast exports negatively correlated with focused (independent) variable including import tariffs of partner countries and control (independent) variables including common language, common border and SAARC membership. When the coefficients of variables are correlated negatively, it indicates that exports decreases as well.

Table 6.2: Correlation Matrix

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
(1) lexp	1.000									
(2) lgdpP	0.050	1.000								
(3) lgdpT	0.620	0.263	1.000							
(4) lrndP	0.056	-0.441	-0.104	1.000						
(5) lrndT	0.928	0.068	0.728	-0.001	1.000					
(6) impt1	-0.614	-0.397	-0.327	-0.023	-0.508	1.000				
(7) ldistance	0.623	0.000	-0.108	-0.000	0.457	-0.588	1.000			
(8) cb	-0.321	0.000	0.366	0.000	-0.299	0.413	-0.759	1.000		
(9) cl	-0.895	0.000	-0.822	0.000	-0.910	0.461	-0.373	0.000	1.000	
(10) saarc	-0.751	0.000	-0.115	0.000	-0.580	0.616	-0.962	0.577	0.577	1.000

Note: This table presents the correlation matrix among the dependent, independent, and control variables. It indicates the direction in which the variables are related. This correlation is among Exportation (exp), GDP of Pakistan (gdpP), GDP of trading partners (gdpT), R&D expenditure of Pakistan (rndP), R&D expenditure of trading partners (rndT), import tariffs (impt1), geographical distance (distance), common language (cl), common border (cb) and SAARC membership (saarc).

* is significance level at 10%

** is significance level at 5%

***is significance level at 1%

Source: Author's own Calculations

6.3. Regression Analysis and Discussion

6.3.1. Panel Unit Root test

The great majority of panel unit root tests are designed to determine whether or not each individual series that makes up a panel actually has a unit root. Instead, the wording of the alternative hypothesis is a difficult issue that is significantly influenced by assumptions about the homogeneity or heterogeneity's nature. Even though panel unit root tests are now often used in empirical economics, several unsolved problems remain regarding the best method to interpret the test results. These annotations clarify that the rejection of the panel unit root hypothesis should be taken as proof that a statistically significant part of the units are stationary. It is advised that, in the event of a rejection, especially in applications where the temporal dimension of the panel is quite large, the test results be supplemented with an estimate of the fraction of the cross-section units for which the individual unit root tests are failed. This is because it occurs in the event that there is a rejection. The size of this proportion is one way that the economic significance of the rejection may be quantified and analyzed.

Table 6.3: Panel Unit Root Test

Variables	At level	At 1st difference
lexp	-1.2759	-3.6217***
lgdpP	-0.9003	-2.9431***
lgdpT	-3.069***	-3.0469***
lrndP	0.3425	-1.6237**
lrndT	-0.0127	-2.7574***
impt1	-2.0293**	-3.8386**

The findings of unit root test reveals that data is stationary.

6.3.2. Ramsey RESET Test

To be more specific, it examines whether non-linear combinations of the fitted values contribute to an explanation of the response variable or not. The hypothesis that underpins the test asks, "Do the non-linear combinations of the explanatory factors have any power in describing the response variable or not?

Ramsey test for over identification

Ramsey RESET test using powers of the fitted values of lexpP

Ho: model has no omitted variables

F(3, 65) = 5.62

Prob > F = 0.0017

The results show that model has no omitted variables.

6.3.3. Breusch-Pagan test

To determine whether or not a linear regression model contains heteroskedastic components, R. Dennis Cook and Sanford Weisberg independently proposed it, and then went on to extend it in some way (they called it the Cook–Weisberg test). It is a test that determines if the variance of the errors that result from a regression is dependent on the values of the independent variables. It is derived from the notion of the Lagrange multiplier test. In such a scenario, heteroscedasticity can be assumed to exist.

Heteroscedasticity test:

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Ho: Constant variance

Variables: fitted values of lexpP

chi2(1) = 15.39

Prob > chi2 = 0.0001

The Breusch-Pagan/Cook-Weisberg test uses a chi-square distribution with n2 and k degrees of freedom for the test statistic. The null hypothesis of homoscedasticity is rejected and heteroscedasticity is assumed if the test statistic's p-value is less than a suitable cutoff (for example, p 0.05). The evidence demonstrates that the data is homoscedastic.

6.3.4. Wooldridge test

By measuring the relationships between the data at various periods in time, autocorrelation analysis looks for patterns or trends throughout the time series.

Autocorrelation test:

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 3) = 29.965

Prob > F = 0.0120

The results shows that there is no autocorrelation in data.

6.4. Regression Results

The study have followed the following equation which contains the relationship of exports of Pakistan automotive sector to partner countries with independent variables.

$$\ln exports_{ij} = \alpha_0 + \alpha_1 \ln GDP_i + \alpha_2 \ln GDP_j + \alpha_3 \ln Distance_{Geo_{ij}} + \alpha_4 R\&D_{EXPi} + \alpha_5 R\&D_{EXPj} + \alpha_6 Import_{Tariffj} + \alpha_7 Common_{Languageij} + \alpha_8 Common_{Borderij} + \alpha_9 SAARC_J + \delta_{ij} \quad (6.1)$$

$exports_{ij}$: Exports of Pakistan automotive sector to trading partners

α_0: Constant

GDP_i: GDP of Pakistan

GDP_j: GDP of trading partners

$Distance\_Geo_{ij}$: Geographical distance of Pakistan with trading partners

R&D_EXPi : R&D Expenditure of Pakistan

R&D_EXPj : R&D Expenditure of trading partners

Import_Tariffj : Import tariffs in trading partners

Common_(Languageij): Common language between Pakistan and trading partners

Common_Borderij: Common border between Pakistan and trading partners

SAARC_J: SAARC membership of trading partners

α_1 $to\alpha_9$: Effect capture parameters of the various variables

δ_{ij}: Error term

Table 6.4: Regression Analysis

VARIABLES	GMM
lgdpP	1.630**
	(0.796)
lgdpT	-0.469
	(0.797)
lrndT	-6.103***
	(2.159)
lrndP	1.471**
	(0.703)
Ldistance	-3.510***
	(0.863)
limp	-0.527***
	(0.108)
cb	5.278***
	(2.038)
cl	4.339
	(3.283)
o.saarc	-
impt1	-0.0123***
	(0.00246)
Constant	-41.67*
	(24.83)
Observations	76
R-squared	0.594

