

IMPACT OF TAXATION ON THE PERFORMANCE OF THE AUTOMOBILE INDUSTRY OF PAKISTAN



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CERTIFICATE

This is to certify that this thesis entitled: “**IMPACT OF TAXATION ON THE PERFORMANCE OF AUTOMOBILE INDUSTRY OF PAKISTAN.**” submitted by **Ms. Misbah Rashid** is accepted in its present form by the School of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Business Economics.

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Misbah Rashid

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Abstract

Economic development of the country is coined with industrial development. The historical records of Pakistan portray that the industrial state of the country was static at the time of independence. However, proliferation was developed in the infant industry under government support, but the performance of the automotive sector has not been commanding for most of the years. The market trends do not only influence the structural development of the industry in developing economies like Pakistan, but other factors such as government intervention, taxation, and incentives are other crucial elements in determining the structure of the industry. This research intends to investigate the relationship between taxation and the performance of the automotive industry. The focus of this research is to identify the key factors that determine the success and failure of the automotive industry. The study utilizes secondary data sources as well as qualitative assessments. Secondary data explores firm-level annual and balance sheets of three automobile companies listed on the Pakistan Stock Exchange for the period 2000 to 2019 with a particular focus on the performance indicators of the companies. ARDL approach is carried out to analyze the performance of the automobile industry in Pakistan. The qualitative analysis involves open-ended semi-structured questionnaires from experts in different institutions. The findings of the study suggest that tax revenue promotes the automobile industry's performance. Therefore, it is recommended that for the development of industry public infrastructure financing and a well-structured policy framework is essential. Further, a complex tax structure should be replaced with clear and a uniform tax mechanism. Centralized investment planning and industrial management are direly needed.

Keywords: Automotive Industry, Pakistan, Tax structure, Sales, Production, Performance

List of Abbreviation

ADF	Augmented Dickey-Fuller
AIDP	Automotive Industry Development Program
ARDL	Auto Regressive Distributive Lag
CBU	Completely Built UP
CKD	Completely Knocked Down
ECM	Error Correction Model
EDB	Engineering Development Board
EVs	Electrical Vehicles
FBR	Federal Board of Revenue
FDI	Foreign Direct Investment
GST	General Sales Tax
ILO	International Labor Organization
IMF	International Monetary Fund
LCVs	Light Commercial Vehicles
LSM	Large Scale Manufacturing
MOIP	Ministry of Industries and Production
NPM	Net Profit Margins

OEM	Original Equipment Manufacturer
PAAPAM	Pakistan Association of Automotive Parts and Accessories Manufacturers
PAMA	Pakistan Automotive Manufacturing Association
PHEV	Plug-in Hybrid Electric Vehicle
R&D	Research and Development
SBP	State Bank of Pakistan
SROs	Statutory Regulatory Orders
SME	Small Medium Enterprises
SSM	Small Scale Manufacturing
TBS	Tariff Based System
WTO	World Trade Organization
WDI	World Development Indicators
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization

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CHAPTER 1

Introduction

1.1 Background

The production of automobiles started in Western Europe in the early 1890s. In 1896 USA began its production of electric and gas automobiles (Nag, Banerjee et al. 2007) following 1904, Ford started the first production line. In the next coming years due to the Great Depression and World Wars, the sales of the auto industry dropped following the decline in car prices from \$850 to from 1908 to 1916. However, the sector saw major development in the years the 1950s and 1960s. In 1982 Japan was dominating the US automotive market. Further, the analysis presented by Hassan & Shabbir, (2014)¹ on the auto sector informs that, towards the end of the 19th century, the automobile industry began to grow in small workshops. Besides Ford other manufacturing corporation such as GM Motors and Austin Motors established their manufacturing plants in Northern Ireland and Great Britain. However, the „lean Production“² was initiated by the Japanese manufacturers, which further provided the bridge for short vehicle production.

During the early 21st century, in the 1990s, the automotive industry further integrated, followed mergers, and based on the new production processes (Hassan & Shabbir (2014)³. There is enough literature available on the notion that the auto industry is experiencing transformation, adaptation, merger, and relocation of its production base to the emerging developing economies (Qadir, 2015); (Nag, Banerjee et al. 2007); Bharadwaj (2015); Traub-Merz, R. (2017).

¹ https://www.academia.edu/21973239/Pakistan_Automobile_Industry_Report

² Lean production involves reduced cost with improved efficiency

³ https://www.academia.edu/21973239/Pakistan_Automobile_Industry_Report

The International Labor Organization (ILO 2020), the report stated that in the past years few developed economies such as Japan, US and Germany were dominating the automotive market. Now the trend in production base is shifting towards emerging countries due to cost-effectiveness of labor. In recent years Chinese enterprises are leading the auto market. These Chinese auto industries held 17% of the revenue in 2019, as 7 out of 34 companies are Chinese - based (Fortune's Global 500). From 2010- to 2019 the number of auto industries and auto part corporations increased from 27 to 34. In 2019, revenue generated by these corporations was US\$2,866 Billion. Similarly, another study by Bharadwaj (2015) on social and global issues in the automotive sector reported the increased participation of emerging economies in global automotive value chain. The BRICS economies have a 27% share of the world's GDP in 2012, as well as 55 % of world growth. In 2009, China became the largest car producer in the world, beating the US. However, the report on automotive industry by (Griffin 2020) revealed that the industry enjoys monopoly in the global world as it is governed by few multinational enterprises.

The countries Japan, Europe, and the United States (Luo, et al.(2006)) are home to the major automotive manufacturing plant. The contribution of the automotive sector of these advanced nations (United States, Japan, South Korea, and Germany) range from 20- to 40% (Saber, 2018) in the Republic of Korea the share of automotive sector to GDP is 10%, in Germany the share is 17% while in South Africa the automotive sectorial share to GDP is 7%, while the developing nations share is less than 10 %. However, a few contemporary studies e.g. Bharadwaj (2015) further identified that the giant automobile companies such as Daimler, BMW, and Audi are expanding their manufacturing plants in emerging economies India and Brazil and the

contribution of BRIC economies to the global automotive industry is increasing following an increase in passenger car production from 7.9% to 33.3% in the ten years (1999-2009).

Few more studies discuss the relocation of manufacturing plants in the automotive industry e.g. (Lamprecht, Tolmay et al. 2017); (Wad 2010); (Bharadwaj 2015); (Griffin 2020). The automotive manufacturing plants are shifting towards the East from the West (Lamprecht, Tolmay et al. 2017) now the emerging economies are taking part in vehicle production following the rise in market share (16% in 2000 to 54% in 2012). During 2009 the global automotive sector experienced a negative growth rate (Wad 2010) in production and sales. The regions of North America, Japan, and Eastern Europe experienced the major downturn in automobile production whereas the regions Middle East, Africa, and Western Europe faced a minor decline in automobile sales. Moreover, the ILO (2020) report identifies that the production of motor vehicles is increasing in Asia and Pacific region, constituting 55% of the total global production. These two regions (Asia and Pacific) produced about 52 million units in 2018.

1.2 Future Trends

In this section, we intend to discuss the recent developments, transformations, and industrial policies in the automotive sector. A lot of studies e.g. Qadir (2016); Nag, B. (2017) and Lee & Mah (2017), focused on the development, transformation, and challenges of the automotive industry in detail.

In today's world, to achieve sustainable economic growth, global competitiveness is imperative. The level of competitiveness is coined with the level of industrialization (Qadir 2015) and advanced economies with massive industrialization are viewed as competitive while the developing economies with a lower levels of industrialization are viewed as less competitive.

Thus it is challenging for the developing economies to turn from imitators to innovators in this technology-intensive world. Market forces, corporate performance and government regulations (Rampersad 2014) are some other important factors that govern the economic sustainability of the automotive industry.

While many of these studies (Griffin 2020); (Qadir 2016); (Bharadwaj 2015) shed light on the performance of the automotive sector of developing economies. Small and medium enterprises in developing countries Griffin (2020) are struggling because of the lack of access to the modern technology and high competition in the automated production system. In depth-analysis highlighted that un-skilled workers constrain the growth in industrial sector. To deal with these (SMEs) challenges, the report proposes the macroeconomic policies and government actions such as social protection, loan schemes, association with the technological platforms, start-up grants, etc. Further another survey on the industrial sector in Pakistan reported that an unstable economic climate imposes threats to the industrial structure. According to the survey report (United Nations Industrial Development Organization (UNIDO), 90% of the firms in Pakistan experienced negative growth in terms of revenue in a response to the ongoing epidemic (Covid-19).

In the manufacturing sector, the industrial revolution is being regulated by the technological diffusion and innovation based-system. Some other studies (Bürken 2014); (Rampersad 2014); (Bharadwaj 2015) highlighted the role of technological evolution in the automotive sector development and its link with the economic policies. Similarly, another study (Bharadwaj 2015) shed some light on the role of three automobile giants (Japan, US, and Germany) and how they shunted the conventional technologies and developed more than 80% of the eco-friendly automobile-related technologies till 2007. However, automobile giants (the US, Japan, and

Germany) those were pre-dominating the automobile industry and were technological pioneers in automobile world, their share fell from 40% to 30% in world production, while the contribution of non-OECD countries in production increased.

In recent years the rapid technological advancements have shifted the competition from national to an international level thereby creating global production networks. The structure of the automotive is continuously transforming following digitalization. An example of which are sensor technology, robotics, and block chains (ILO, 2020). (Galvin, Goracinova et al. 2015) further elaborates that the transition of automobile industry from mass production towards the lean production induced the competition⁴.

The interdependency relation between the industry and economy is dynamic over time (Duarte and Rodrigues 2017) In major advanced economies such as Japan, US and Germany, the contribution of automotive sector to GDP is much higher as compared to the developing nations (the link between the industrial development and GDP is explained in detail by Saberi (2018), and other scholars such as Atkinson, Ezrati, et al. (1984) built a consensus that economic stability greatly influences the automotive industry. Considering that the industry serves as largest economic sector in world in terms of revenue generation e.g. see Liu et al. 2020). On one side it contributes in developing the transport industry and on other side it is contributing to the GDP of the economy in areas of employment generation, tax revenue, technology transfer, and foreign exchange reserve.

There exist some studies in the literature that link the industrial policies with the development of the automotive industry (O'Neill, Coney et al. 2020); Griffin (2020); Khattak et al. (2010);

⁴ Automobile products are now brand specific following distinctive looks thereby creating challenges to gain economies of scale.

(Ranawat, Tiwari et al. 2009); Ma, Du et al. (2019); Traub-Merz (2017); Atkinson, Ezrati & Flynn, (1984).

The process of Industrialization requires constant transformation to compete in the world. Countries like China, Norway, and United States have undertaken several policy measures (O'Neill, Coney et al. 2020) to transform and expand their automotive sector. Therefore to expand the market of Electric Vehicles (EVs) market (UNDP, 2004) these countries introduced several incentives such as tax abatements, installation of charging stations, monetary benefits (fee exemptions, etc.), and subsidies. The well-designed policy structure influenced the market share, for instance, Norway's EV sales increased (56% in 2019), after the elimination of various taxes (value added, emission tax, toll tax, etc.) Another study on the structure and its future business models by Vaquero (2018) demonstrates that electric cars were introduced some 120 years ago but due to a lack of reliable electric technology, gas-powered engines were not efficient. New business ideas, digitalization, and innovation have been seen as a game-changer for business models of the past such as great start-ups Uber, Cream & Cab call, etc.

Direct policy interventions have effective an impact (O'Neill, Coney et al. 2020) on the market share of automobiles, for instance, China lowered the several incentives on EVs which immediately declined the sales in 2019. Import substitution policies on one side push the foreign firms (Traub-Merz, 2017) toward localization while on another side it may create the chances of a monopolistic market for domestic producers. As local firms have lower production and technological efficiency and are crowded out. Therefore, to strengthen the domestic infant industry special protection such as joint ventures with local firms can be considered.

The role of the industrial policies is linked (Bürken 2014) with the development of the automotive industry. The research shows that to sustain in the global competitive market how the Turkish automotive industry was developed through protections such as import substitution policies and various schemes (R&D subsidized scheme). Many other factors also influence the structure and development of the industry as (Atkinson, Ezrati et al. 1984) explained in the case of Brazil and Mexico how the FDI in the automotive sector had introduced innovative production techniques. Moreover, the South African automotive sector was protected through high tariff rates (mainly on CBUs) which resulted in the establishment of assembling plants (Rampersad 2014) which further attracted the foreign investment in the Original Equipment Manufacturer (OEMs) sector.

In the past half-century Korea among the developing nations stepped into the global automotive market and began to develop in the mid-70s (Lee and Mah 2017), to expand and develop the auto sector, the government implemented various structural measures. During the initial stages of the development of the auto industry in Korea, the government protected the domestic industry by introducing several incentives such as export subsidies, restricting auto part imports, and foreign cars.

A study by Ranawat, Tiwari, et al. (2009) on the structure of the automotive industry of India identifies that R&D spending in Indian automobile sector is influenced as evident by the products indigenously developed by Tata Motors, Bajaj, Mahindra, and many others. Government actions and monetary and fiscal policy measures played an active role in enhancing the R &D activities. Further another study by Griffin (2021) concluded that the global EV

industry has shown remarkable growth and captured significant market share due to the several policy incentives such as tax exemptions, subsidies, and environmental concerns⁵

Japan, and France through successful industrial policies (Atkinson, Ezrati et al. 1984) strengthen their local domestic firms prevailing over the foreign companies. The industrial policy measures (including tax incentives, and technology up-gradation) in Japan and Brazil encouraged the cash flows and investment in the automotive sector, while the other factors (government programs, domestic market growth, etc.) seemed helpful in achieving the higher production scale. O'Neill, et al. (2020) study shows how some Asian countries such as Thailand and Philippines focused on fiscal policy measures (such as tax exemptions) and brought investment into the local EV industry.

The development of the automotive industry is coupled with the multifarious innovation. The competitiveness of the automotive industry is linked with the domestic competition that drives corporations to adapt and enhance productivity (Rampersad 2014).

The automotive industrial state of developing economies such as Pakistan experiences global competition. The development process of the industry is complex and dynamic as many roles are involved. For instance, the technological challenges, inconsistent policy framework, and lack of R&D restrict the growth. During the initial stages of growth, the government establishes policies to protect the infant industry. However, the policy framework established in the previous years did not have any positive impact on the performance of the industry (Qadir, 2016).

⁵ emission targets

1.3 Structure of Thesis

The impact of taxes on the performance of the automobile industry in Pakistan is still unexplored. This thesis sheds light on the performance of the automobile industry of Pakistan under tax regime by analyzing it through theoretical and empirical perspectives. First, it presents the literature in the field of taxes and automotive manufacturing/ working. Second, it explains the regulatory framework and policy structure of the automotive industry. Third, it contributes to the existing research by a methodological part that contains the empirical data of the automotive companies, taxes, and global vehicle production. Further, three automobile companies are chosen due to their leading role in the domestic market. Their financial highlights are analyzed. This study also chooses the qualitative analysis. The qualitative part consists of the interview, with representatives from the tax department. The interviews are analyzed based on the questionnaires. The thesis tests the hypothesis that changes in the tax structure have subsequent consequences on the automotive structure and what are the tax incentives and concessions provided to this industry. Therefore, to test the hypothesis the authors conducted the quantitative and qualitative analyses.

The structure of the thesis is as follows. The remaining part of chapter 1 explains the problem statement, research questions, objectives and literature on the performance of the industry. Chapter 2 contributes to the literature studies of both domestic and foreign countries. Chapter 3 involves the structure of the automotive industry. In chapter 4 regulatory framework of the industry is analyzed. Chapter 5 presents the methodology of our research. Chapter 6 involves the empirical findings which are then discussed and analyzed. Chapter 7 concludes our research by summarizing the main findings and policy recommendations.