Note: This table presents the regression analysis between the dependent, independent, and control variables. It indicates the direction in which the variables are related. This regression is among Exports (exp), GDP of Pakistan (gdpP), GDP of trading partners (gdpT), R&D expenditure of Pakistan (rndP), R&D expenditure of trading partners (rndT), import tariffs (impt1), geographical distance (distance), common language (cl), common border (cb) and SAARC membership (saarc). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In levels and differences, the study used Pooled OLS, GLS, PPML, and System GMM. Pooled OLS provide an initial estimate of data correlation without controlling for country fixed effects, overestimating the lagged dependent variable's coefficient. The OLS fixed effect estimator controls for country effects but biases coefficients in presence of lagged dependent variable; in this situation, Distance and Language are automatically eliminated from the regression. Levels and differences GMM estimators correct for endogeneity and provide consistent, unbiased estimates. Estimations by ordinary least squares (OLS) can be inconsistent (because dependent variable and

error term are correlated), hence the study used the generalized method of moments (GMM). Poisson pseudo maximum likelihood (PPML) regression was used to estimate the gravity equation. It doesn't require strong parametric assumptions on agents' expectations, therefore it can handle macroeconomic and policy shocks. It handles zero values, measurement faults, and heteroscedasticity issues. OLS is biased when used to estimate dynamic panel models (those with a lagged dependent variable). Use GMM. So, the study included GMM.

To estimate the gravity equation GMM is the best among five techniques as it gives results free of endogeneity. Although the study has followed five estimation techniques to estimate the model, all the five techniques have support the expectation and hypothesis regarding results[25]. The expectation for GDP of Pakistan was that, GDP of Pakistan has positive relation with exportation. The results proved this hypothesis that GDP of Pakistan has positive, significant relationship with export of Pakistan auto-motive sector with partner countries.

The study expected that GDP of partner countries has negative relationship with exportation. As literature proved this hypothesis by Khouilid & Echaoui, (2017). The results also in favor of this hypothesis that GDP of trading partners has diverse relation with exportation.

R&D expenditure of any country is a main factor, which have key role to boost exportation. Theory explains that R&D expenditure of any country have positive relation with its exportation and negative relation with exportation of trading partners. The results are in-line with this theory and the hypothesis has been proved by all five regression results.

Geographical distance is a key variable in bilateral trade and gravity model explains it extensively. The literature has explained that geographical distance between any two trading partners has

[25] See Table 6.5. (Appendix)

negative relation with exportation (Sichei & Luc Erero, (2008). The results also endorse the hypothesis that distance has negative significant relation with exportation.

The context behind imposing import tariffs and non-tariffs barriers is to protect domestic industry and restrict imports. The automotive sector of Pakistan is also highly protected in this term, and the hypothesis was also regarding import tariffs that they have negative significant relation with exports of partner countries. The results have proved this theoretical hypothesis, the results shows that imports tariffs of partner countries have negative significant result with exports of Pakistan automotive sector to partner countries.

Another important finding is that common language between two trading partners has positive relation with exportation. In this study English have been used as dummy common language. The results have proved the hypothesis that existence of common language can enhance the bilateral trade so common language has positive significant relation with exportation.

SAARC membership of partner countries has been used as dummy variable to explain the foreign affairs and strategic relations of trading partners. The theory claims that membership of same organizations or trade agreements have positive relation with exportation but this model has omitted the variable in all five regression techniques so this hypothesis cannot be accepted or rejected.

Along with geographical distance there is another variable which explain the exportation. Theory suggests that common border has positive significant relation with bilateral trade. The results also shows that common border has positive significant relation with exports, which also proven by literature (Sichei & Luc Erero, (2008).

The study included South Africa, India, China, and Japan as trading partners. Literature suggested that some nations, such as Malawi, Zambia, Kenya, and Malaysia, have export potential, but The National Association of Automobile Manufacturers of South Africa (NAAMSA) members are unable to fully utilize these export markets due to a number of obstacles, such as extremely high import duties, the absence of a diplomatic representative from South Africa in the trade partner, and the uncertainty surrounding what will occur when the Motor Industry Development Act (MIDA) is implemented. It tells the untold story of South Africa's automotive industry, which faces the same bottlenecks as Pakistan's automotive industry.

China, the second trading partner of Pakistan in the automotive industry, has developed its automotive sector through government economic goals, automotive industry policies from 1994 to 2010, and other texts aimed at expanding the automotive industry and local automobile manufacturing with its own technology and imitation. In the 2000s, innovative entrepreneurs such as Chery Automobile, Great Wall Motor, Geely, and BYD emerged, and local auto production began in 2004. The administrative authority granted to local governments even during imperial times is central to the novel arrangement (Dolanay, S. S.) (2021).

China's local automobile manufacturers are still technologically lagging behind the rest of the world. Due to the sluggish growth of R&D talent in China, the government is offering incentives to conduct R&D locally. Therefore, Chinese manufacturers have chosen to enter international markets by acquiring foreign brands and cutting-edge technologies (Qiu, 2013).

Japan is one of the world's automotive industry leaders and Pakistan's third trading partner in the automotive sector. It has the most liberalized trade in the automotive sector because of its advanced technology, economies of scale, 100 percent localization, and market dominance.

Pakistan's fourth trading partner in the automotive sector, India's auto industry has enormous scale economies. It is technologically advanced and exports automobile products to numerous countries. WTO ranks India as the tenth-largest exporter of automobile products. In order to protect domestic industry, Pakistan maintains a list of 1,209 Indian goods that are prohibited imports. Chapter 87 has 181 automotive products, which represents 15% of the items on the bad list. India, on the other hand, has placed only one automotive item ('tanks and other armored war vehicles, motorized, whether or not armed, and parts thereof' HS code: 87100000) on the negative list it maintains for all trading partners (Ahmed, V., & Batool, S. (2017).

Ceravegna, L. (2003) argued that Pakistani producers are concerned that India will benefit more from the liberalization of trade in automotive products due to scale economies, whilst tariff and non-tariff barriers will prohibit Pakistan from boosting its exports to India (including high environmental and safety standards). Therefore, they advise that Pakistan negotiate the entry of its automotive products via a buy-back arrangement for value-added automotive items. The car exchange between Argentina and Brazil is an example of such a transaction.

CHAPTER 7

POLICIES OVERVIEW OF AUTOMOTIVE SECTOR OF PAKISTAN

The automotive sector's policy history can be categorized into the following periods:

- Deletion Program
- Tariff Based system (TBS)
- Auto industry development program (AIDP 2007-2012)
- Automotive Development Policy (ADP 2016-21)
- Auto industry development and export policy (AIDEP 2021-26)
- Electric vehicles policy (EV)

7.1. Deletion Program:

With the intention of enhancing local content in automobiles, the deletion program, also known as the Localization Policy, began in 1987 and ran through 2004. It enforced mandatory localization for the automotive sector. The firm and product-specific deletion program was changed to an industry-specific deletion program, in which local content levels were set in accordance with particular indices and localization compliance was checked annually through audits. An example of such an industry is the car manufacturing sector. Localization in high value-added or high-tech components was not possible under the elimination scheme.

The current policy, SRO.693(I)/2006, updates every two years, with the goal of encouraging localization in terms of value. The following table lists the levels of localization attained in various car models:

Table 7.1: Deletion Achieved as per Manufacturer in Pakistan

S. #	Manufacturer	Product	Deletion Achieved
1	Pak Suzuki Motor Company	Suzuki Mehran Car, 800cc	73%
		Suzuki Cultus, 1000cc	69%
		Suzuki Pickup, 800cc	70%
		Suzuki Bolan Van, 800cc	68%
		Suzuki Swift	38%
		Suzuki Cargo Van	68%
		Suzuki Wagon	32%
2	Indus Motor Company	Toyota Corolla XLI/GLI (M / AT) 1.3CC	65%
		Toyota Corolla A/T) 1.6 CC	60%
		Toyota Corolla M/T 1.8 CC	60%
3	Honda Atlas Cars (Pakistan)	Honda Civic VTI -MT/AT 1.3/1.5	58%
		Honda City MT /AT 1.3/ASP 1.5/1.3	68%

Source: EDB[26]

7.2. Tariff Based System (TBS):

The tariff-based system's fundamental components were as follows:

Parts that had been locally produced by June 2004 were subject to a higher rate of customs duty; those that had not been locally produced were permitted at the CKD rate of customs duty, or a lower rate of duty.

7.3. Auto industry development program (AIDP 2007-2012):

As a result of the SROs that were discussed earlier, it became apparent that the automotive industry required the provision of a long term tariff plan. As a result, the Automotive Industry Development Program (AIDP) was announced on November 13, 2007, following consultation with various stakeholders. This program offered a tariff plan that was valid for a period of five years.

[26] Engineering Development board. For further details see http://engineeringpakistan.com/

The Automotive Industry Development Plan (AIDP) had as its primary goals the attainment of a critical mass of production and the doubling of the contribution of the automotive industry to the nation's gross domestic product (GDP) from its current level of 2.8 percent by the year 2011–2012. This was to be accomplished with a strong emphasis on investment, the up-gradation of technology, an increase in exports, and an improvement in job opportunities.

In addition, a number of different development schemes, such as PAII, which proposed a duty credit to auto part manufacturers (APMs) for the purchase of machinery, and TASS, which proposed matching grants by the government to businesses that acquired the most up-to-date technology, were not put into action.

This was primarily the case because there was an insufficient amount of funding from the government. Because of interest rates in the double digits during the AIDP period, the goal of purchasing 500,000 cars by the year 2012 as part of the AIDP was not able to be met, which can be partly attributed to the inability of the car-financing or leasing facility to function properly. In the 2011–2012 fiscal year, the output of automobiles remained at 154,255 units, which was below the target of 500,000 vehicles. In addition, the localization of essential components did not take place as anticipated. Due to the fact that only a few of the AIDP's schemes were actually put into action, such as the development of clusters in Karachi and Lahore and the meeting of growth targets in the two-wheeler segment, the program can be considered only partially successful. For the purpose of directing the initiative on Human Resource Development (HRD), the Auto Industry Skill Development Company (AISDC) was envisioned for Testing and the availability of trained human resource. On the other hand, there was not any appreciable advancement shown in this respect.

The tariff established by AIDP was extended all the way through 2016, or until the introduction of ADP 2016-21. Because of this, the sector continued to function for a period of four years without a defined policy framework.

7.4. Automotive Development Policy (ADP 2016-21):

Despite AIDP 2007–12's inability to bring in competition, the market still has the three long-standing firms Pak Suzuki Motor Company, Indus Motor Company (Toyota), and Honda Atlas Cars Pvt. Ltd. Al-Haj FAW, the fourth company, was unable to attract a sizable market share.

As part of the subsequent program, a more favorable tariff structure was made available to new investors in order to entice competition. The following is an outline of the most important aspects of the ADP for 2016-21.

- Brand New Incentives for Investment (Greenfield for new, Brownfield for closed units)
- Streamlined payment mechanisms to combat misuse of Import Policy (vehicles), per SRO.52(I)/2019
- Ensuring the Welfare of Consumers by Offering Reimbursement at KIBOR Plus 2 Percent in Case of Delayed Deliveries
- Establishing the Pakistan Automotive Institute (PAI)
- Installation of an immobilizer must be made mandatory in passenger cars and light commercial vehicles
- Reorganization of the AIDC with clearly defined responsibilities in order to serve as an advisory body for the automotive industry

The ADP 2016-21 was successful in achieving its goals of limiting inappropriate use of import policy and adhering to a predetermined tariff strategy. In addition, consumers who experienced delayed delivery have been reimbursed, and the installation of immobilizers in cars and light commercial vehicles is now required by law. In accordance with the official sign E-64, Pakistan has become a member of the UNECE's WP 29 Rules, which would make it possible for the country to implement safety and environmental regulations into cars that are made domestically. During the time that the policy was in effect, AIDC served an active consultative role in the implementation of the policy.