1.3 Problem Statement

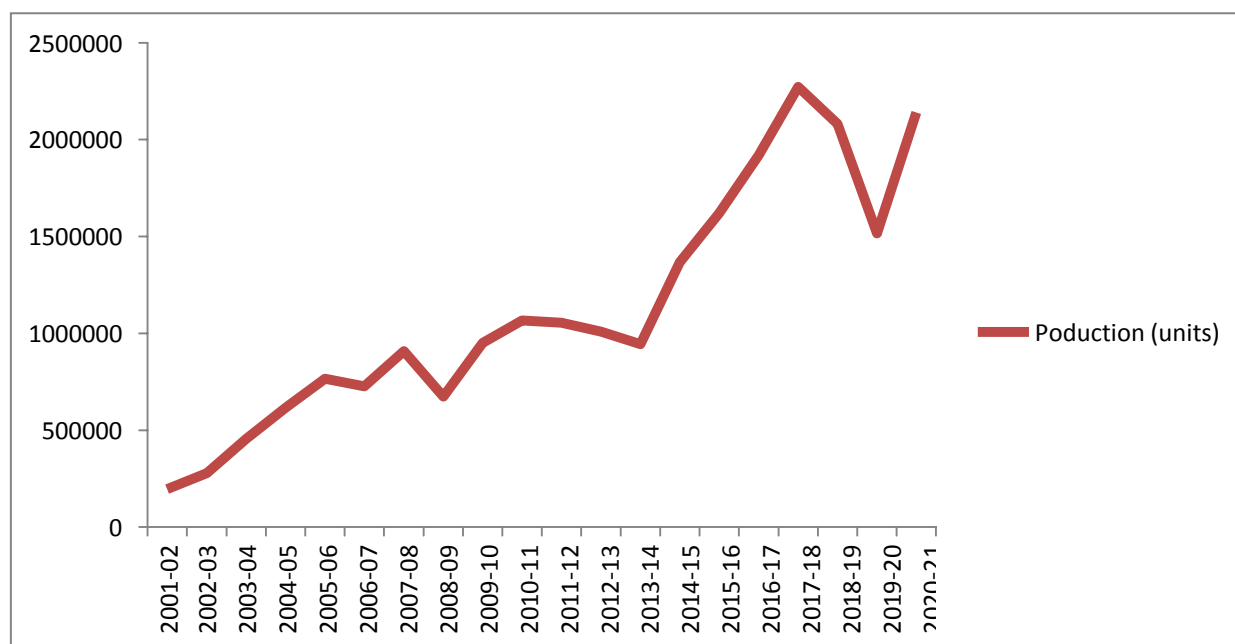
The auto industry of Pakistan is inundated with the multiple taxation system such as direct tax, sales tax, motor vehicle tax, registration duty, and excise duty, which led to an increase in the prices of imported inputs, components and automobiles. Innovation, production and competitiveness are limited in this sector due to imposition of tax duties and lack of friendly policy framework.

1.4 Objective

The essential objective of this study aims to investigate the automotive industry of Pakistan in context of taxation. Therefore, this research is designed to analyze the “Pakistan auto industry under the taxation regime”.

1.5 Research Questions

- 1- What are the tax incentives and concessions in the automobile sector?
- 2- Do changes in the tax structure have subsequent consequences on the automobile industry (evaluation of tax regimes in terms of being growth friendly).



Source: Pakistan Automotive Manufacturing Association (PAMA)

Fig1.1: Automobile Production (Pakistan), 2001-2021

Fig1.1: The SBP analysis observed the continued strong growth with a 33% contribution in FY 2015 and 29% contribution in FY 2016. Further, the assembling of Light Commercial Vehicles (LCVs) and cars increased due to the availability of auto finances and Apna Rozgar Scheme launched by the Punjab government and LCVs⁶. According to the Economic Survey (2019), the auto sector experienced the decline in growth of 7.6% during FY July-March 2019. The reasons for this decline in growth can be explained by currency depreciation, higher financing cost, higher prices, hikes in policy rates, and uncertainty regarding filer and non-filer⁷.

⁶ <https://www.sbp.org.pk/reports/annual/arfy04/qtr-index-eng.htm>

⁷ https://www.finance.gov.pk/survey/chapter_20/PES_2019_20.pdf

Moreover, the report shared by Dawn news (2021), indicates that auto industry sales during the present fiscal year (eight months July- Feb) increased, depicting the strong growth. The sales show the jump of 24.3% following more than 113, 905 units, and a 17.3% rise in two to three-wheeler segments (1.27m units). Another factor that played the major role in increasing the sales is the reduction in the interest rate. On Business side, due to the tax concessions proposed in policy 2016-2021, foreign investors such as Chinese and Korean car manufacturers are investing in the domestic industry.¹ Moreover, the demand for the automobiles has increased as the auto financing by consumers raised from PRs 85 billion in 2015 to 285 billion in 2021. However, the financing by manufacturers rose from RS.19bn in 2015 to RS.33bn in 2021⁸. Low auto financing rate impacts the sales growth, for instance when the interest rate was low from 2014 to 18, the auto sales doubled from 136888 to 258638 units⁹.

⁸ <https://primeinstitute.org/wp-content/uploads/2021/08/Auto-Policy-Note-10.8.21.pdf>

⁹ <https://primeinstitute.org/wp-content/uploads/2021/08/Auto-Policy-Note-10.8.21.pdf>

CHAPTER 2

Literature Review

2.1 Background of Auto industry of Pakistan

This section is based on the earlier research studies which explain the historical background of the domestic automotive industry and the association between the fiscal policy variable (taxes) and the performance of the automotive industry. The first part of this study consists of the literature review for Pakistan, while the second part is dedicated to foreign studies.

Pakistan's automotive industry is the multibillion rupee sector which consists of large and small-scale components, Original Equipment Manufacturers (OEMs), manufacturing and assembling units. Whereas OEMs are considered as large-scale components while auto part manufacturing is a part of small scale informal sector. The formal sector possesses high level of technology (Imran, Khan et al. 2015) due to the linkages with the Original Equipment Manufacturer (OEMs) while the informal sector is still struggling in achieving the development and technology. Although the growth of both the sectors is largely hampered by the factors such as sales tax increases, additional customs duties, power shocks, law and order situations, bribery, and uneven government regulations.

The industrial structure of the country was not developed at the time of independence (Qadir 2016) and therefore to formulate the industrial policy and for the development of the industrial sector Ministry of Industry was established in early 1950s. The Ministry of Production was set up after the nationalization phase in the early 70s. Later in 1990s, these two ministries merged into a single institute, Ministry of Industries and Production. Another diagnostic study conducted by Arsalan, et al. (2018) indicated that the development of the auto industry observed different

growth phases. The initial phase started in 1949 after the establishment of GM motors. The second phase followed nationalization period in 1972, where different Automobile Corporations were formed and renamed such as Pakistan Automobile Corporation, National motors, Millat Tractors, etc. In 1974 Private sector participated such as Yamaha Motorcycles, Suzuki Motor Cycle and Kawasaki Motor Cycle. The third phase was the period of accelerated growth followed by production period such as car production, tractors production, Nissan truck production, Toyota Corolla, establishment of regulatory body such as Pakistan Association of Automotive Parts and Accessories Manufacturers (PAAPAM). The next fourth phase started in 1994 following production of Honda Civic and formation of another regulatory board Pakistan Automotive Manufacturing Association (PAMA). In 1984, Suzuki Motors exported light commercial vehicle Participation of Private sector enhanced in this phase following production of 125cc motorcycles by Yamaha (2015), Revo car (2005) etc. Arsalan et al. (2018) further demonstrated that the latest phase involve when Uber and Careem established their networks in Pakistan (2016-2017) further raising the demand of vehicles in the country. Moreover, in 2018, United Motors started manufacturing 800cc cars and pickups. Recently Hyundai Nishat launched the Hyundai Elantra (see, The Nations, 2021) in March 2021. The Hyundai Elantra is assembled domestically with Completely Knocked down (CKD) and is the third locally assembled in Pakistan.ⁱⁱ

The sector experienced the robust performance during 1970s and 2000s (Qadir 2016) and (Pasha and Ismail 2012). The highest growth was due to the lower tariff rates, business friendly policies such as lower interest rates, increased investment, persistent GDP growth and growth of real per capita income. However the progress attained by the automotive sector during the past years (1980s, 1990s, 2008-09) is not remarkable. As Pasha and Ismail (2012) explained that during

2008-09 auto sector experienced major downfall, followed by a 47% drop in sales. The sudden decline in demand was due to the economic recession, high interest rate and depreciation of exchange rate. However in 2009-10, recovery in auto sector sales helped increase production.

The studies discussing the productivity and growth of automotive industry in Pakistan Imran (Khan 2020; Qadir 2016; and Bari, et al. 2016) revealed that the sector is depicting sluggish performance, following manufacturing units based on low or intermediate technology and are labor-intensive rather than capital intensive and lack advance technological diffusion. Although the labor-intensive method is cost effective and majority of the companies lack specialized equipment characterized by timeworn production processes such as the technology used in production process has not been upgraded since 1980s, and hence resulted as low quality products.

Moreover, the study (Qadir, 2016) revealed that the contribution of the domestic industry to the GDP is less than 3 percent. The auto part manufacturing lacks potential growth and therefore does not meet the demand of the country (IFC, SBP (2011)¹⁰, while the part manufacturing contribution to the annual global production is only 0.04%. The sector experiences cartelization, high taxes, and currency depreciationⁱⁱⁱ (Express Tribune,2021) with little or no competition (Ahmed and Batool 2017) and the manufacturers are highly dependent on the imports of auto parts which raise the production cost resulting in price hike and therefore making the car affordability unattainable for the consumers. However, consumer surplus can be achieved through trade (by importing small engine-sized cars). Further, the study on vendor sector by (Khattak, Ullah et al. 2010) highlights that the sector is facing competitive disadvantage in terms of information, technology and government assistance. Firms are globally uncompetitive,

¹⁰ <https://www.sbp.org.pk/press/2011/IFC-Dissemination-06-Jun-11.pdf>

lagging behind R&D (Bari, Afraz, et al. 2016) and new technology and raw material are poorly available and thus resulting in low-value addition as well as providing comparative advantage to other countries.

A study by Qadir (2016) further explains the market trend of the auto sector, as the domestic industry undergoes the joint ventures and mutual collaborations with international manufactured units. Major market share is captured by the Japanese corporations¹¹. While, in case of light commercial vehicles, South Korean firms and Japanese firms cover the market. Whereas Atlas Honda, Japanese OEMs, Pak-Suzuki and Indus Motors dominate the market in terms of the two wheelers and four wheelers vehicle respectively. Although the joint ventures have introduced the basic technologies in the auto sector (Pasha& Ismail, 2012), the sector does not evolve as a self-reliant following lower level of technological diffusion and non-competitiveness.

The industry possesses oligopolistic market structure (Ahmed and Batool, 2017; Aqil, et al.2014) with three manufacturers (Honda, Indus Motors, and Pak Suzuki) dominating the market following the rigidity in price structure. Further, the industry was protected against foreign players through tariff regimes and therefore companies enjoyed the monopolistic and oligopolistic market structure in their manufacturing base. Poor resource allocation following limited testing equipment and unsteady electricity is another big issue that impedes the growth of vendor industry (Khattak et al. (2010)).

Industrial policies related to the localization (Khan, T. 2020) contributed to the development of the local part segment (supplier base), although the local supplier base was deficient in adopting innovative technologies to catch up with the market leaders. And thus post-liberalization policies

¹¹ trucks, buses, passenger cars, motorcycles

are not supportive of adopting the advanced technology capabilities. The study by Khattak et al. (2010) highlights that the sector is experiencing challenges such as supply chain issues due to the quality defects (obsolete techniques, poor quality control) following OEM's un-organized production and untimely deliveries. Introducing the EV industry in Pakistan will improve the environmental standards (Ullah, N. 2019) with no requirements for fuel stations and fewer maintenance costs and duties.

Policies are crucial for the institutional framework and development of the sector. To enhance the competitiveness and quality of the industry, sector needs the strategy and business-friendly policies (Pasha& Ismail (2012); Qadir (2016); Bari, Afraz, et al (2016); O'Neill, Coney, et al. (2020); Khan, T. (2020)).

Historically the domestic automobile industry has enjoyed high protection rate (Ahmed and Batool, 2015; Bari, Afraz, et al.2016) and has continued to earn monopolistic profits. Qadir (2016) explains that the policy frameworks introduced in past years do not have any considerable impact on the performance of the automotive industry. Automotive Industry Development Policy (AIDP 2007-2012) was set out in 2008 (Bari, Afraz, et al 2016) following few key elements of this policy were technological acquisition schemes, tariff plan (five-Year), automotive cluster development scheme, sector related investment policy, HRM development and establishment of industrial development committee. However, the policy was not followed properly due to the several factors such as political chaos (change in government), uncertain investment patterns, and global financial crisis.

Industrial policies related to the localization (Khan, T. 2020) contributed in the development of the local part segment (supplier base), however, the local supplier base was deficient in adopting

innovative technologies to catch up with the market leaders. And thus post liberalization policies are not supportive of adopting the advance technology capabilities. Part manufacturers could not take place in global Original Equipment Manufacturer (OEM) supply chain due to the barriers (Bari, Afraz, et al. 2016) such as licensing requirements and taxation fees on royalties and technology transfer.

The study by O'Neill, et al. (2020) proposes that Pakistan could learn from the Indian automotive sector to indigenize the domestic industry and to adopt the electrifying transportation system, as the high localization levels in India (such as Mahindra and Tata motors) are a good example for Pakistan to follow. Further, another study by Ullah, N (2019) on the electric vehicle sector of Pakistan concludes that to achieve the transformation and indigenization level of EV industry, tax abatements, stable policy framework, R&D facility, charging and a Plug-in hybrid electric vehicles (PHEVs) infrastructure are few crucial elements.

2.2 Review of studies based on the tariff, trade and taxes of Auto industry of Pakistan

In this section, we review the existing literature on the effects of taxes, protection rate, and trade on the automobile industrial growth from the perspective of Pakistan.

The automobile industry of Pakistan is provided with the high level of protection (Imran, Khan et al. 2015). Similarly, the overview provided by Pasha & Ismail (2012) in their study on the trends in the Automotive Sector of Pakistan reports that in 2009 heavy import duties were imposed on the auto industry and thereby resulting in restricting the auto imports.

A study conducted by Bari, Afraz et al. (2016) depicts that during the last ten years the overall trade to GDP ratio declined. The country relied on imports from Japan, Thailand, Singapore, Turkey, South Korea, and China. He further reported that the growth in exports increased only

by ten folds while it increased 25 folds for the rest of South Asia. Further, the ratio of exports to Afghanistan rose by eleven folds from 2002- to 2011. Ahmed, V, and Batool, S. (2017) explains the reason for the decline in auto parts export are the energy crisis (shortages) in the country and global oil price hike. According to the Automobile Sector of Pakistan (2010) report, during 2008 country's major auto export markets were Turkey (49%), Nigeria (7.5%) and UAE (7.8%) whereas the Thailand's share in auto imports was 12.7%. In 2013, country's top export markets were Afghanistan, Italy and Nigeria (Ahmed, 2011)¹².

The tax structure is important to analyze as it impacts the fiscal consolidation (Stoilova 2017) and economic growth. In case of Pakistan, the literature discussing the taxation impact on automotive sector is limited. Much of the past research is focused on the policy reviews and development assessment Aqil, Qadeer, et al. (2014); Bari, Afraz, et al (2016); Khattak, Ullah et al. (2010); and Pasha& Ismail (2012).

The domestic auto sector comprises the various tax system such as corporate income tax, custom duties, sales tax and withholding tax while the auto sector is the third major contributor to the tax revenues (Pasha& Ismail, 2012) generating RS 62 Billion in taxes during 2009-2010.

According to the AIDP (2007) report, it is observed that in the preparatory phase, because of the relaxation in import duties, industry experienced the high growth in used car imports. In years 2005-06, the auto industry's contribution to the country's revenue is 63 billion with around 7 million total vehicles were being produced. Another study by Aqil, et al (2014) found that long term trade barriers, high protection rate, low indigenization and poor capacity utilization halted the progress of the industry.

¹² <http://sjbipp.org/publications/PR/projectreport/PR-14-13.pdf>

Considering that the automobile sub-sectors experience inconsistent tax policies (Bari, Afraz et al, 2016) and subsidy schemes for instance tractor industry was exempted from sales tax in 2008 to support the farmer. Although profits were maintained by manufacturers, sales did not boost due to the lower purchasing power of farmers. Moreover during 2012 to 13 and 2016 tractor industry further benefited from subsidies. Similarly, other studies (Khattak et al. 2010) also provide the evidence that unstable policy framework following price discrimination (lack of price ceiling), absence of subsidies and soft loan schemes are some impeding factors that make the industry more un-competitive.

The economic crisis coupled with low demand (Pasha& Ismail, 2012), high interest rate and depreciated exchange rate led to rise in the prices of the car industry and input components. Following the years 2008-09 the industry experienced downfall, with sales declining to 47%. The Economic survey in its assessment observed that during 2019-2020, the automotive industry experienced fall in production and sales as during the last year new federal excise duties, value added taxes and additional custom duties were imposed. Although, the two new vehicles such as Suzuki Alto and Toyota Yaris launched during this year, no substantial demand for passenger cars was witnessed. Pakistan's trade policies are coupled with protectionism and liberalization (Bari, Afraz et al. 2016). Due to the high protection policies the Overall Trade Restrictive Index places the Pakistan on 9.9 scales (0-16 trade index, with higher scale indicating higher trade unfriendliness).

According to the SBP report (2015), the automobile industry depicted the continued strong growth in FY 2016 with the 33% contribution in FY 2015 and 29% contribution in FY 2016. The

assembling of LCVs and cars increased due to the availability of auto finances and Apna Rozgar Scheme launched by the Punjab government and LCVs¹³.

2.3 Review of studies based on foreign auto industry

Some of the literature is considered for review from other countries to see how the auto industry in other countries is carrying on with taxation. This will give an insight to do country level comparisons.

The studies that set forth to analyze the impact of taxation on auto industry performance are (Natsuda and Thoburn 2013); (Xi and Yun 2015); (Ranawat, Tiwari et al. 2009); (Li, Jing et al. 2019); (Agostini 2010); (Craft and Schmidt 2005); (Lee and Mah 2017).

The structural analysis of auto industry in few selected countries performed by (Nag, Banerjee et al. 2007) reported that sector is subjected to the variety of tax systems such as corporate tax, VAT, and import duties and each country has heterogeneous tax structure, for instance in China and Thailand tax structure is vehicle specific while in India import duties are higher as compared to these countries. Another study conducted by Agostini (2010) informs that automobile demand is elastic to the differences in the fuel tax rates (diesel and gasoline). Craft and Schmidt (2005) discussed how the value based taxes impact the vehicle ownership and concluded that new automobile capital and purchases are sensitive to the effective tax rates“ positive impact on profitability of the industry and increased efficiency.

The Thai automotive industrial policy reviewed by Natsuda & Thoburn (2013) demonstrates that policy involved several incentives such as tariff reductions; corporate tax exemptions etc. in a response to this policy, domestic Thai automotive company initiated its plant in the country. The

¹³ <https://www.sbp.org.pk/reports/annual/arFY16/Chapter-02.pdf>

production during this period rose at considerable level, which was 525 units in 1961 and in 1965 it reached 10,000 units. While, during the period 2000-10 Thai government introduced several tax incentives such as excise tax exemptions, and corporate tax reductions create international competitiveness and to create the market demand for automobiles. As a result of these policies, Toyota decided to relocate its plant from Japan to Thailand, where it established the Research and development center, thereby introducing its production base as well as product development base.

The research conducted by (Saber, 2018) on the role of automotive industry in the developed economies its current situation and future trends revealed that in the 26 industrialized nations the tax revenue collected from automobile manufacturing (car manufacturing) is more than 430 billion euros per year. Moreover, 1% growth of the automotive sector causes the growth of 1.5% in GDP. Furthermore it is pointed up by Ranawat, et al. (2009) in their study that India's automotive industry shows the positive growth because of the export friendly policy incentives, multilateral trade agreements, and development of the export oriented units. Further it was reported that in 1948 tariff barriers were raised on automobile imports and these tariff barriers are still high in the country. Ranawat, Tiwari et al. (2009) concluded that the shift in the policy framework turned the auto industry from an oligopolistic to a competitive market structure. Preece (2015) proposed that tax policies should not impact the production-consumption pattern as well as investment structure of the industry, in other words tax structure should be neutral¹⁴. The factors such as import-export up gradation (Barnes and Black 2013), development program,

¹⁴ It should not be used as a tool to target one particular segment of the market. Therefore it was recommended in the paper that tax policies should be based on the transparent and fair tax system.

reduced the protection (falling tariff) and currency depreciation (rand) push the South Africa's automotive industry into the export market. Further, the authors concluded that their exports of automotive expanded during 1995 to 2013. On contrary the auto sector of Korea was initially protected by high tariff rates, which played an important role in expanding car manufacturing industry (Lee & Mah, 2017) government introduced the lower consumption tax rates to promote the consumption of domestically produced cars. During 80s, Korea was among the countries with developed car industry with the exports of about 30,000 every year. Another study by Sanjay (2020) reveals that the overall impact of GST on auto sector is positive. It is concluded that GST is imposed on the supply and consumption state not on the origin state. Further the cost of transporting goods and operational cost has decreased due to the GST implementation, and this reduced the price of automobiles.

The impact of tax policies on consumption and production by Li, Jing et al (2019), demonstrates that on supply side, tax incentives implication to the new energy vehicle has reduced the cost of production and hence an increase in the supply, while the supply of traditional vehicles will decrease. On the consumer side, the demand for the advanced automobile will increase due to the reduction in the purchasing cost. Li (2019) further argued that the change in consumption pattern is slow, because it is difficult for the consumers to quickly compare cost of the both vehicles. Further the impact of tax policies on the automotive industry (purchasing behavior of consumers) in China is empirically studied (Xi and Yun 2015) which showed that tax adjustments have diverse effects such as the first two excise tax implications limited the auto sales while the third purchase tax cut encouraged the automobile sales. Global Electrical Vehicle market is expanding due to the number of social and environmental benefits (Haq, Masood et al. 2011) such as low operational cost, energy efficiency and low emissions. In 2019 global EVs counted were 7

million units with sales of 2.2 million units. Fuel prices (gasoline) impact the EV market more than the discounted tax rate (O'Neill, Coney et al. 2020) therefore to support the EV potential market, gasoline tax rates would be more viable method. China possesses the largest market (Atkinson, et al. 1984) for Electric Vehicles (capturing a 4.9 % market share (2019) that provides several incentives such as subsidies, tax exemptions (value-added tax, excise taxes, license fees etc.) to the consumers as well to the manufacturer.

Wad(2010) reports that, due to the global financial crisis of 2007-2009, productivity of the automotive sector dropped, following a 3.7% decline in global auto market production from 2007-2008. In 2008 global vehicle sales and production estimated as -5.3% and -5.1% respectively.

Chen, Esteben et al. (2010) quantitatively examined how sales tax reductions impact sales and profitability of firms in auto industry. By using the baseline model, results indicated that tax reduction increases the sales as well as profit of the firms. The reduction, not only impacts the primary market but also the secondary market. The study also accounts the for durability of the product. It reveals that sales tax reduction benefits decrease with product durability. Results highlighted that when the product (used car) becomes less durable, the rise in firm's profit because of tax reduction, becomes more significant.

There are some other literature studies for instance Ma, Du et al. (2019); Khattak et al. (2010); Bari, Afraz et al (2016) that discuss the unfriendly policy framework for the automotive industry and its impact on the performance of the industrial structure. Government policies are often unbalanced i.e. benefiting some particular group (Ma et al. (2019) for instance automobile manufacturing industry in China receives more preferential policies than automotive

maintenance industry therefore there exists the a gap between the developed manufacturing industry and less developed maintenance industry.

The study by Traub-Merz (2017) proposes that protection offered to the sector increases the cost of production and which in turn raises the selling prices and thereby impacts the consumer. Import substitution policies cause (Atkinson, et al. 1984) un-competitiveness in the auto industry because it creates the economic inefficiency and raises the cost structure.

According to the report on the covid-19 assessment of the automotive sector, German automotive research center expert stated that the pandemic has highly disrupted the Western Automotive industry, as it will take 10 years to regain the size of 2019. The sector is dealing with the demand shocks, as sales volume is declining. Global automotive sales (LVs) dropped nearly 20% in February 2020^{iv}.

UNIDP's (2020) report on the manufacturing industry assessment revealed that during the pandemic period (Covid-19), the automotive industry experienced the supply and demand shocks following declines in sales (used as well as new vehicles) and production. And on the manufacturing side (auto part) this has posed the trickle-down effect.

The study on the policies and trends in automotive sector of the emerging economies such as China, Brazil, Mexico, India and Russia by Traub-Merz (2017) concluded that government intervention through fiscal policy frameworks such as tax duties, custom regulations and subsidies can alter the price mechanism of domestic production. The export production can be enhanced through inflow of foreign direct investment by removing the entry barriers. Therefore the policy options such as tax exemptions and subsidies can be applied.

Critical Analysis

The automotive industry of Pakistan experienced boom and fall in the preceding years. In some of the years (the 70s and 2000s) the industry experienced robust growth due to the lower tariff rate; increased per capita income and business friendly policies. While in other years (2008-09) economic recession coupled with high interest rates and depreciated exchange rate halted the growth of the industry.

Over the years, the automotive industry is relying on the imports of auto parts and vehicles. Due to the high protection provided through taxes, the industry is experiencing little or no competition with few companies enjoying the oligopolistic and monopolistic market structure. 3200 manufacturing plants are working in-country¹⁵. The policies set out in previous years did not have any considerable impact on the performance of the industry. These policies are unsuccessful in indigenizing the local industry and adopting the advance technological capabilities. Many other factors such as inconsistent policy framework, price discrimination, lack of subsidies and loan schemes made the industry more uncompetitive.

Several policy measures (tariff reductions, corporate tax exemption, export-oriented policies, subsidies) introduced in countries such as Thailand, India, China, South Korea increased their industrial competitiveness and production base. Therefore, to attain the economic efficiency in the industry Pakistan could learn from these countries in establishing the policy framework.

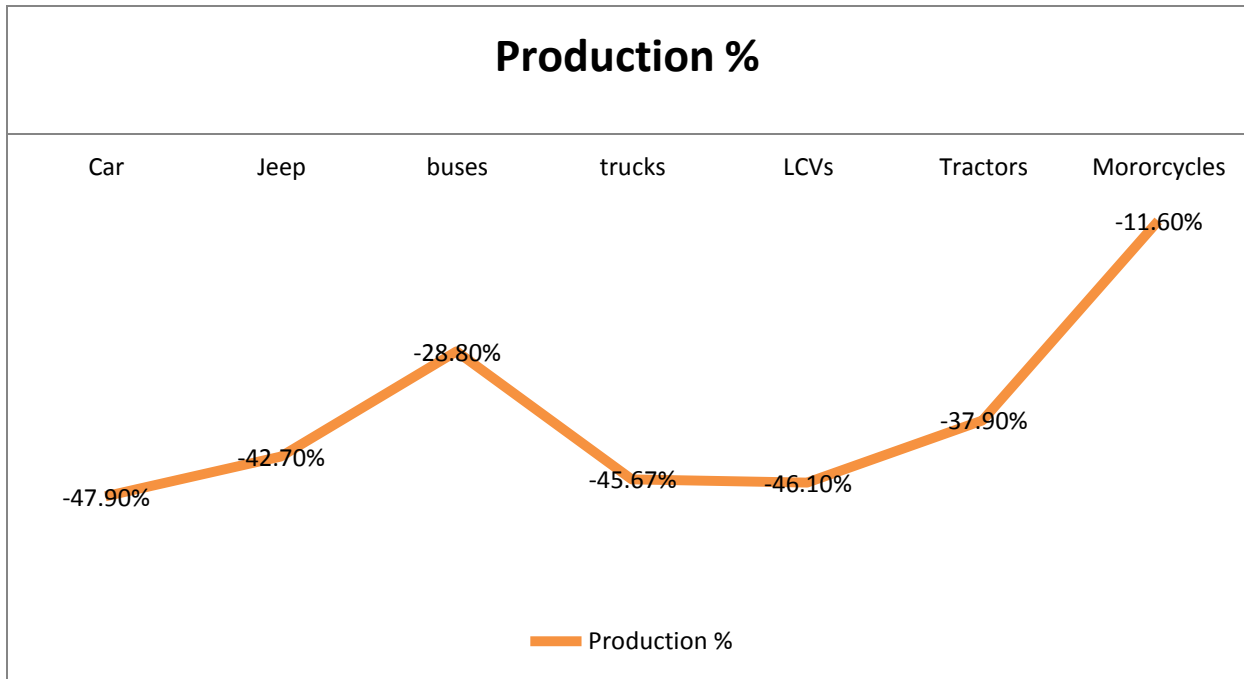
¹⁵ <https://www.pakistangulfeconomist.com/2019/01/14/overview-of-auto-sector-of-pakistan/>

2.4 Pandemic Impact on the Performance of Auto Industry

The production process takes place in two phases one is producing parts and second producing vehicles through assembling by using those parts. In the Pakistan the manufacturing companies are engaged (Haque, Rashid et al. 2021) in car assembling process by relying on parts imports. This resulted in the higher prices of output. Thus the locally manufactured cars are expensive as compared to the imported ones following 40-50% of parts are imported.

During the fiscal year 2020, the automotive sector experienced a fall of 35.6% following a 7.56% decline in the rupee. In April 2020, the manufacturers reported zero car sales. Supply chain disruption is another contributing factor to the declined sales. The production of auto plants such as Honda, Toyota, Yamaha and Indus Motors halted.¹⁶ Many macro-economic factors such as interest rate, inflation and exchange rate affected the growth of the auto industry during the pandemic period.

¹⁶ <https://auto.hindustantimes.com/auto/news/how-crisis-struck-pakistani-auto-industry-faces-massive-threat-in-covid-19-times-41589005528837.html>



Source: Pakistan and Gulf Economist¹⁷

Fig2.1: Automobile Production Post Pandemic (Pakistan), 2021

¹⁷ (<https://www.pakistangulfeconomist.com/2021/01/25/pakistans-automobile-sector-review/>)

2.5 Concluding Review

In the view of the literature studies this study concludes that the automotive industry of Pakistan depicts sluggish performance. The parts manufacturing lacks potential growth due to the dependence on low or intermediate technology inputs. Firms are globally uncompetitive in terms of research and development. Although, the auto industry had undergone several joint ventures and still it is deficient in evolving as self-resilient. Several economic woes such as unstable policy framework, high protection rate and currency fluctuation decline the efficiency of the industry following an uncompetitive environment. On another side, lack of technological strategies and absence of research and development facilities are other factors that are threatening the progress of the industry. In this connection the study aims to investigate the performance of the automotive industry of Pakistan in relation to the influence of the fiscal policy variable i.e. taxes.

2.6 Theoretical Framework

2.6.1 Neo-classical Theory

The neo-classical economic theory argues that offering tax concessions to one particular group and isolating another group of investors violates one of the principal tenets of good tax system, that of horizontal equity. This inequality leads to the distortion of price signals experienced by investors (Daniel, T. and Faustin, G. 2019) which in turn leads to the inefficient allocation of capital. The special incentives provided are justified through market failures (decision of investing in certain sectors and locations), which further justify government intervention.

The consequences of market failure involve either too much or too little investment in certain sectors and locations. Often the most cited market failure outcome is the positive externalities

not internalized in the project's rate of return that are higher in certain sectors than in others. A firm's investment decisions are based on different factors such as government policy, future demand and competitors' behaviors.

Changes in the tax policy and its impact on the investment in the physical and human capital can be explained through literature (Daniel, T., & Faustin, G. 2019) that sheds light on the taxes and rates of capital investment. Lower tax rates on new investments faster growth in the short run, due to the investment boom in a response to lower tax rates (e.g. lower corporate income tax rates).

2.6.2 Taxes and the technical changes

How do the taxes affect the entrepreneurial activity that led to the creation of new ideas that raises productivity?

This can be explained through the literature (Daniel, T., & Faustin, G. 2019) that suggests that when the effective tax rates on the business income are lower than the tax on the salary (income) and wage; this will lead to the tax encouragement on being self-employed.