7.5. Auto Industry Development and Export Policy (AIDEP 2021-26):

AIDEP consists of promoting small automobiles, localization, stimulating introduction of new goods in tractors and motorcycles, consumer protection, promotion of new technologies such as electric vehicles and hybrid vehicles, and targeting export markets. The following financial benefits have been made available to the automotive industry as part of the Auto Industry Development and Export Policy (AIDEP 2021-26). The notifications and incentives were agreed by the cabinet on December 21st, 2021, in addition to the incentives that were stated in the budget for the fiscal year 2021–2022.

1. Cars, vans, and Light Commercial Vehicles (LCVs) up to 1000 cc that are reasonably priced (Meri Garri Scheme)
    a. All taxes on locally built cars will be eliminated (ACD (zero percent), AST (zero percent), WHT (zero percent), and FED (zero percent), with the sales tax remaining at 12.5 percent).
    b. A decrease in the amount of taxes paid by CBUs (ACD 0 percent)
    c. Policy for New Products Cost of Goods Sold (15–30%) plus 12.5 percent sales

tax Cutoff date for approval: 30th June 2023. New Product Policy CD (15–30%), three years from manufacturing certificate or 30th June 2026, whichever comes first. For automobiles up to 1000 cc, applicable to new models from all current and incoming manufacturers. Applicable to all new models of vehicles up to 1000 cc

2. Reducing the costs of automobiles that are produced in the country (above 1000 cc). FED will be lowered (by 2.5 percentage points on each category of vehicles, SUVs, and LCVs). [From 1001-2000cc 5 percent to 2.5 percent] [From 2.5 percent to zero percent, up to 1000cc] [Above 2000cc-7.5 percent to 5 percent]

3. New Product Policy

    a. The custom duty on locally manufactured agricultural tractors of new make or new model, as certified by EDB, will be reduced to 15% (20% advantage) for the first three years after the date of the manufacturing certificate or until June 30, 2026, whichever comes first.

    b. Customs duty on locally manufactured components will be reduced by 16 percent for motorcycles with engines larger than 125 cc, motorcycle rickshaws, and auto rickshaws with engines larger than 200 cc that have been certified by EDB.

    c. The deadline for the issue of manufacturing certificates is the 30th of June in 2023.

4. Addressing the issue of "on money"

    a. Taxes on registration amounting to Rs 50,000, Rs 100,000, and Rs 200,000 for different CCs of cars, in cases where the booking is done by Person A and the registration is done in the name of Person B.

b. The requirement for manufacturers to pay an interest rate equal to KIBOR plus 3 percent on the initial deposited cash for any deliveries that take longer than 60 days.

5. Ensuring safety

a. The importer-cum-assembler or OEM is responsible for complying with the short mentioned WP-29 Regulation as defined by EDB, and EDB is responsible for ensuring compliance with this regulation.

b. After the 30th of June in 2022, no vehicle that is not compliant with the nominated WP 29 regulations may be built domestically or imported into the country.

c. However, manufacturers may get a total waiver of up to a total of 24 months (ending on 30.06.24) from EDB subject to showing reasonable progress in compliance of WP 29 Regulations of UNECE or any practical difficulty. In the event that compliance is difficult, MOIP, on the recommendation of EDB, will grant relaxation for one year.

6. Incentives for electric vehicles

a. Imposition of a one percent Customs Duty (CD) on Particular Components of Electric Vehicles

b. Reduction of sales tax on locally manufactured EVs having battery packs below 50 KWH from 17 percent to 1 percent c. Import of EV CBU at 10 percent CD for one year instead of 25 percent d. Import of EV CBU at 10 percent CD for one year instead of 25 percent c. Import of EV CBU at 10 percent CD for one year The policy document goes into further detail on a number of topics.

c. The policy elaborates on all of the pertinent details regarding the incentives.

7. The adoption of a policy that permits hybrid production

    a. Customs Duty (CD) on Specific Parts for Plug-in Hybrid Electric Vehicles and Hybrid Electric Vehicles will be 4% and 3%, respectively.

    b. A decrease in the amount of the sales tax (8.5 percent)

    c. A Relaxation of the Obligations Placed on CBUs 15 percent tax on hybrid imports for engines over 1800 cc; no tax on hybrid imports for engines under 1800 cc.

8. The custom duty on the import of non-localized CKD components for rigid vehicles with a GVW of more than 5 tones that falls under HS Code 8704 has been cut from the current rate of 10 percent to 5 percent.

9. The customs duty on sub-assemblies of vehicles classified under PCT heading 87.11 was lowered from the current rate of 20% to 12.5%, with the exception of motorcycle rickshaws classified under PCT category 8711.3020. These procedures eliminated the anomaly, which indicated that CKD was not localized in 15 percent of cases.

10. Localization/ Indigenization

    a. The Appendix-I and Appendix-II of SRO 693(I) 2006 will be amended every six months on the advice of EDB by the 31st of December and the 30th of June. Components or assemblies that have been locally produced by any original equipment manufacturer (OEM) or vendor in their relevant vehicle category are required to be eligible for inclusion in Appendices I and II.

    b. The benefit of exemption under SRO 655(I) 2006 must not be available for any components or sub-assemblies in the event that IORC, as determined by EDB or IOCO, is less than 30 percent value addition for the manufacture of

specified components or assemblies.

11. Prolongation of the ADP 2016-21 for CKD Manufacturing until 2026 (or between three and five years after the issuing of a manufacturing certificate, depending on the specifics of each case)

12. In order to assure traceability, all original equipment manufacturers (OEMs) are required to implement an online booking system for cars, LCVs, and HCVs.

13. The initial payment must be at least 20 percent of the total invoice amount for automobiles, light commercial vehicles, and sport utility vehicles (SUVs). This means that original equipment manufacturers (OEMs) will only accept booking requests with an initial payment of at least 20 percent of the total invoice amount.

14. Approval/Issuance of Notification/SRO to authorize the import of CBUs 10 per variant with a maximum of 100 units for cars and 200 units for 2-3 Wheelers at 50 percent of the levy CD per company for the purposes of marketing and showcase

15. Sales Tax reduction up to 1000cc is not provided to Light Commercial Vehicles and Vans because of the use of the word "Motor Cars," which has been approved to be changed to "Motor Vehicles" for the provision of sales tax reduction to vans and LCVs also. This is due to the fact that the word "Motor Cars" was used instead of "Motor Vehicles."

16. Establishment of Predetermined Export Objectives

    Following export targets have been fixed

Table7.2: Obligatory Export as % of import

Financial Year	Obligatory Export as % of import
2021-22	0
2022-23	2
2023-24	4
2024-25	7
2025-26	10

Source: MOIP[27]

Under the auspices of AIDEP, a number of objectives and targets have been determined (2021-26). In order to accomplish these goals, various targets have been established. The particulars of the objectives and aims are presented as follows:

Table7.3: AIDEP Objectives and Targets

OBJECTIVES	TARGETS
increase access to inexpensive mobility in society	➢ The ability to produce 7 million 2-3 wheelers annually, 100,000 tractors, 650,000 cars, LCVs, and SUVs, as well as 20,000 HCVs. ➢ The introduction and promotion of high-quality, middle-class-affordable compact vehicles. ➢ Enhance regional vehicle production for public transportation and promote domestic design, development, and production of regional vehicles.
Increase market competition. "Make in Pakistan" as a goal	To enhance quality, rationalize pricing, and provide customers with superior products, OEMs and all levels of the supply chain must work together.
Develop design and innovation capabilities for the car engineering industry.	Proposed tax credit for in-house product design, development, molds, dies, testing apparatus, and facilities for OEMs and Vendors. Imports of machinery and equipment for measurement and metrology, all forms of testing, designing and printing, CAD, CAM, CAE software, production of molds, dies, and fixtures, 3-D printers, calibration equipment, etc. are proposed to be duty- and tax-free.

[27] Ministry of Industries and production. For further details see https://moip.gov.pk/policiesDetails.aspx

Build the supply chain at all levels and promote local content.	Through the process of periodic assessment, incentives and administrative resources are provided to all levels of suppliers, from raw materials to part manufacture, assembly, and after-sales service.
Increase Export of Parts and Vehicles	➢ Automobiles, tractors, motorcycles, and automotive parts to targeted nations ➢ By the end of the policy period, on June 30, 2026, OEMs must explore exporting through their worldwide supply chains or global distribution channels/networks at least 10% of the C&F value of their total imports. Calculated in US dollars or their equivalents.
Rationalize sales of aftermarket parts	Stop under billing, smuggling, etc. It was suggested that taxes on raw materials be reduced by periodic stakeholder dialogue, review by the Tariff Policy Board, and introduction of replacement parts to gradually lower vehicle maintenance costs. Encourage also local aftermarket manufacture. Implement SRO 693's requirements for aftermarket parts.
Implement WP-29 Safety Regulations	As per plan finalized by EDB

Source: MOIP[28]

7.6. Electric Vehicles (EV POLICY):

The Electric Vehicle (EV) and New Technology Policy have several primary goals, the most important of which are as follows:

- Reduce emissions from the transportation sector by implementing environmentally friendly technology that are also fuel efficient in order to mitigate the potentially detrimental effects of climate change.
- The creation of new job opportunities as a result of the introduction of new investments
- Shift toward technologies that are more fuel efficient, which will contribute to a reduction in the current account deficit by lowering the overall share of the bill that is incurred for oil imports.

[28] Ministry of Industries and Production. For further details see https://moip.gov.pk/policiesDetails.aspx

7.6.1. Incentives for Electric Vehicles

The following rebates and incentives will be made available for all electric vehicle models:

- The ACD will be 0% on the production of CKD electric vehicles.
- The import of electric vehicle chargers is expected to attract one percent CD and zero percent ACD
- Electric vehicles, whether imported or manufactured locally, will no longer be subject to FED taxes.

The following are the non-tariff incentives for EVs that have been approved for the Islamabad Capital Territory and are suggested for consideration by other pertinent authorities:

Table 7.4: Non-Tariff Incentives for EVs

Description	Intervention
Annual Tax	Authorities in charge of provincial motor vehicle registration should consider making all Evs completely exempt from the annual renewal fee.
Power Tariff	Power Division's Special Incentivized Power Tariff on EV Charging Stations
Toll Charges	NHA and the Ministry of Communications are going to think about partially exempting EVs from toll taxes at 50%.
Insurance	Bulk insurance for large fleets of electric vehicles at a discounted rate.
Registration (For EVs only)	EV registration charge exemption is being considered by provincial motor vehicle registration authorities. Electric vehicle registration number plates may come in a variety of colors and designs at the registration authorities' discretion. The capital and the provincial registration authorities both envision the registration to be based on a unique identifying number.

Source: MOIP[29]

[29] Ministry of Industries and Production. For further details see https://moip.gov.pk/policiesDetails.aspx

7.6.2. Incentives for Hybrids

The use of hybrid technology is widespread throughout the developed nations of the world, such as Japan and Europe. There is a significant difference between the fuel consumption of hybrids and that of conventional vehicles that run on fossil fuels. Hybrids, on the other hand, produce significantly fewer emissions. In order to encourage the use of hybrid technologies, the Finance Act of 2021 includes the following tax breaks and subsidies for the production and assembly of hybrid vehicles within the country:

- A customs duty of 3% will be assessed on the importation of plug-in hybrid vehicle-specific parts.
- Components that are unique to conventional hybrid vehicles will be subject to a customs duty of 4%.
- The import of hybrid buses and vehicles will be subject to a customs duty of one percent beginning on the date that the production certificate is issued.
- The domestic and the imported hybrid automobiles, SUVs, vans, and light commercial vehicles will each be subject to a sales tax of 8.5 percent.

The government is still dedicated to the goal of promoting fuel-efficient and environmentally friendly technologies through the AIDEP program.

CHAPTER 8

QUALITATIVE ANALYSIS

Pakistan's automotive sector is protected by tariff and non-tariff measures. The goal of this protectionism is to allow the industry to attain the level of indigenization that it desires. To identify the impact of this protection on automotive sector of Pakistan and reveal that what policy intervention would incentivize the industry towards competitiveness, there were two intensive discussion have been done.

One of them was with Mr. Gonzalo Varela. He is a Senior Economist in the Macroeconomics, Trade and Investment Global Practice of the World Bank. He is currently based in Islamabad, where he leads the trade program. In the discussion he said that the automotive sector of Pakistan faces a growth ceiling given by the size of the domestic market. Because the high protection barriers the sector enjoys, both because of import duties and because of non-tariff barriers, domestic producers have no incentives to export cars as trade policies keep the domestic market captive for them. This has allowed them to sell even if they are not internationally cost competitive. Yet, they can only sell in the domestic market, which is a limit to their growth.