Taxes provide risk-sharing with the government, for the risk-averse entrepreneurs. If the financial markets are ineffective at risk sharing (for small firms), then the entrepreneurial activity can be the increasing function of the overall effective tax rates.

The VAT is the proportionate taxes on the net output. However, a firm with the negative VAT due to the unsuccessful project will experience the hard time receiving the implied tax rebates from the government. A higher VAT also discourages the risk-taking.

2.6.2 Tax Incentives Theory

Tax incentives are defined as the instruments that lessen the tax burden (Daniel, T., & Faustin, G. 2019) of any party in order to encourage the investment in particular sector or group. These include tax concessions on profits, tax holidays and reduced tariffs on raw material and components and increased tariffs to protect the domestic market.

Tax expenditures are defined as the revenue losses that government incurs by offering tax exemptions, tax credits, and tax deductions/allowances to any party. Further the budget deficit involves the (Daniel, T., & Faustin, G. 2019) negative savings and reduction in deficit will result in the high net national savings more than changes in the tax policies, which will encourage savings and then stimulate investment.

CHAPTER 3

The Automotive Industry of Pakistan

This chapter provides the brief overview of the manufacturing sector, the automotive industry structure in the Pakistan, auto parts manufacturing sector and auto industry profile.

3.1 Manufacturing Sector of Pakistan

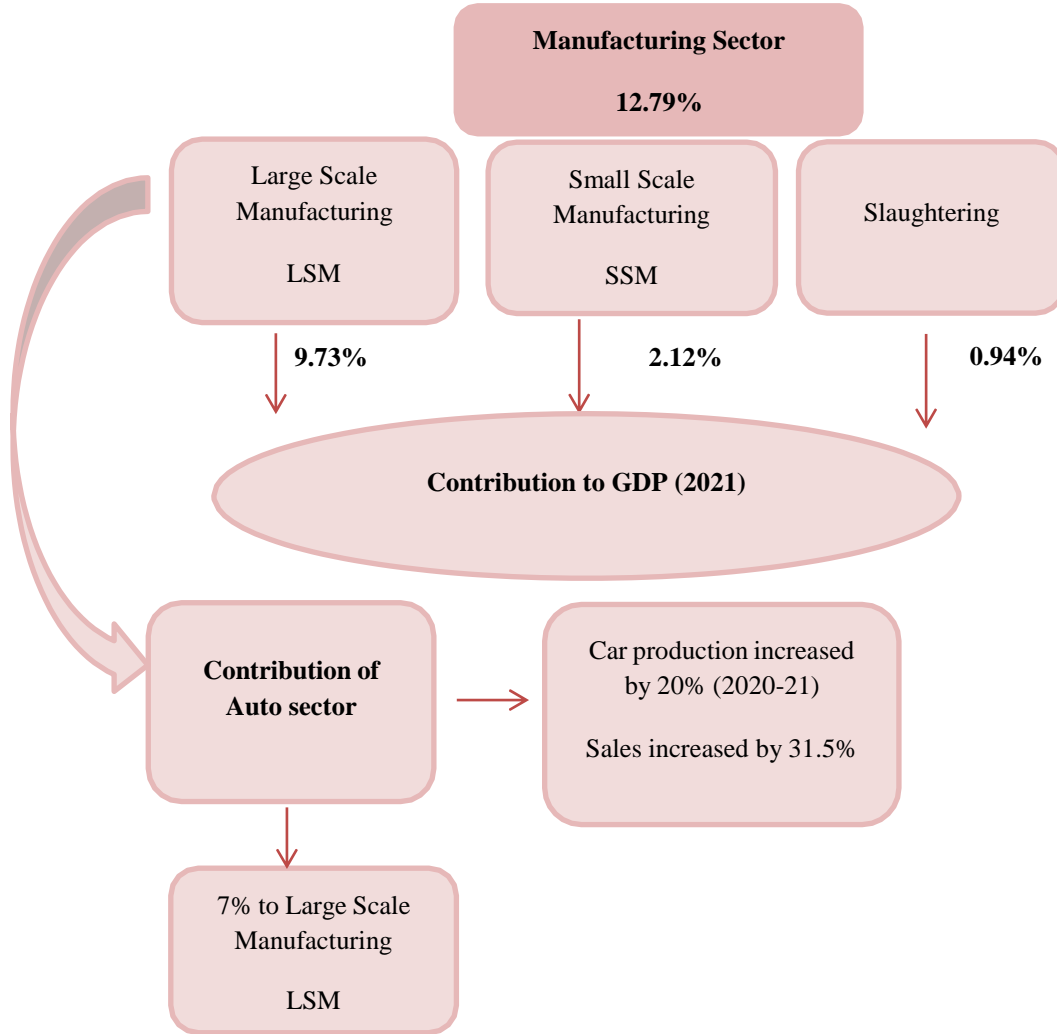


Fig3. 1: Manufacturing Sector of Pakistan

Figure 3.1: According to the Economic survey (2020-2021), manufacturing sector of Pakistan contributes 12.79% to the GDP. The auto sector contribution to the large scale manufacturing is 7%. During the FY 2019-2020, the sector experienced the contraction in growth (-37.66), and year FY 2020-21 marked an upward trend in growth i.e. 23.3%. However, the production in the year (FY) 2020-21 remained slow. The imposition of new taxes and duties such as value added taxes, federal excise duties and ACD in 2019 along with the Covid crisis impacted the production pattern. However, the low interest rate, new investment by existing and new players recovered the auto industry has positive impact on the growth.

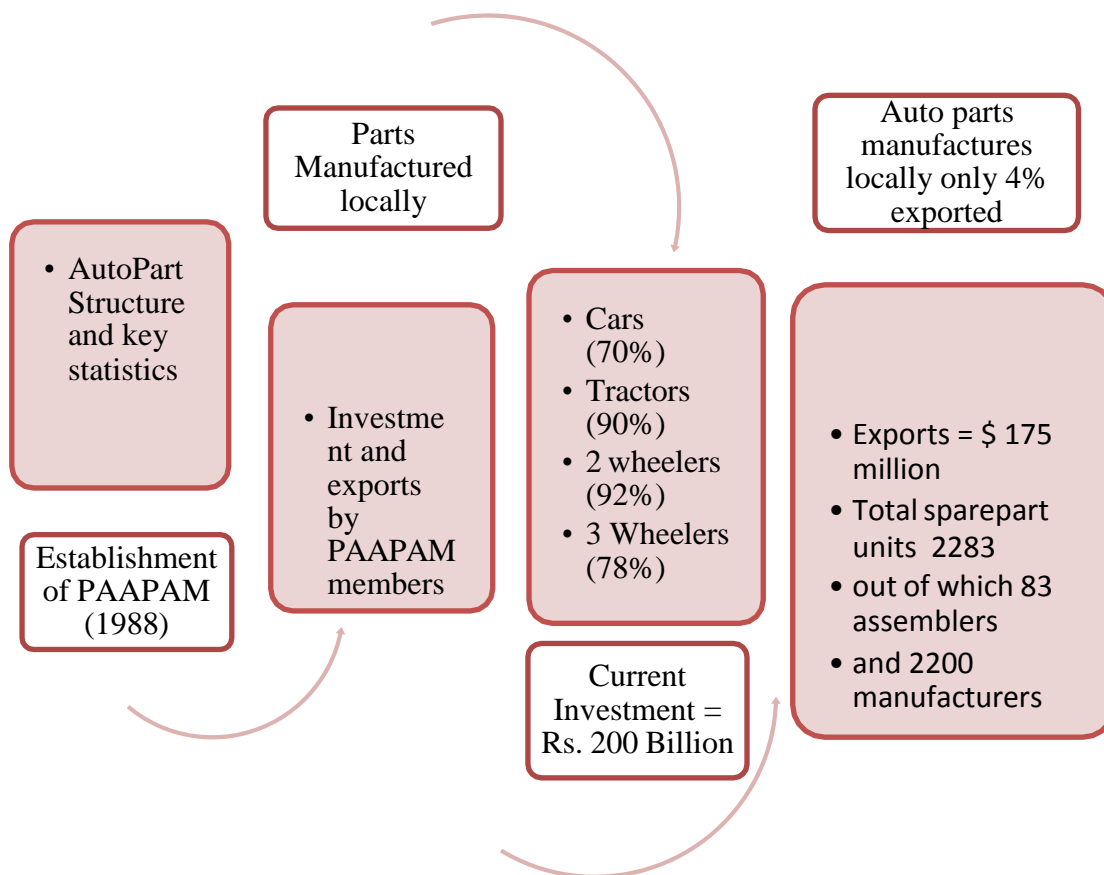


Fig3. 2: Auto Parts Manufacturing Structure (Pakistan), 2018¹⁸

¹⁸ Source: Sector Profile Automotive and Auto-parts manufacturing

Figure 3.2: Auto part industry of the country holds up the supply chain of the automotive assembly units. To assist this auto part industry, a Regulatory Board named Pakistan Association of Automotive Parts and Accessories Manufacturers was established in 1988. Auto part exports accounted for 4% while the exported markets are Asia and Europe. These auto part manufacturers are coupled with emerging technologies such as power hydraulic, iron casting, and spot welding¹⁹.

¹⁹ *Sector Profile Automotive and Auto-parts manufacturing*

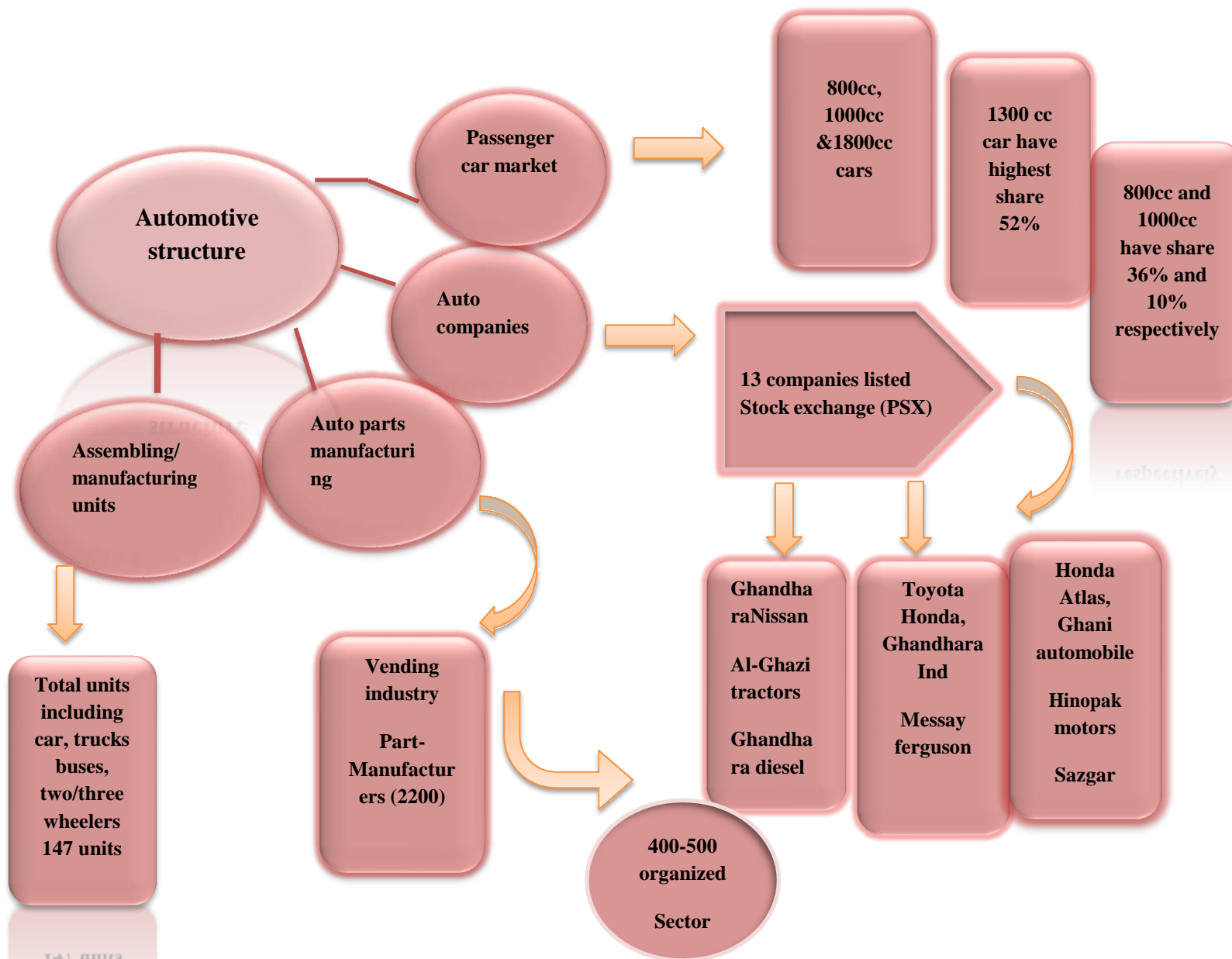


Fig3. 3: Automotive Industry Structure of Pakistan, 2018

Figure 3.3: According to the Board of Investment report, automotive manufacturing industry is the sixth largest subsector of the economy. The automobile production and consumption structure are mainly regulated by tax incentives such as tax reduction and tax exemption. The Automotive industry's share of the GDP is 2.8% and adds 30 Billion to the national exchequer through the taxes and duties. From 2014 to 18, the sales and production of the sector increased by 172.5% and 171% respectively. On another side, annual average foreign direct investment in auto sector was \$50 million from 2008 to 2018²⁰.

²⁰ <https://invest.gov.pk/automobiles>

3.3 Pakistan Automobile Industry Profile

Table 3.1: Automobile Industry Profile (Pakistan)

Second largest tax payer	Auto industry of Pakistan
Contribution to GDP	2.8% (*) 3.0% (**)
Automobile industry provides employment to Population	3.5 Million
Contribution to national exchequer (taxes and duties)	PKR 30 billion(*) PKR 50 billion (**)
Sector's investment	PKR 92 billion (**)
Contribution to govt. revenue	7-8 billion annually (**)
Key Market Players (Registered companies)	13 registered in PSX (*) Key Players: Atlas Honda, Indus Motors and Pak Suzuki
New entrants	Master Motors, Hyundai Nishat, FJW automobiles, Proton, Regal Motors. (***)
Average capacity of utilization of automobile industry	45%-55% (**)
Auto industry policies	<ul style="list-style-type: none"> ○ Automotive Development Policy (2007-2012) ○ Automotive Development Policy (2016-21) ○ Electric Vehicle Policy (2021-2025) (***) ○ SROs (678 (1)/2019, 655 (1)/2006, 656(1)/2021, 845 (2021) (***) ○
Incentives given in Policies	<ul style="list-style-type: none"> ○ Reduction in GST, sales tax, toll tax and power tariffs for under EV policy (***) ○ Duty free import of plant & machinery (for setting up assembly or manufacturing unit) under AIDP (2016-2021). (*) ○ Import of 100 vehicles at 50% of prevailing duty (for test marketing) under AIDP (2016-2021). (*)

Source: (*) <https://invest.gov.pk/automobiles>, (**) http://pbit.gop.pk/system/files/Auto%20Sector_1.pdf, (***)<https://www.thecorrespondent.pk/2020/12/26/jostling-for-pole-position-five-new-entrants-in-pakistans-crowded-auto-industry/>, (****)<https://invest.gov.pk/sites/default/files/2020-07/EV%2023HCV%20130620%20.pdf>, (*****)<https://www.pama.org.pk/customs-sros/>

3.4 Conclusion

The local automobile industry falls under large scale manufacturing. The industry contributes 7% to the LSM. In the Quantum Index Manufacturing (QIM) the industry constitutes the weight of 4.6% in 2019.²¹ The market structure of the industry is comprised of automobile companies; manufacturing and assembling units; parts manufacturing and passenger car market. The sector is divided into large scale and small scale components. Large scale components include OEMs (Original equipment manufacturing), whereas auto part manufacturers are considered in the small scale component or informal sector. The auto industry-related associations include PAMA (Pakistan Automotive Manufacturing Association), PAAPAM (Pakistan Association of Automotive Parts and Accessories Manufacturers) and Association of Pakistan Motorcycle Assemblers (APMA). The demand for the auto industry is correlated with many macroeconomic factors such as expected inflation, exchange rate, inflation etc. These multiple macroeconomic shocks along with pandemic affected the performance of the industry in preceding years (2019, 2020). However, the industry managed to recover in 2021 with a positive growth rate of 23.3%. In the previous year different policy measures were introduced to boost the demand and supply of the industry.