To answering the question about protectionism in automotive sector of Pakistan he said that the protection is not economically rational. Why would it be? You can think it makes sense to protect an industry if there are some sort of learning by doing processes at play (the infant industry argument). But the Pakistani auto sector has been treated as infant industry for a long time. It’s rather old now. Not an infant anymore. Yet, there’s no evidence of learning by doing. To concluding his thoughts he said that, the high protection is just a transfer from consumers to producers, with a large deadweight loss. So there is no need of protection in the sector anymore.

The second discussion have been done with Mr. Abdul Waheed Khan (Director General PAMA). In response of first question about protectionism he said that the automotive sector of Pakistan is not highly protected, there is nominal protection actually. He said that all of this concept rely on the method how you calculate the protection. He also claimed that there is insignificant protection in automotive sector as "CKD is considered as complete car" which is not true. During the discussion he discussed about recent situation of automotive sector that there is a lot of competition in domestic sector now a days and due to tariff free import of new cars in Pakistan especially from china have increased this competition.

To address the issue that why no automotive policy can achieve its objectives and goals he said that, there are a lot of factors involved in this fact. He highlighted that, elastic demand of cars, economic crises of 2008 which declined the industry to 50%, personal interests of local manufacturers, international influence and low demand are some key reasons of failure of those policies.

At one point he claimed that, we have small scale manufacturing industry in sector. So due to diseconomies of scale, we cannot localize the expensive and sensitive parts. That's why we cannot achieve the desired level of localization so far.

To concluding his discussion he said that, government itself not serious about implementation of AIDEP 2021-26. He pointed out that not even a single time, government have contributed in the sector which was promised on particular policies. He suggested that, to address the issue we have badly in need of new technology and significant protection.

8.1.1. Conclusion

Policies overview and qualitative analysis suggest some significant outcomes that where there is policy implementation is important from the government side, there is also necessary that government should keep check and balance on firms. As the production firms enjoying protection from 1949 but can't archive the localization and also can't meet the any automotive policy targets, suggestion of trade openness and less protectionism gets strong. Another outcome is that government itself do not interested to fulfill the promises made through automotive policies.

CHAPTER 9

CONCLUSION AND POLICY RECOMMENDATIONS

This research has analyzed the non-tariff measures in automotive sector of Pakistan and their impact on exportation of automotive sector with partner countries. The research suggest that GDP of Pakistan have positive relation with exportation of automotive sector of Pakistan and GDP of partner countries have negative relation with exportation of automotive sector of Pakistan. Theory and literature also suggest that GDP of any country have a strong impact on its imports and exports Khouilid & Echaoui, (2017). Here the findings conclude that, progress in automotive sector and achievement of localization is attached with GDP of Pakistan also. Main focus of the research was on non-tariff measures, and protectionism of sector, so the study has included research and development expenditure in analysis. R&D expenditure have been used as proxy to protectionism. Literature reveals this truth that; automotive sector of Pakistan is highly protected in terms of tariffs and non-tariffs measures but still not competent with international market. The research has concluded that research and development is also important to boost the exportation. Data analysis has found that R&D expenditure of Pakistan has positive relation with exportation and R&D expenditure of partner countries have negative relation with exportation. Data of R&D expenditure revealed another truth that Pakistan is spending too low with respect to other trading partners R&D expenditures. Which is also a main reason we are much behind them in automotive sector. In bilateral trade another major factor is geographical distance between partner countries. Theory suggest that distance is considered an important variables as it describes the cost of exportations, barriers to trade and many other factors. For more extensive results common border also included in the research. The analysis suggests that geographical distance has negative relation with exportation, as more distance causes less trade. On other side common border has positive relation with exportation as existence of common border can boost the exportation Khouilid & Echaoui,

(2017). Along with study of non-tariff measures the research has also included import tariffs in data analysis. As expected according to literature and theory, import tariffs have negative relation with exportation, the results also reveals that import tariffs imposed by partner countries reduces the imports from other countries Sichei & Luc Erero, (2008).

So the conclusion of this research is as below:

- According to the study, the automotive sector of Pakistan despite high protection not competitive with respect to trading partners.
- The study have identified the protection of the sector in terms of NTM's. There are 7 major NTM's prevailing in the sector.
- The gravity model suggests that GDP, R&D, and Common borders are the main factors to boost exports in the sector, and import tariff is the key obstacle which is causing low exports.

9.1. Policy Recommendations and Future Research

One of the objective of this study was suggesting relevant policies which can be helpful in making the sector more competitive in world. Pakistan's automotive sector is effectively protected by tariff and non-tariff obstacles. The goal of this protectionism is to allow the industry to attain the level of indigenization that it desires. Tariffs and non-tariff policies are inefficient economically and alter production incentive. It also makes the system weaker to lobby and raises managerial costs for both the government and businesses. For small manufacturers, these administrative costs can be prohibitively costly. As a result, despite all of the efforts made by the government at various times, Pakistani vehicles are less competitive in the worldwide market.

The findings of this research suggest that to enhance the production and ability of automotive sector of Pakistan more Research and development is essential in automotive sector. The study also concluded that only protectionism is not enough to boost any sector, actually the tariff and non-tariff measures are burden on economy of the country as well as on government.

Common borders are a bright scope to boost exports, as shipment cost makes any sector less competitive in international market, so the automotive sector of Pakistan can be competitive if focus on boosting trade with neighboring countries.

The study have found this truth that, after TRIMS and WTO, every country is imposing too much trade barriers to protect their local industries, so more trade agreements, free trade zones and Most favorite nation trade agreements are necessary to boost exportation in automotive sector of Pakistan.

Policies review and Qualitative analysis revealed that Auto-policies should be more intensive in terms of producer and consumer friendly approach and government should ensure the implement of policy from both producer and public sector end as well.

Some key policy recommendations are as below:

- The productive and efficient sector requires investment in R&D.
- NTM's negatively impacts exports, so government should ensure fair use of NTM's
- Policy implementation failures must be identified and corrected.
- Government have to effectively engage key stakeholders to ensure implementation of policies.

It is possible to do future research with a larger sample size, a longer sample period, or with more trading partners of automotive sector of Pakistan.

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Appendix

Table 2.1: NTM's in automotive sector of India[30]

NTM Code	NTM Description	NTM Coverage ratio	NTM affected product count	NTM affected trade	Total Trade
C	Pre-shipment inspection and other formalities	31.63	72	4891536.7	15466297.7
C300	Requirement to pass through specified port of customs	31.63	72	4891536.7	15466297.7
D	Price control measures	2.37	3	367269.78	15466297.7
D110	Antidumping investigation	0.58	1	89018.61	15466297.7
D120	Antidumping duty	2.27	3	351830.85	15466297.7
E	Licenses, quotas, prohibitions and other quantity control measures	9.01	6	1392922.57	15466297.7
E100	Non-automatic import licensing procedures other than authorizations for SPS or TBT reasons	9.01	6	1392922.57	15466297.7
F	Charges, taxes and other para-tariff measures	31.63	72	4891536.7	15466297.7
F400	Customs Surcharges	31.63	72	4891536.7	15466297.7

Table 2.2: NTM's in automotive sector of Japan[31]

NTM Code	NTM Description	NTM Coverage ratio	NTM affected product - count	NTM affected trade	Total Trade
B	Technical barriers to trade	76.23	61	21944172.53	28785024.1
B140	Authorization requirement for TBT reasons	9.15	12	2632753.82	28785024.1
B220	Restricted use of certain substances	0.05	1	14326	28785024.1
B310	Labelling requirements	36.19	22	10417971.33	28785024.1
B420	TBT regulations on transport and storage	9.15	12	2632753.82	28785024.1
B700	Product quality or performance requirement	67.09	49	19311418.71	28785024.1
B830	Certification requirement	15.75	6	4532258.3	28785024.1
B859	Traceability requirements, n.e.s.	45.17	32	13002327.66	28785024.1
F	Charges, taxes and other para-tariff measures	13.24	30	3811885.16	28785024.1
F690	Additional charges n.e.s.	9.15	12	2632753.82	28785024.1
F730	Taxes and charges for sensitive product categories	4.1	18	1179131.34	28785024.1
P	Export related measures	4.31	11	6901902.76	160142504
P500	Export taxes and charges	4.31	11	6901902.76	160142504
P690	Export technical measures, n.e.s.	4.31	11	6901902.76	160142504

[30] See WITS. http://wits.worldbank.org/
[31] See WITS. http://wits.worldbank.org/

Table 3.2: Sales and Production in Automotive Sector of Pakistan (History of Production)

YEARS	CARS	TRUCKS	BUSES	JEEPS	Pick-Ups	SUVs	FARM TRACTORS	2/3 WHEELERS
1995-96	33,419	2,994	474	2,274	2,682	~	16,093	0
1996-97	37,032	2,917	456	792	4,553	~	10,417	106,797
1997-98	38,676	1,683	591	657	4,843	~	14,144	92,978
1998-99	42,927	1,083	1,124	622	3,834	~	26,644	87,504
1999-00	35,332	913	1,460	380	3,785	~	24,559	86,959
2000-01	41,556	912	1,326	459	4,982	~	31,635	108,850
2001-02	42,679	1,134	1,086	564	5,900	513	23,801	120,627
2002-03	66,432	1,929	1,296	374	7,815	820	26,240	175,169
2003-04	103,662	2,022	1,380	807	8,888	802	35,770	303,383
2004-05	133,722	3,204	1,762	1,564	16,294	414	43,200	416,189
2005-06	170,487	4,518	825	2,472	19,152	0	48,887	520,124
2006-07	176,016	4,410	993	3,298	19,672	0	54,098	467,267
2007-08	164,710	4,993	1,146	1,590	21,354	0	53,256	660,593
2008-09	84,308	3,135	662	932	16,160	0	59,968	509,054
2009-10	121,647	3,425	628	1,172	15,768	0	71,607	736,861
2010-11	133,972	2,901	490	883	19,142	0	70,770	838,665
2011-12	154,255	2,597	568	451	20,929	0	48,120	828,576
2012-13	120,332	1,923	522	1,475	14,517	0	50,859	819,556
2013-14	116,605	2,674	558	1,217	17,477	0	34,521	771,507
2014-15	152,524	4,039	575	1,109	28,189	0	48,883	1,131,196
2015-16	179,944	5,666	1,070	773	35,836	0	34,914	1,362,096
2016-17	186,936	7,712	1,118	3,530	24,265	0	53,975	1,632,965
2017-18	217,774	9,326	803	13,364	29,414	0	71,894	1,928,757
2018-19	209,255	6,035	913	7,525	24,453	0	49,902	1,782,605
2019-20	94,325	2,945	532	3,564	12,068	0	32,608	1,370,417
2020-21	151,794	3,808	570	11,328	19,744	0	50,751	1,902,415

Source: PAMA[32]

[32] Pakistan Automotive manufacturers Association. See https://www.pama.org.pk/

Table 6.5: Regression Analysis

VARIABLES	OLS	GLS	PPML	PPML FE	GMM
lgdpP	0.0942	0.0942	0.000238	0.000238	1.630**
	(0.208)	(0.372)	(0.0138)	(0.0188)	(0.796)
lgdpT	-0.924**	-0.924***	-0.0754***	-0.0754***	-0.469
	(0.402)	(0.351)	(0.0279)	(0.0183)	(0.797)
lrndT	-6.015***	-6.015***	-0.406***	-0.406***	-6.103***
	(1.248)	(0.874)	(0.0897)	(0.0621)	(2.159)
lrndP	0.202	0.202	0.0130	0.0130	1.471**
	(0.184)	(0.293)	(0.0117)	(0.0147)	(0.703)
Ldistance	-1.255***	-1.255***	-0.0948***		-3.510***
	(0.262)	(0.271)	(0.0185)		(0.863)
limp					-0.527***
					(0.108)
cb	3.217***	3.217***	0.253***		5.278***
	(0.971)	(0.719)	(0.0698)		(2.038)
cl	0.344	0.344	0.0455		4.339
	(0.873)	(1.021)	(0.0587)		(3.283)
o.saarc	-	-			-
impt1	-0.154***	-0.154***	-0.0123***	-0.0123***	
	(0.0448)	(0.0451)	(0.00330)	(0.00246)	
Constant	27.65**	27.65**	3.962***		-41.67*
	(11.13)	(10.80)	(0.779)		(24.83)
Observations	76	76	76	76	76
R-squared	0.953		0.949		0.594
Number of id		4		4	