²¹ https://www.pacra.com/sector_research/Auto%20sector%202020_1588841074.pdf

CHAPTER 4

Regulatory Framework

4.1 Regulatory Framework of Auto Industry of Pakistan

This chapter presents the policy framework adopted by the government of Pakistan. The recent policies Automotive Development Policy (2016-21) and Electric Vehicle Policy (2021-2025) are expected to boost automotive sector.

4.1.1 Automotive Development Policy (2016-21) Review

According to the Automotive Development Policy (2016-2021) new investment is encouraged and it is divided into two categories. Category A is known as Greenfield investment while Category B is Brown-field investment. Category A involves the investment of new automotive facilities that are not being assembled or manufactured before. While category B involves the restoring of existing manufacturing and assembling units.

A few key elements of ADP (2016-2021) are: to raise the share in GDP from 2.3% to 3.8%, to increase the production of vehicles by 2021, to raise the share of manufacturing sector from 22% to 30%, and to raise the employment from 2.4 million to 4 million.

The five years Automotive Development Policy (2016-2021) had certain essential features such as duty-free imports (parts and machinery), and reduced custom duties on non-localized auto parts (reduced from 32.5 % to 10 %). Duty imposed on the new investors to import auto parts at 25% in comparison with the current 50%. Further, for existing investors duties imposed on import of localized parts are decided to bring down to 45% see for instance (Mustafa, Begum et al. 2018) during 2014-18 , the overall production and sales in automobile industry

increased(Sector Profile Automotive Industry) , followed by 171 % and 172 % recorded growth rate respectively while at the same time auto financing doubled from 20 billion to 40 billion between 2014-2018.

According to the report by Automotive and auto Parts Manufacturing (PAAPAM) almost 70% of cars, 90% tractors, 92% 2 wheelers and 78% 3 wheelers parts are reported to be manufactured locally. Current investment and exports in automotive sector are RS 200 Billion and \$ 157 million respectively.

Further under this policy framework incentives provided for the green field investment include installation of assembly and manufacturing facility, for making vehicles that are not produced/ manufactured in Pakistan includes for setting up the plant one-time duty free imports for plants/ machinery will be applied, 50% of prevailing duty applied for the 100 vehicles imported in the form of CBU, for the cars and LCVs, 10 reduced import duty is applied on the non -localized car parts whereas 25% reduced duty is applied on the localized parts for five years.

The incentives for the brownfield investment such as reviving the existing assembly/ manufacturing units include 10% reduced duties on the non-localized car parts and 25% on localized car parts applicable for three years (cars and LCVs)²².

A study by Li, Jing et al. (2019) suggested that government taxation policies should amplify their tax incentives, which often revolve around the purchase and production such as mainly concentrated on production side. Hence policies don't play the effective role regarding the corporate income tax, VAT, import taxes, custom duties, and consumption tax. Tax incentives

²² <https://www.globaltradealert.org/intervention/14027/import-tariff/pakistan-incentives-and-import-tariff-amendments-under-automotive-development-polic>

should be implemented for both consumers and producers as US having this double reduction tax policy to encourage consumption and production.

The Automotive Industry Development Policy (AIDP 2007-2012) policy response was not encouraging as it was formulated to enhance the competitiveness of the industry (Qadir, 2016) and to increase the sectorial share by 5.6 % of the GDP by 2012. But the targeted level was not achieved and the shortfall had grown further. Mustafa, Begum et al. (2018) access the aspects of the current Automobile Development Policy (2016-2021) in comparison with the previous policy (2008) in Pakistan and concluded that in a response to the implementation of this five years development policy, sales and net profit of the all automotive companies increased during 2017. Further sales of major players in auto industry continue to rise from 2012 to 2017 even after the policy change.

4.1.2 Electric Vehicle Policy (2021-25) Review

The policy is designed to provide incentives to all the players in automobile industry including existing companies and new entrants.

The key features of (EV) policy are to encourage industrial growth using hybrid, EV and efficient technologies, introduce environmentally friendly activities such as green technologies, enhance new investment and generate employment opportunities. Adapting fuel-efficient technologies to reduce dependence on the fuel oil and shifting towards EVs will reduce the external deficit²³.

Moreover there are some challenges because the road infrastructure in some areas of country is not suitable for EVs as well the cost is much high which may not attract the customers. Further

²³ <http://www.engineeringpakistan.com/wp-content/uploads/2020/08/EV-New-Tech-Policy-060420.pdf>

battery infrastructure (charging), equipment safety, standardization and lack of funding to support import substitution are the key challenges.

Tariff plans of the EV policy are there as a 1% customs duty is imposed on the EVs related parts. 15% customs duties are levied on the non-localized non-EVs parts. 46% of customs duties are proposed on the localized parts of normal vehicles. 5% sales tax is fixed at sales²⁴.

To promote new technology and energy efficient vehicles for the year 2021-2025, different measures are proposed in Policy framework, which includes reduction in taxes such as GST, road tax, income tax, and power tax.

²⁴ <http://www.engineeringpakistan.com/wp-content/uploads/2020/08/EV-New-Tech-Policy-060420.pdf>

Table no 4. 1: EV Policy Overview

Measures	Description
GST	8% reduction in GST for EVs, hybrid light and heavy vehicles
Sales tax	Exemption for CKD imports
Annual tax	Exempted for EVs
Toll tax	50% exemption for EVs
Power tariff	Incentivized for EVs
Permit costs	Exemption for EVs and hybrid cars
Lease	Reduced interest rate for EVs part manufacturing, Infrastructure development
Insurance	Concession for hybrid and EVs
Income tax	Five year exemption for EVs related manufacturing, infrastructure development and hybrid related manufacturing
Registration fee	Exemption for EVs
Input incentives	Five years exemption from all taxes and duties for EVs and hybrid

Source: EV policy (2021-2025)²⁵

²⁵ <http://www.engineeringpakistan.com/wp-content/uploads/2020/08/EV-New-Tech-Policy-060420.pdf>

4.1.3 Tariff Framework

The automotive sector often experiences inconsistent policy frameworks as there's a tradeoff between the policies and industrial performance. Often policy structure is designed in such a way that it offers incentives to some particularly interested group and policy objectives remain unachieved due to the inefficiency in resource allocation. Government uses several tariff and non-tariff tools to protect the industry against foreign competition and to transform the industry into competitive sector. High custom duties and tariff rates continued (Aqil et al, 2005) the reason that the sector is unable to bear open competition; however the tariff barriers were rationalized during 2001-2005 following WTO regulations.

The tariff regime applied to the domestic sector experienced discrepancies in the past years in terms of cascading tariffs, exemptions, concessions and additional tax duties Bari, Afraz et al. (2016).

In 2006 July, New tariff-based system was introduced (Aqil et al, 2005) replacing the prior deletion program for automotive industry. The objectives behind the establishment of this new tariff-based system were providing (Ahmed and Batool, 2015) job facilities; attract foreign investment, protect the OEM and vendor industry, to gain economies of scale, to transfer the new technology and to enhance value addition. However, this tariff system emphasized the domestic manufacturing sector to improve the quality standards to catch up with foreign manufacturers. Under the deletion program (Nag, 2017), the domestic manufacturers were allowed to assemble Japanese cars locally with the aim to attain a deletion level. However, the deletion program is not fully utilized (Mustafa, Begum et al. 2018), this program had some critics (Ahmed and Batool, 2015) due to the reason that industry could not manage to attain indigenization level (low production) despite high protection.

Table no 4. 2: Tariff Based Structure of Automotive Industry

Structure of New Tariff Based System (TBS)
Assemblers are allowed to import in Completely Knocked Down (CKD) form which possesses the suitable assembling facilities and is registered with sales excise department.
Lower tariff 0-10% on parts/ components and raw material
High custom duties imposed on Completely Knocked Down CKD (components/parts)
High duties levied on Completely Built Ups (CBUs) (based on engine capacity)
Non-indigenized parts allowed at CKD custom duty rate , High tariff levied on parts/ components based on localization

Source: An overview of trends in the automotive sector and policy frameworks

Table 4.2: During 2007-08 government approved the five years tariff plan in budget. The tariff plan included the import duties on automotive industry, CBU"s and CKD. There were 418 tariff lines allotted for parts and components and total of 480 tariff lines were created for the auto sector. Under this TBS, auto industry was protected through tariff and non-tariff measures i.e. high duties on output and low tariff duties on inputs/ raw material. Moreover, government also introduced SROs which provided partial exemptions (54%) to the raw material, part components and assemblers. These concessions were confined to the particular group such as commercial importers. The resulted in the situation as identical products had different import duties. Further, the addition of SROs complicated the TBS (Bari, Afraz et al. 2016) as change in the effective protection rate is difficult to monitor. Special exemptions provided to the OEM reduced their incentives to lower the tariffs on inputs thus making the small/ informal sector vulnerable by

raising the prices. This resulted, in the absence of competition and innovation and that encourage smuggling by traders and small sector that is limited to importing under preferential rates.

Table4. 3: Tariff amendments under Auto Development Policy (2016-2021)

Import Tariff structure								
Passenger and motor vehicles	Import duty on sub parts	Import duty on CKD (non-localized)	Import duty on CKD (localized)	Import duty on CBUs (for the year 2017-18 & 2018-19)				
Duty applicable	+ 5% to 10%	- 32.5% to 30%	- 50% to 45%	Vehicles 800 cc	801 to 1000cc	1001 to 1500 cc	1501 to 1800cc	
				- 50% to 40%	- 55% to 45%	-60% to 50%	- 75% to 65%	
Motor cycles, Rickshaws & Three wheelers								
Import duty on sub parts		Import duty on CKD (non-localized)		Localized CKD				
+ 5% to 10%		Reduced to 15% from 15-20%		Reduced from 47.5% - 50% to 45%				
Heavy commercial vehicles, Trailers, Prime movers & Buses								
Import duty on CKDs (Prime movers) non localized		Import duty on localized CKDs (Prime movers)		Import duty on CBUs below 280 HP (Prime movers)		Import duty on CBUs above 280 HP	Import duty on sub parts (Buses & HCV)	Import duty on CBUs (HCV)
Reduced to 5% from 10%		Rationalized to 5% from 0%		Reduced to 20 % from 30 %		15% - 20%	+ 5% to 10 %	- 30% to 20 %
Import Tariff structure								
Passenger and motor vehicles	Import duty on sub parts	Import duty on CKD (non-localized)	Import duty on CKD (localized)	Import duty on CBUs (for the year 2017-18 & 2018-19)				
Duty applicable	+ 5% to 10%	- 32.5% to 30%	- 50% to 45%	Vehicles 800 cc	801 to 1000cc	1001 to 1500 cc	1501 to 1800cc	
				- 50% to 40%	- 55% to 45%	-60% to 50%	- 75% to 65%	
Motor cycles, Rickshaws & Three wheelers								
Import duty on sub parts		Import duty on CKD (non-localized)		Localized CKD				
+ 5% to 10%		Reduced to 15% from 15-20%		Reduced from 47.5% - 50% to 45%				
Heavy commercial vehicles, Trailers, Prime movers & Buses								
Import duty on CKDs (Prime movers) non localized		Import duty on localized CKDs (Prime movers)		Import duty on CBUs below 280 HP (Prime movers)		Import duty on CBUs above 280 HP	Import duty on sub parts (Buses & HCV)	Import duty on CBUs (HCV)
Reduced to 5% from 10%		Rationalized to 5% from 0%		Reduced to 20 % from 30 %		15% - 20%	+ 5% to 10 %	- 30% to 20 %

Source: Incentives and import tariff amendments under automotive development policy

Table 4.3: The auto policy was formulated to increase its contribution (ABD & ISDB, 2020)²⁶ to the GDP from 2.3 % in 2016 to 3.8% in 2021 along with the increasing contribution to manufacturing sector from 20% to 30% (whereas the contribution to GDP is roughly 3% in 2021²⁷). Further the industrial policy has introduced some tariff rationalization measures. The local industry is not only protected through high tariff measures for auto parts to meet the international standard but there exist inconsistencies relating importers and different parts. This leads to the irregularities that distort the behavior of stakeholders and growth in the industry is halted²⁸.

The tariff structure of Pakistan is based on the principle (Nasir 2020) of „cascading“ i.e. the import duties on the raw material or factor inputs shall be charged at low rates, whereas the output is subjected to the higher rates. At the import stage, Custom duties, additional custom duties (ACD) and regulatory duties are charged to protect the local industry, revenue generation, and solve the balance of payment issues (import compression). In the auto sector, total duties levied on the vehicles imported in CBU form is around 250%. The protection provided to the industry through tariffs on import of new vehicles in CBU form (CD 50% to 100%, ACD 7%, FED 2.5% to 30%, WTH 6%, ST 17%, RD 15% to 90%)

Policy Critique

²⁶ <https://www.isdb.org/sites/default/files/media/documents/2021-09/2020%20IsDB%20Annual%20Report%20FINAL%20QRC%20%281%29.pdf>

²⁷ <https://visual.ly/community/Infographics/animals/automotive-industrys-contribution-pakistan-gdp>

²⁸ <https://www.adb.org/sites/default/files/publication/662091/pakistan-reviving-growth-competitiveness.pdf>

The policies introduced in the previous years did not get success in establishing the link between the domestic industry and the localization of components. The long-protected industry has not created any operational efficiency. The long-term policies introduced are unable to get desired results in terms of higher prices, poor quality standards and low technology. Further due to the lack of internal competition, the companies are limited to innovation. The local industry could not achieve comparative advantage due to the limited operational capacity and market size²⁹.

Table4. 4: Vehicle Ordinances Overview

Vehicle Ordinance	Description
Motor Vehicle Ordinance 1965 (Section 39)	Deals with the vehicle registration issues, license requirements and permit issues etc. ³⁰ (amended by provincial ordinance of 1978)
Motor Vehicle Rules (1969) section 35	Deals with the motor vehicle fitness, maintenance requirements, equipment and body construction.

Source: Policy Brief on Automobile Industry (CRCP)

Table4.4: Pakistan Standard and Quality Control Authority (PSQCA) was established in 2000. The objective was to develop the quality standards, metallurgy and testing infrastructure in Pakistan. However, the organization along with the Engineering Development Board (EDB) achieved no success in developing the quality standards in automobile industry.

Table4. 5: Safety Standards Offered in Automobile Companies of Pakistan

²⁹ <https://primeinstitute.org/wp-content/uploads/2021/08/Auto-Policy-Note-10.8.21.pdf>

³⁰ <http://punjablaws.gov.pk/laws/189.html>

Car Type	Antiknock Breaking System (ABS)	Airbag	Emission Standards
Mehran	✘	✘	✓
Caltus	✘	✘	✓
City	✓	✘	✓
XLI	✘	✘	✓
GLI	✓	✘	✓
Altis	✓	✓	✓
Swift	✓	✓	✓

Source: Policy Brief on Automobile Industry (CRCP)

Table 4.5: Antiknock breaking system (ABS) is absent in Suzuki models except for Swift, while Corolla XLI (Toyota) lacks an ABS system. Honda models possess this system. ABS feature is very important as all the passenger cars sold in EU required this feature since 2007. Airbag is absent in all models of Suzuki while GLI and XLI (Toyota) don't possess this feature. Now globally manufactured cars have at least two airbags. Local automobile industry makes significant profit each year. However, the consumers paying prices for the vehicle complain about the safety standards.³¹ Local manufacturers produce low quality vehicles (safety standards) due to the absence of monitoring by any regulatory body. To meet the international regulatory

³¹ <https://crp.org.pk/images/PDF/Publications/Automobile%20Safety%20in%20Pakistan.pdf>

regimes Pakistan has entered the international agreement for vehicle safety standards and has accepted the United Nations treaty i.e. Adoption of Harmonized Technical Nations Regulations for Vehicles.³²

³² <https://profit.pakistantoday.com.pk/2020/06/27/pakistan-finally-adopts-intl-safety-standards-for-vehicles/>

CHAPTER 5

Methodology and Model Specification

5.1 Methodology

The chapter discusses the methodology, data description, model specification, procedure and steps involved in analyzing the relationship between the fiscal policy variables (taxes) and the performance variables (production/sales) in the automobile industry of Pakistan. This study utilizes the mixed research methods (qualitative and quantitative).