Note: This table presents the regression analysis between the dependent, independent, and control variables. It indicates the direction in which the variables are related. This regression is among Exportation (exp), GDP of Pakistan (gdpP), GDP of trading partners (gdpT), R&D expenditure of Pakistan (rndP), R&D expenditure of trading partners (rndT), import tariffs (impt1), geographical distance (distance), common language (cl), common border (cb) and SAARC membership (saarc). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

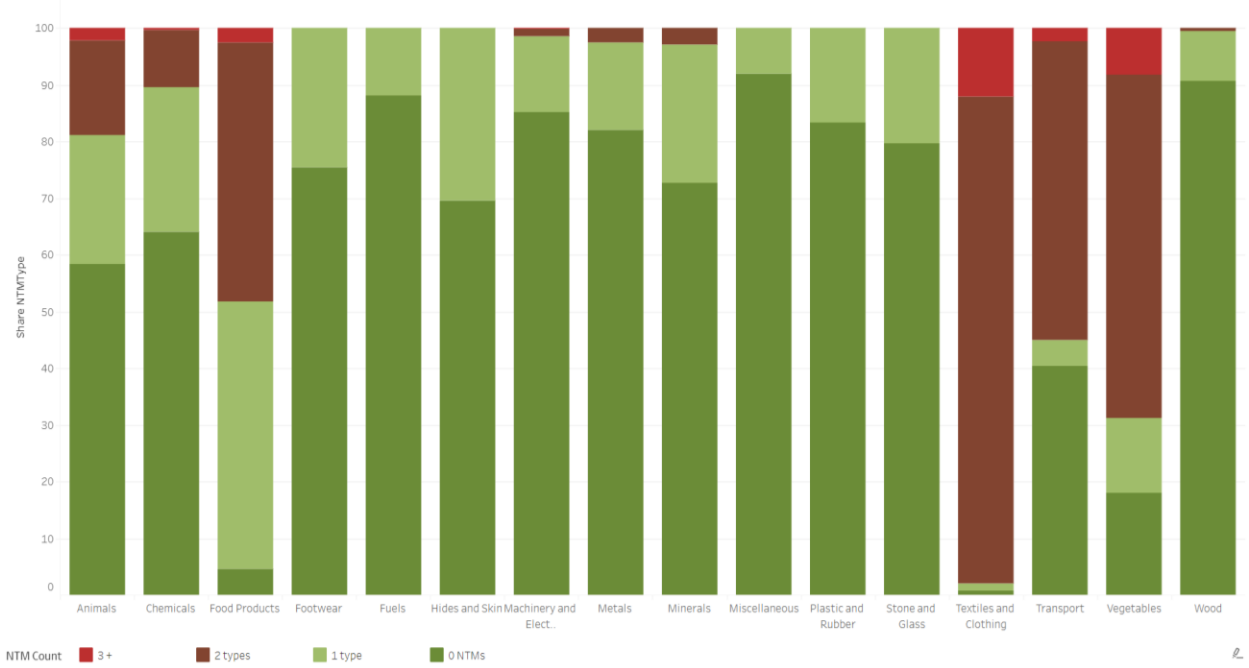

Figure 2.1: NTM's in different sectors of India[33]

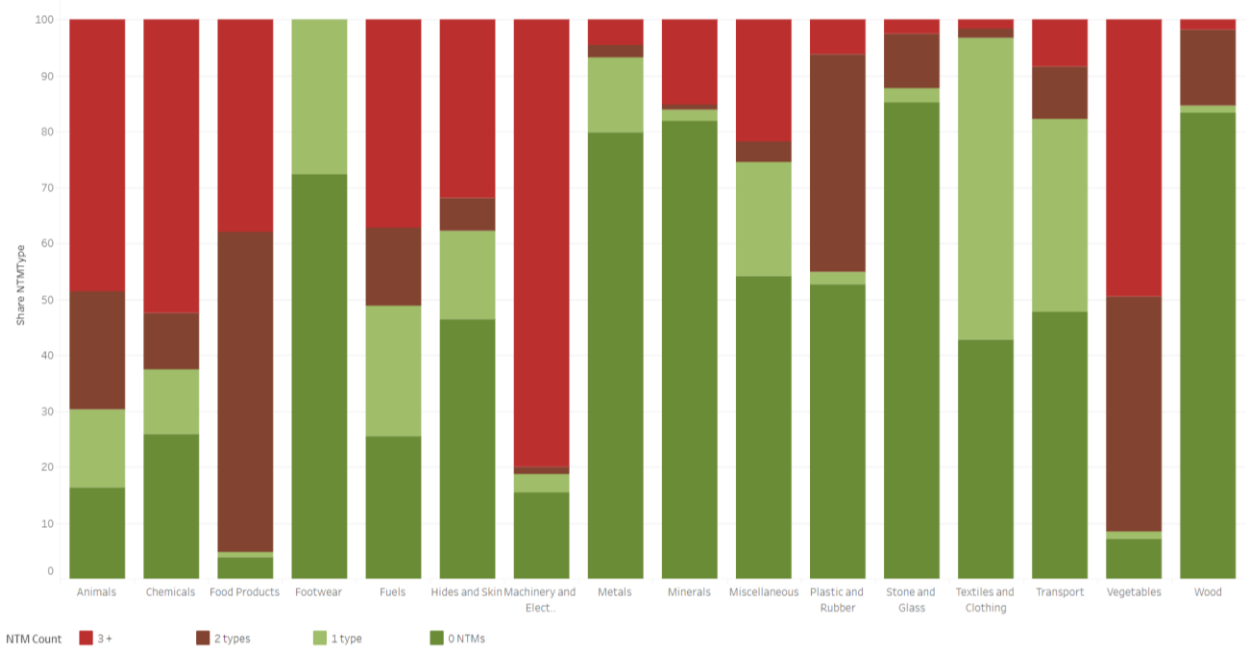

Figure 2.2: NTM's in different sectors of Japan[34]

[33] See WITS. http://wits.worldbank.org/
[34] See WITS. http://wits.worldbank.org/