5.2 Data Description

For the quantitative analysis, the research utilizes secondary data sources. Annual time series data on the variables taxes (custom duties, direct taxes, and effective tax rate), production/sales, inflation, and gross capital formation from Pakistan over the year 2000-2019 are chosen for the econometric analysis. Data sources include World Development Indicators (WDI), Federal Board of Revenue (FBR) website, and Companies Balance Sheets, Economic Survey of Pakistan. For econometric analysis, the research utilizes the E-views 10.0 software.

In developing the companies' profile, the research employs the variables such as net revenue, gross profit margins, total assets and cost of production.

For the qualitative analysis, semi-structured open-ended interviews are considered.

5.3 Quantitative Analysis

In this section quantitative analysis is done to answer research question. The overall analysis is performed based on the secondary data and policy reviews. Therefore, following steps are adopted to provide detailed analysis of auto industry of Pakistan.

Step 1: Growth trends, tax and tariff reviews, SROs, imports, exports trade profile and policy responses are studied based on the availability of the data.

Step 2- Latest auto sector policies are reviewed: Auto industry Development Policy (2016-2021) and EV Policy (2020-2025).

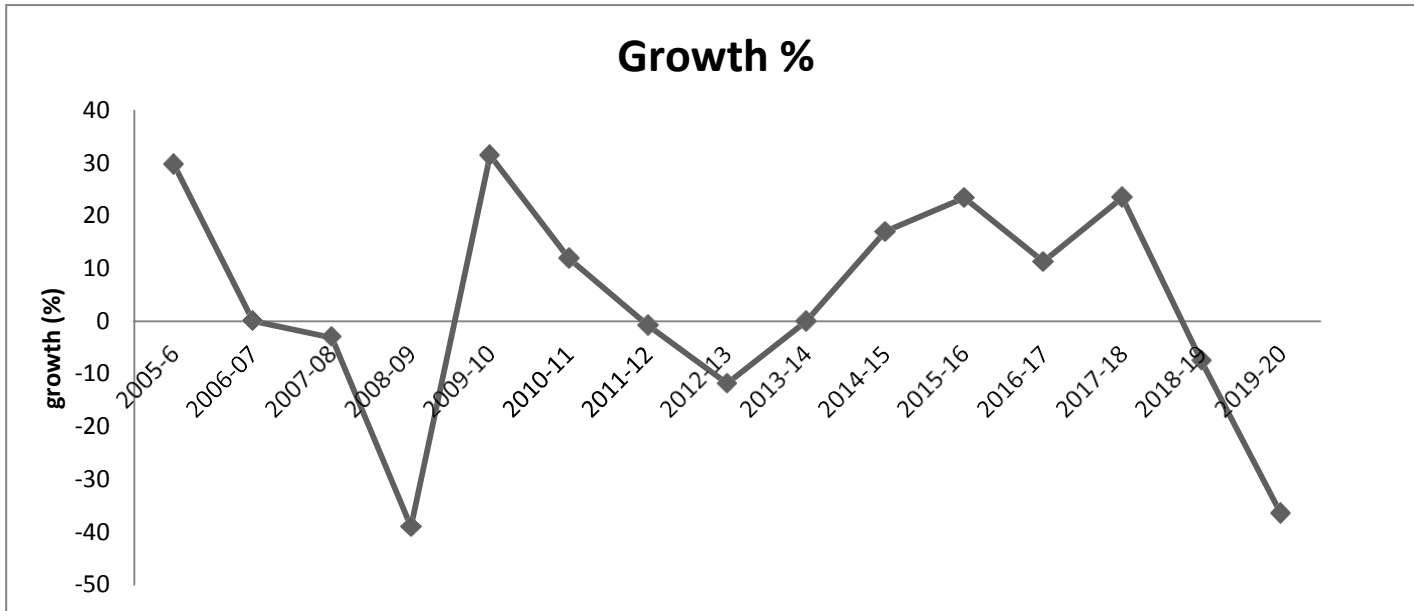
Step 3- Financial statements of the key performers of Pakistan auto industry (Honda, Suzuki Motors and Indus Motors) are analyzed and Auto industry companies' profiles are developed.

Table5. 1: Variables and Sources

Variables	Source	Units
Dependent Variables		
Production	Pakistan Automotive Manufacturing Association	Numbers
Sales	Pakistan Automotive Manufacturing Association	Numbers
Independent Variables (Tax Components)		
Custom Duties	Federal Board of Revenue	Millions
Direct Taxes	Federal Board of Revenue	Millions
Sales Tax	Federal Board of Revenue	Millions
Instrumental Variables		
Inflation rate	World Development Indicators	GDP (%)
Gross fixed capital formation	World Development Indicators	Millions
Profile Variables		
Net Revenue	Financial Statements	Millions
Gross Profit	Financial Statements	Millions
Total Assets	Financial Statements	Millions
Operating costs	Financial Statements	Millions

5.3.1 Growth Analysis

Fig 5.1 depicts the growth of automotive industry from the period 2005-2020. The trends in the sector show a combination of positive and negative growth rates and the less optimistic performance over the years. The extraneous factors defining this substandard performance include policy rate hikes, heavy tax, and tariff duties and rupee depreciation. During all these years the highest growth marked was 31.5% in 2009-10. The industry observed the double-digit growth in different periods such as 2005-06, 2009-10, 2010-11, 2014-15, 2015-16, 2016-17, 2017-18 while the rest of the years marked the negative growth. Some of the sub items show a positive growth rates in a response to the reduced tax rates and clear policy implications. While the other sub items of the industry such as locally produced cars experienced declined growth due to the policy shifts in favor of imported cars which grabbed the large market share. Moreover, the negative growth of these sub sectors mainly trucks are associated with the imposition of heavy tax duties. While the fiscal year 2020, followed by the continuous distress in automotive industry, the sector experienced massive decline with the negative growth of 36.5%, as the factors such as depreciated currency, economic uncertainty, increase in additional custom duties & FED, and policy rate hike impact the performance of the industry.



Source: Economic Survey of Pakistan

Fig5. 1: Growth Analysis of Auto Industry

5.3.2 Performance of Pakistan’s automotive industry into global context

Table5. 2: Global Automotive Production VS Domestic Production (% Share)

Year	Vehicle Production (Global in Mill)	Vehicle Production (Pakistan)	Pak Share of Production (%)
2005	66719519	156222	0.23
2006	69222975	157500	0.22
2007	73266061	169681	0.23
2008	70729696	130857	0.18
2009	61762324	109433	0.17
2010	77583519	152970	0.19
2011	77880920	162194	0.2
2012	84236171	159599	0.19
2013	87595998	146130	1.66
2014	89776465	142145	0.16
2015	90780583	214650	0.23
2016	94976569	229686	0.24
2017	97302534	250800	0.26
2018	95634593	269700	0.28
2019	91786861	186751	0.2
2020	77621582	117375	0.51

Source: OICA (Percentage Share own calculation)

Table5.2: The global automotive industry is coined with global trends such as joint ventures, mergers, technology up-gradation and innovation. These factors have crucial impact on the development of the automotive sector of developing economies. The data above gathered from the International Organization of Motor Vehicle Manufacturers reveal that the country produced relatively low volume of vehicles. The share of the Pakistan automotive industry in the global production of automobiles is considerably small. This depicts that the domestic sector is globally uncompetitive. However, in the past several joint ventures undertook with multibillion auto firms of advanced economies to come into innovation and technology (Arslan et al. 2018).

5.3.3 Statutory Regulatory Orders (SROs) to the auto industry

The market structure of the automotive industry is also influenced by several government interventions (Ahmed & Batool 2015) for instance statutory regulatory orders (SROs) which aim to provide protection and exemption to the industry. SROs were introduced in 1988 by Engineering Department of Pakistan (Pasha& Ismail, 2012) to protect the evolving engineering sector against the foreign competition and to attain the indigenization level. The Ministry of Industry and Production (MOIP) initiated the industry-pecific and product-specific programs and later these were managed by Engineering Development Board (EDB) as the industrial market structure is quite sensitive to the regulations such as protections, exemptions, statutory orders (Ahmed and Batool, 2015). To enhance the development of the domestic automotive industry government issued SROs (Bari, Afraz et al (2016) for all the auto sector members, OEMs and vendor industry. In 2006 deletion program for automotive industry was replaced with new tariff based system (TBS) and under this system (Aqil, et al. 2005) new SROs were proposed to protect the OEM and vendor industry, gain the economies of scale and to introduce the new technology.

At present five dominant SROs cover the automotive sector, and are briefly summarized below in table 5.4

Table5. 3: Economic Impact of Dominant SROs in the Automotive Industry

SRO No.	Updated	Description	Economic Impact
SRO. 678 (1)/2004	02.08.2019	Specialized Vehicles: exemption from custom duty with 5% ad valorem and whole sales tax leviable on their supply and imports. Vehicles (Pajero, Land cruiser) imported by production & exploration companies are exempted from whole custom duty	The Tariff system becomes complex because it is difficult to observe changes in the protection rate. Specific group targeting can lead to rent-seeking.
SRO. 656(1)/2006	30.06.2021	OEMs: components (assembling, sub assembling, excluding consumables) partial exemption from custom duty. Some vehicles under special conditions such as three years or five years are admissible	SROs are Group specific only targeting few firms, therefore isolating the other firms such as informal sector. The identical products have a different tariff duty which creates uncertainty.
SRO. 693(1)/2006	25.08.2019	Auto parts and imports of motor vehicles: protecting the manufacturers through imposition of CD, ACD and RD on domestically produced parts. According to the this SRO,	Due to continuous imports, costs are increased which makes the final product expensive. In the form of regulatory duties ACD, government

			additional custom duties levied on the goods classified under tariff headings of the Custom Act 1969	can now earn more tax revenue.
SRO. 655 (1)/2006	30.06.2021		Auto OEMs: components, sub-components, assemblers, sub assemblers exempted from partial custom duties under the custom act 1969. However, the assemblies and sub-assemblies levied additional custom duties under SRO. 693 (I)/2006 are excluded to benefit from this exemption	Too much reliance on imports makes the local manufacturing industry uncompetitive as the technology transfer and growth are discouraged. Local indigenization is discouraged.
SRO. 845 (2021) (Amended SRO. 904(I)2021, Rescinded SRO. 572(I)/(2020)	09.07.2021		Electric vehicles, CBU (imports), CKD (imports cars, jeeps etc) are free from the additional custom duties.	It will encourage imports. While auto parts manufacturing and vendor sector will be negatively affected.

Source: EDB (Ministry of Finance, Economic Affairs, Statistics & Revenue)

Table 5.4: The SROs issued earlier SRO 655 (I)/2006, and 656 (I)/2006, had main objective to provide relief from custom duties, while the OEM sector was the main beneficiary (Pasha and Ismail, 2012) of the SRO 656 (I)/2006. While the other SROs .277 (I)/2010, 172 (I) /2013 deal with the custom exemptions (Ahmed and Batool, 2015) the disabled persons on the imports of cars and tax amnesty on duty-free or smuggled vehicles respectively.

The SRO.930 (1)/2013 and SRO 940(1)/2013 were issued, following amendments in the SRO (1)/2006 and 693(1)/2006. According to this (SRO 939 (1)/2013), no additional custom duties were imposed on the imports of the sub components and components of motorcycles for the manufacturers and new entrants in assembling and manufacturing the motor cycles for five years³³.

Under the SRO 577 (I)/2005 custom duties, sales tax and withholding tax was partially exempted on the import of old and used vehicle^v.

To facilitate the automotive industry in achieving localization government offered several incentives in the form of SROs. On one side SROs benefit the Automotive assembling units while the part manufacturers import the components at the concessionary rates. Therefore these import result in the value addition achieved by manufacturers when supplying the end product to the assemblers. Thus all the financial benefits are transferred to the assemblers achieved by SROs and thus resulting in no technology up-gradation and future growth. As when the components are imported at lower tariff than the CKD (completely Knocked Down) tariff rate, the incentives to develop locally are discouraged. The continuous import of the components at high costs makes the final product expensive by raising prices³⁴.

SROs are often issued to target some particular group, thereby excluding the other importers. This creates the uncertainty as same products have different import duties. The tariff system has become complicated due to the SROs, (Bari, Afraz et al. 2016) because it is difficult to track changes in effective protection rates. In addition, SROs lack transparency from the political economy side; they are assigned by the FBR rather than the Parliament, although this task was set to the Parliament. On another side specific exemption to particular firms such as original

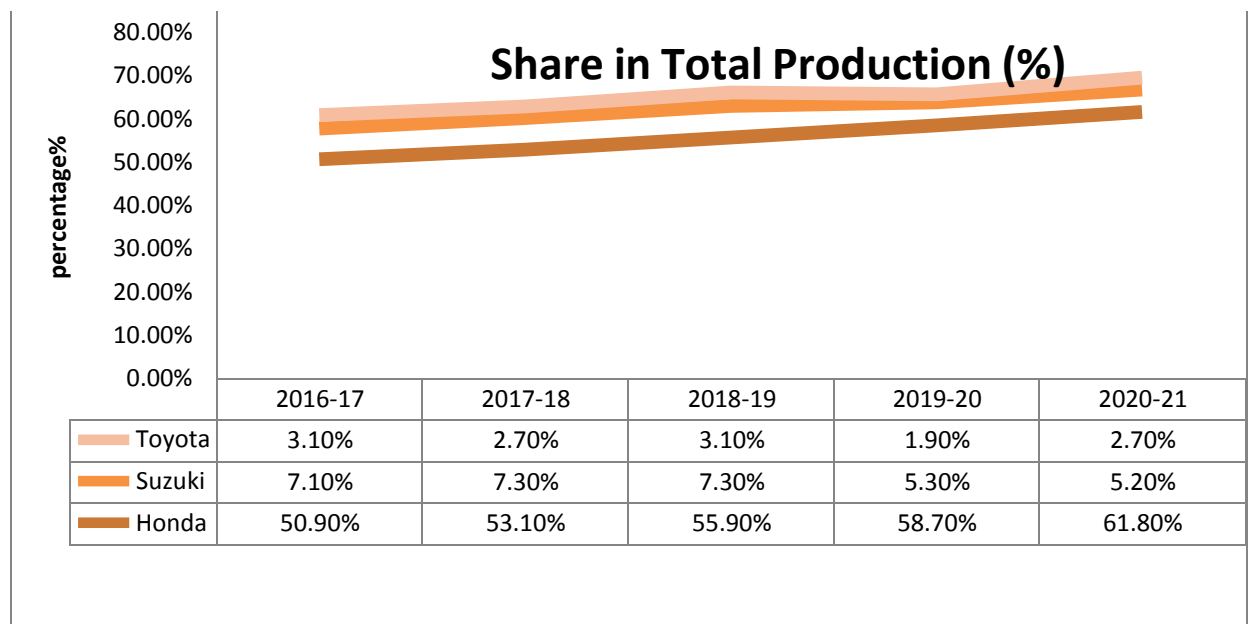
³³ <https://fp.brecorder.com/2013/10/201310231243711/>

³⁴ <https://www.dawn.com/news/1603375>

equipment manufacturers (OEM) increases the prices for small informal firms and consumers and thereby discouraging the competition and innovation and enhancing the smuggling.

5.3.4 Assessment of the Automotive Companies (Profile)

Auto industry of Pakistan consists of automobile companies that are engaged in assembling manufacturing vehicles whereas the auto part industry together with the auto manufacturing makes the major auto sector. On stock exchange, 12 automobile companies are listed. However, in the car industry four major players are dominating. All these Japanese companies are Pak Suzuki Motors, Indus Motors, Honda Atlas and Ghandara Nissan³⁵.



Source: PAMA, Authors Calculation

Fig5. 2: Share of Three Major Auto Players in Total Production

Fig 5.2: Honda has the major share in total production as compared to the Suzuki motors and Indus Motors. Honda specializes in the production of cars and motorcycles. The share of Suzuki motors in total production is higher than Indus Motors. It specializes in the car, jeeps, pickups and motorcycle manufacturing. Indus Motors has least share in total production. The company produces cars and pickups.

³⁵ <https://www.ravimagazine.com/analysis-of-pakistani-automobile-industry-a-report/>

5.3.4.1 Financial Analysis of the Auto Companies

Auto companies are analyzed based on the data from the annual reports (financial statements). Three companies (Atlas Honda, Indus Motors and Pak Suzuki) are selected and the performance of each company is independently evaluated. The financial stability of the company can be measured by various financial indicators such as profit margins; revenue, market share, sales cost etc. However, in this study financial performance measures include total assets, revenue, operating costs and profit.

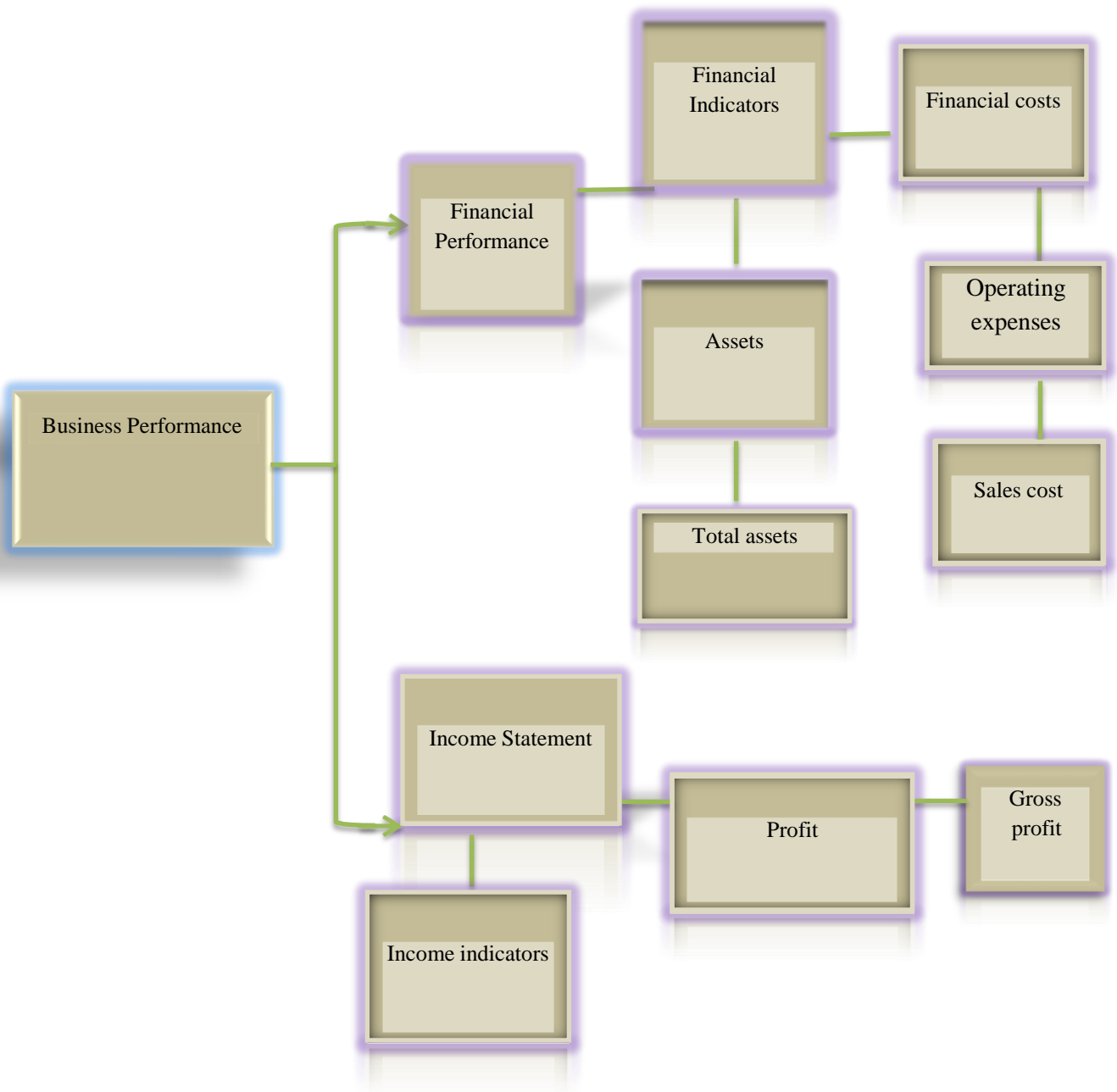


Fig5. 3: Financial Performance Indicators Chart

5.3.4.1.2 Financial Analysis of the Honda

Financial analysis is important to analyze as it presents the past performance, current situation and future forecasts of the company.

The most important findings of the company are depicted in the table below. The total assets of the company grew over the time from 2005 to 2018 except 2009, while the trend in increase in total assets is slow in each year, only the years 2017 and 2018 marked the substantial highest increase, following the year later 2019 and 2020, shows sharp decline in total assets. The total assets include current assets and non-current assets.

Revenue analysis of the prior year (2005-2016) experienced the fluctuations in trend. The next period from 2017 to 2019 the revenue experienced an increase. In 2020, the unfavorable economic situation, decline production in and sales resulted in the decreased revenue.

Table5. 4: Financial Highlights of the Honda for the Period 2005-2020

Year	Gross Profit	Total assets	Revenue	Sales cost	Finance cost	Operating expenses
2005	13,44,171	5885046	14120	12,776,676	68,050	96,734
2006	1,629,717	7444722	17420	15,790,546	151,611	75,762
2007	1,563,773	7936815	16608	15,044,640	269,337	60,772
2008	1,556,541	8420622	20855	19,298,994	252,091	68,878
2009	965,655	7380653	13747	12,782,165	251,777	13,849
2010	1,998,930	8522276	25555	23,555,842	112,613	92,600
2011	2,440,421	9621230	22026	30,080,978	93,457	109,597
2012	2,775,964	10960417	38012	35,235,893	11,717	117,162
2013	3,679,193	12014438	42325	38,646,049	9,726	190,453
2014	4,224,784	14365190	39153	40,253,929	8,036	223,989
2015	4,673,606	15781673	37764	41,098,571	8,190	451,897
2016	6,046,780	20368962	40086	34,038,741	6,991	485,775
2017	9,121,692	25642750	62803	53,681,061	23,443	537,523
2018	10,449,095	31827339	91523	81,073,777	14,476	1,244,569
2019	7,304,074	31954916	95128	87,824,215	11,189	1,281,007
2020	4,091,222	31059504	55046	50,955,042	727,444	1,048,538

Source: Honda Annual Report

Table 5.4: The items of the income statement include sales cost, finance cost and gross profit. The trend in gross profit analysis depicts the gradual increase in profits over the years from 2005 to 2016 except 2009. While the years 2017-18 marked the substantial rise in gross profits as compared to the prior years. The next two years 2019-20 experienced a fall in gross profit due to the unfavorable economic situation in 2020 and the rise in input costs.

The sales cost analysis shows fluctuations in the period 2005-2009, while there has been continuous rise in the sales cost during the year 2010-2015. Again, after the fall in 2016, it shows the considerable increase till 2019, while the year 2020 experienced sharp decline.

The data in finance cost analysis shows the fluctuations in period 2005-2011, while the year 2012-2019 marked the continuous decline in costs. In 2020, the company experienced the substantial increase in finance cost.

The operating expenses of the company were low during the period 2005-2009, whereas the coming year from 2010-2019, operating expenses increased at a considerable rate, and the year 2020 is marked by gradual decline in expenses.

5.3.4.1.3 Financial Analysis of the Indus Motors for the Period 2005-2020

The net revenue results of the Indus motors state that over the years the revenue of the Company increased which indicates the positive development of the company. While the revenue of the previous year dropped because of the poor performance of the company due to the global pandemic.

Total assets demonstrate fluctuating trend from 2005 to 2013, while these continue to grow from 2014 to 2018. The year 2019 experienced the decline in assets. While in the last year (2020), the value increased. Throughout our analyzed period their value increased and decreased.

Table5. 5: Financial Highlights of the Indus Motors (000) for the Period 2005-2020

Year	Gross Profit	Total. Assets	Revenue	Sales Cost	Finance cost	Operating expenses
2005	2,625	13	27.6	24,975,614	94	186,614
2006	4,147	15.8	35.2	31,088,906	12	321,746
2007	--	15.7	39.1	--	--	--
2008	3,848	13.7	41.4	37,575,356	26	2,757,637
2009	2,324	20.7	37.9	35,540,418	27	1,501,952
2010	4856	19.2	42.6	41,639	21	66
2011	4089	23.3	52.7	50,849	18	107
2012	6562	21.3	58.5	56,186	11	111
2013	5857	23.8	51	47,818	68	176
2014	5794	28.3	54.7	49,481	26	195,850
2015	14244	37.4	96.5	73,061	30	653,212
2016	17731	57.5	108.8	91027	77	144
2017	19493	63.8	112	92450	69	177
2018	23885	81.9	139.7	115831	80	194
2019	19191	64.7	158	138805	67	235
2020	7451	80.2	86.2	78716	86	197

Source: Annual Report Indus Motors

Table5.5: The gross profit margin analysis based on data provided by company's balance sheet shows the fluctuating character during 2005-14. The profit margins continue to increase for the three year (2015-2018), while the next two year 2019-2020 the profit depicted the considerable decline. The increase in profit margins demonstrates the company's positive performance. As all the costs (administrative, sales, depreciation and finance etc.) and interest expenses will be covered. This supports the findings of (Nasir 2020) which states that the positive profit margins influence the growth. The value of other operating expenses, sales cost and finance cost throughout the analyzed period increased and decreased with the passage of time.

5.3.4.1.4 Financial Analysis of the Pak Suzuki Motors for the Period 2005-2020

The financial analysis of the Pak Suzuki motors in table 5.9 indicates that revenue decreased in 2020 following the decline in sales volume. Further the asset structure of the company shows that total assets in the last year 2020 declined. According to the analysis, the value of total assets fluctuated over the entire period.

Income analysis of the Pak Suzuki motors in table 5.9 shows that Gross profit improved in absolute terms in the last year (2020) as compared to the prior year (2019). While the sales cost and financial cost grew substantially in the last year. On another side the operating expenses also increased. Based on the prior analysis it shows that overall the performance of the Honda Corporation in industry is rated well as compared to Indus and Suzuki motors.

Table5.6: Financial Highlights of Pak Suzuki Motors in Period 2005-2020

Year	G.P	Revenue	Total Assets	Finance Cost	Operating Expenses	Sales cost
2005	3572956	353745	18747841	--	--	--
2006	5693710	482030	23131398	282	116	42509374
2007	4760232	508446	21010117	143	921	46084400
2008	588,053	396697	16,956	53	74	39,079
2009	569,299	262340	17,656	13	39	25,665
2010	1,003,787	426,476	19,250	21	66	41,639
2011	1,869,410	527,185	23,360	18	107	50,849
2012	2,344,871	585,311	21,365	11	111	56,186
2013	3,242,513	510,613	23,811	58	176	47,818
2014	4,183,699	536,649	28,354	27	196	49,481
2015	11,487,448	845487	37,452.00	31	653	73,061
2016	7,348,577	801810	37,852	96	334	69,167
2017	9,652,573	107,095	50,910	68	414	92,159
2018	7,044,865	119,853	61,510	36	154	112,809
2019	1,693,139	116548	77,660	208	348	114,563,486
2020	3,102,573	767201	66,704	265	1500	734,186,191

Source: Suzuki Motors Annual Reports

Table 5.6: Companies' performance can be compared through the financial and income statements. The main determinants of the performance are profit and revenue. Increase in gross profit shows that company is able to cover all the costs such as administrative cost, financial costs and other expenses. And therefore the company will exhibit the positive performance (Mulyadi and Sihabudin 2020). Gross profits of the Honda increased over time however the years 2017-2018 marked the highest gross profit margins while the Indus motor balance statement analysis shows that company's profit margins increased during 2015-2018. On contrary the analysis of the Suzuki Motors depicts that the profit margins increased in 2020 as compared to the prior year. While the gross profit of the prior companies Honda and Indus Motors declined in last year 2020. Although the gross profit margins of the Honda remained higher as compared to these two corporations.

The second indicator of performance analysis is the revenue which shows that Honda and Indus Motors revenue increased over time while the last year 2020 shows the sharp decline due to the uncertain economic situation (Covid-19). Revenue of the Honda declined to Rs55 million from Rs95.1 million while the Indus Motors revenue declined to Rs86.2 billion from Rs158 billion. At the same time the revenue of the Pak Suzuki Motors show the upward trend during the last year following an increase from Rs11.6 million to Rs76.7 million.

5.3.4. Comparative Analysis of the Automotive Companies of Pakistan: Net Profit Margin (Performance Analysis)

Net Profit margin is defined as the percentage of the revenue left over when all the costs are paid (PBIT, 2018). Net profit margins (NPM) significantly impact the firm's value. Increasing profit margins have positive impact on the company's performance (Mulyadi et al. 2019). Net profit is the dominant indicator in analyzing company's financial performance. (Murphy, Investopedia, 2021).

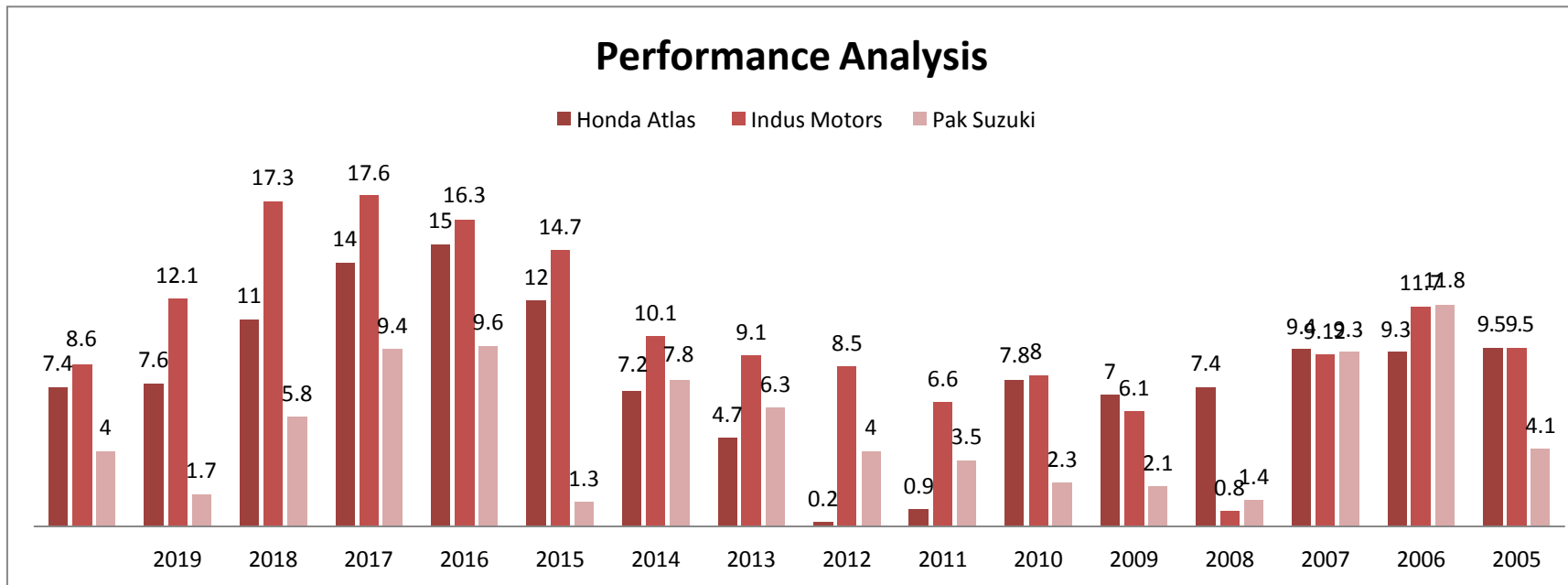
The table below (5.7) indicates the net profit margins of three automotive corporations Honda Atlas, Indus Motors and Pak Suzuki from the period 2005-2020. The Auto Company Atlas Honda observed higher net profit margins in 2016 i.e.15% as compared to the other years. The Indus Motors marked the highest net profit margin in 2017 i.e. 17.6% while in 2018 there was slight decrease in profit margins may be due to the operating cost of the company. The profit margins of the Pak Suzuki motors mark highest in 2016 and 17 while the other preceding years show the low profit margins may be due to the decrease in sales and hence decrease profits.

The comparative analysis of all the three companies based on the profit margin demonstrates that the Indus Motors observed the higher profit margins as compared to other two companies. Thus the overall performance of the Indus Motors on the basis of profit margin is significantly better as compared to both these companies. Thus our results are consistent with the findings of the (Mulyadi and Sihabudin 2020).

Table5. 7: Performance Indicator of Auto Companies Net Profit Margin

Performance of the three automotive companies: Performance Indicator Net			
Profit Margin (Net Profit Margins = Net Profit / Sales × 100)			
Year	Honda Atlas	Indus Motors	Pak Suzuki
2020	7.4	8.6	4
2019	7.6	12.1	1.7
2018	11	17.3	5.8
2017	14	17.6	9.4
2016	15	16.3	9.6
2015	12.	14.7	1.3
2014	7.2	10.1	7.8
2013	4.7	9.1	6.3
2012	0.2	8.5	4
2011	0.9	6.6	3.5
2010	7.8	8.0	2.3
2009	7.0	6.1	2.1
2008	7.4	0.8	1.4
2007	9.4	9.12	9.3
2006	9.3	11.7	11.8
2005	9.5	9.5	4.1

Source: Financial Statement Analysis of companies (Non-Financial) listed at Pakistan Stock Exchange



Source: Financial Statement Analysis of companies (Table 5.7)

Fig5. 4: Performance Analysis of the Automotive Companies of Pakistan

5.3.5 Market Share of Automobile Companies of Pakistan

The current market structure of the automobile industry is dominated by the three players; Indus Motors, Suzuki Motors and Honda. In the preceding years (2014-2017) the market share of Pak Suzuki motors (PBIT, 2018, (Talha 2021) was highest among the all other automobile companies. During all this period, Suzuki Motors maintained its place through market penetration and models diversity while the Atlas Honda and Toyota Motors was among the top selling cars and the demand for the Toyota Corolla increased in 2017.

Pakistan automotive industry comprises around 1700 auto parts (PBIT, 2018) manufacturers. These parts manufacturers are dominated by the local companies while original equipment manufacturers (OEMs) are Japanese led companies.

Table5. 8: Market Shares of Automobile Companies

Year	Atlas Honda	Indus Motors	Pak Suzuki
2014	18%	25%	58%
2015	13%	31%	55%
2016	12%	30%	59%
2017	18%	28%	54%

Source Punjab Board of investment and trade (2018)

5.3.6 Conclusion

From the analysis it is reflected that the profit margins of all the three major players decreases over the years. Though the profit margin of the Indus Motors increased in 2017, after the implementation of auto policy of 2016, whereas the profit margins of other two companies are showing decreasing trends. However, the profit margins of all three companies are high in 2016 as compared to the previous years. Further, the revenue of all these companies showed the continuous rise even after the auto policy of 2016. However, the year 2020 marked the declined revenue of all the three companies due to the prevailing pandemic situation.

5.3.7 Econometric analysis

In order to find the relation among the fiscal policy variable and automobile production volume and sales, statistical analysis is used. The study tests the hypothesis as H0: Changes in the tax structure have subsequent consequences on the automobile industry. H1: Changes in the tax structure have no subsequent consequences on the automobile industry. The study includes parameters tax variables such as, excise duty, custom duty and sales/production. Data sources for these parameters include Federal board of revenue and Pakistan Automotive Manufacturing Association (PAMA)

Table5. 9: Import Duty on Auto Parts in Pakistan

Custom Duty	35%
Sales Tax	17%
Additional Sales Tax	3%
Income tax	6%
Additional Custom Duty	11%

Source: Pakistan and Gulf Economist³⁶ (2020)

Table 5.9: The automobile assembling industry is supported by the auto part industry. 4% auto parts manufactured locally and are exported to Europe and Asia. 35% custom duty imposed on the import of auto part is enhancing the local production thereby reducing the imports. But auto parts are mostly imported and assembled in Pakistan³⁷. Taxes levied on the auto parts include custom duties, registration tax, federal excise tax, income tax and registration tax.

Car prices in Pakistan are very high following exorbitant taxes (i.e. around 40% retail value of new car price). In 2021, additional custom duties on import of auto parts are reduced from 7% to 2%. The decision was made to enhance the production of indigenous vehicles. On heavy commercial vehicles, the ACD are removed at the same rate³⁸.

³⁶ <https://www.pakistangulfeconomist.com/2020/10/12/pakistans-auto-parts-is-an-emerging-business-but-need-prompt-reforms-under-covid-lockdown/>

³⁷ <https://www.pakistangulfeconomist.com/2020/10/12/pakistans-auto-parts-is-an-emerging-business-but-need-prompt-reforms-under-covid-lockdown/>

³⁸ <https://pkrevenue.com/additional-customs-duty-reduced-to-2-on-auto-parts/>

Table5. 10: Duties on Import of Old/ Used Vehicles

Vehicles of Asian Makes	Duty & Taxes	Hybrid Electric Vehicles	Concession on duties and taxes
800cc	US\$4800	Engine Capacity	
801-1000cc	US\$6000	8000cc	50%
1001-1300cc	US\$13200	1801-2500cc	25%
1301-1500cc	US\$18590		
1501-1600cc	US\$22550		
1601-1800cc (excluding Jeeps)	US\$27940		

Source: Import of Vehicle (FBR 2020)

Table 5.10: the old vehicles can be imported under the specific rules and regulations. For the old cars not more than 3 years can be imported, while other vehicles not more than 5 years old can be imported gifted or brought to Pakistan. Further these taxes/duties are fixed for Asian make vehicles. However, for other vehicles (other than Asian make) duties and taxes are paid assessed by Pakistan customs³⁹.

³⁹ <https://pakistanembassy.se/vehicle-gift-undertaking/>

Table5. 11: Taxes on Local Manufactured Cars

Locally Manufactured Cars	Taxes
Cars/LCVs/SUVs from 1000cc to above 2000cc	FED reduced to 2.5%
Sales tax	Reduced to 12.5%
Agr.tractors (localized parts)	CD 15%
Motorcycle above 125cc, rickshaws, auto rickshaws exceeding 200cc	CD on localized parts 30% Non localized parts 15%

Source: Dawn News ⁴⁰(2021)

Table 5.11: to promote localization and protection to the consumers, tax concessions are provided. For the cars manufactured locally up to 1000cc, taxes including custom duties, additional sales tax, withholding tax, federal excise duties are removed. However, the sales tax is reduced to 12.5%. The local manufactured cars, (1000 to above 2000cc), federal excise duties are reduced by 2.5%

⁴⁰ <https://www.dawn.com/news/1665289/govt-offers-tax-relief-to-ensure-affordable-vehicles>

5.3.5.1 Model Specification

Specifications are essential when accessing the possible relation among the variables. To analyze the impact of taxation on the performance of automobile industry of Pakistan an empirical model is adopted. The study focus on the lead-lag relationship between the fiscal policy variable and auto industry performance, and these two variables interact through some other „control variable“. The theoretical literature is not very rich about the transmission channel between „taxes and industrial performance „but it is generally postulated that taxes affects the industrial performance through investments. The gross fixed capital formation (GFCF) is used as a proxy in investment channel. This study follows technique adopted by, (Tran, Subhani et al. 2020) and (Afzal, Malik et al. 2013) among others.

In the following equation Y is independent variable, f is the function and X is the vector of independent variable.

$$Y = f(X) \quad (5.1)$$

In order to determine the empirical relationship between the endogenous and exogenous variables the following equation is developed.

$$Y = f(CD, ETR, DT, X) \quad (5.2)$$

In the linear form

$$Y_t = \beta_0 + \beta_1 CD_t + \beta_2 ETR_t + \beta_3 DT_t + \beta_4 X_t + \mu_t \quad (5.3)$$

Where Y is Production and Sales of automobiles at time t, vector X shows the set of instrumental variables that includes gross fixed capital formation (GFCF) and inflation rate INF (Million) at

time t . While the exogenous variables include custom duties CD (Million), effective tax rate ETR (Million) and direct taxes DT (Million) at time t .

To convert the equation (5.2) into more appropriate form, each variable will be transformed into natural logarithmic form as it will reduce the effects of heteroscedasticity in time series data.

Therefore, the relationship between fiscal policy variable and automobile performance can be specified as

$$LP_t = \alpha_0 + \alpha_1 + \alpha_2 LCD_t + \alpha_3 LnETR_t + \alpha_4 LDT_t + \alpha_5 LnX_t + \mu_t \quad (5.4)$$

Where,

P is the production in units, expressed as natural logarithm

CD is custom duty, expressed as a natural logarithm

ETR is the effective tax rate, expressed as natural logarithm

DT is the direct tax, expressed as a natural logarithm

X is the control variables including GFCF (Gross Fixed Capital formation) and Inflation rate

β_0 is the slope or constant while β_1 to β_4 are the coefficients of the explanatory variables and μ_t is the error term. In the above equation we use the variable “tax collection” targeting the fiscal side, to find the dynamic impact on the performance of the automobile industry.

The ARDL representation of the equation can be specified as

$$\begin{aligned} \Delta \ln P_t = & \alpha_0 + \alpha_1 t + \sum_{i=1}^n \alpha_2 \Delta \ln P_{t-i} + \sum_{i=1}^n \alpha_3 \Delta \ln S_{t-i} + \sum_{i=1}^n \alpha_4 \Delta \ln CD_{t-i} + \\ & \sum_{i=1}^m \alpha_5 \Delta \ln ETR_{t-i} + \sum_{i=1}^m \alpha_6 \Delta \ln DT_{t-i} + \sum_{i=1}^m \alpha_7 \Delta \ln X_{t-i} + \delta_1 \ln P_{t-i} + \delta_2 \ln S_{t-i} + \\ & \delta_3 \ln CD_{t-i} + \delta_4 \ln ETR_{t-i} + \delta_5 \ln DT_{t-i} + \delta_6 \ln X_{t-i} + \mu_t \end{aligned} \quad (5.5)$$

Similarly,

$$\begin{aligned} \Delta \ln S_t = & \alpha_0 + \alpha_1 t + \sum_{i=1}^n \alpha_2 \Delta \ln S_{t-i} + \sum_{i=1}^n \alpha_3 \Delta \ln P_{t-i} + \sum_{i=1}^n \alpha_4 \Delta \ln CD_{t-i} + \\ & \sum_{i=1}^m \alpha_5 \Delta \ln ETR_{t-i} + \sum_{i=1}^m \alpha_6 \Delta \ln DT_{t-i} + \sum_{i=1}^m \alpha_7 \Delta \ln X_{t-i} + \delta_1 \ln S_{t-i} + \delta_2 \ln P_{t-i} + \\ & \delta_3 \ln CD_{t-i} + \delta_4 \ln ETR_{t-i} + \delta_5 \ln DT_{t-i} + \delta_6 \ln X_{t-i} + \mu_t \end{aligned} \quad (5.5^*)$$

Δ is difference operator

m is lag length

μ_t is assumed serially uncorrelated error term

In the both equations, that each variable is represented as dependent on the past values of itself, past values of other variables, past values of differenced of itself and the past values of differenced values of other values. Equation (1) and (2) can be formulated either as intercept or trend ARDL model or both.

In econometrics various con-integration techniques for instance Johansen (1988), Engle-Granger (1987), Peraran (2001) ARDL and Johansen-Juselius (1990) are used. In our study to investigate the long run and short run relation between taxation and performance of the industry, ARDL bound testing approach is utilized. In this model, the problem of endogeneity arises. According to the Pesaran and Shin (1999), modeling the ARDL with the appropriate lags will correct for both serial correlation and endogeneity problems. However, in this study, all the variables are assumed to be endogenous and the long run and short run parameters are estimated

simultaneously. Further, the literature (Menegaki, et al.2019) suggests that a bidirectional relationship could exist between the performance variables and fiscal variable. The reason for using the ARDL (Menegaki, et al.2019) approach is that it is most robust and performs better for small sample sizes (our study involves annual data and therefore restricted) than other co-integration techniques.

ARDL approach will be utilized with three steps. First stage involves the stationarity of the data through ADF method. The second stage involves estimating the model to analyze the long run and short run dynamics among the variables through ARDL. The third stage involves the diagnostic tests to confirm the model's goodness of fit.

5.3.5.2 Unit Root Test (ADF)

As time series data shows trending behavior, therefore it is an obligation in econometrics is to determine the most suitable form of data trends.

In many econometric time series data trending behaviors are observed and to remove these trends unit root tests are applied. Therefore, this study tests the variables for non-stationarity. The pre-tests (unit roots) are the necessary before estimating the equation as non-stationary variables may not be used for regression unless co-integrated Hystad et al (2015).The Augmented-Dickey Fuller (ADF) unit root is estimated for all the model variables.

The hypothesis for the ADF is given as

H0: Data is non-stationary i.e. there is unit root

H1: Data is stationary i.e. no unit root

The stationarity of the data can be interpreted through p-value. If the p value is greater than 5% then we will accept (Khan 2016) the null hypothesis i.e. presence of unit root. And if the estimated p value is less than 0.05 then we will accept the alternative hypothesis and data confirms the no unit root means that data is stationary.

5.3.5.3 Formal Procedure for the ADF

Equation 5.5 of the ADF test is wrongly written. Please check the subscripts

$$\Delta y_t = \gamma y_{t-1} + \sum_{i=1}^p \beta_i \Delta y_{t-i} + U_t \quad (5.5)$$

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \sum_{i=1}^p \beta_i \Delta y_{t-i} + U_t \quad (5.5^*)$$

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \alpha_2 t + \sum_{i=1}^p \beta_i \Delta y_{t-i} + U_t \quad (5.5^{**})$$

In ADF test when H_0 is rejected i.e. Y variable is non-stationary (Khan 2020) and ($H_0 : \beta = 0$) if β is significantly negative.

When the model shows non-stationary results (Khan 2020) at level then they are transformed into first difference and then the variables are tested at 1%, 5% and 10% significance to achieve the stationarity. One of the assumptions of the ARDL bound test is that (see Khan 2016, Lwin 2017) all the variables must be integrated at I(0) and I (1) not at I (2) as when the data follows the I (2) order ARDL bound model will yield spurious results.

5.3.5.4 Autoregressive Distributive Lag (ARDL) Approach to Co-integration

The next step after estimating the level of integration of all the variables is to analyze the short run and long run dynamic relationship among the variables. Therefore to analyze the presence of co-integration we apply the bound test ARDL approach. Thus the relationship among the taxes

and production/sales is evaluated through ARDL bound testing approach. The ARDL method was developed (SANN 2017) by Pesaran & Shin in 1998 and further modified in 2001 by Perasan et al. In analyzing co-integration and long run relations this method is preferred over traditional statistical methods due to its several advantages (Haq & Larsson 2016, Khan 2016, Afzal, Malik et al. 2013) such that ARDL may be applied for the combined I (0) and I (1) as well as for I (1) and I (0) while Engle and Johansen tests cannot be applied for the mix level co-integration. On other side, for the higher order integration I (2), this method (ARDL) will reveal spurious results. Many co-integration techniques such as Johansen and Engle tests are sensitive to the sample size while ARDL is the robust methodology for the small sample sizes (Haq & Larsson, 2016). Financial time series is often the combination of I (0) and I (1) therefore this method is quite advantageous. Moreover, the ARDL explains the short run impact without dropping the long-run information by using error correction method. Although long run and short run impact can be assessed simultaneously.

In the light of the proposed advantages, the ARDL method is utilized in our study to access the long run and short run impact of the macroeconomic variables on the performance of automobile industry.

The first step is to estimate the ARDL equation through OLS method. The second stage in the analysis involves testing the Null hypothesis of no co-integration against the alternative hypothesis i.e. existence of co-integration by using the F-statistics. In accessing the long run relationship, if the estimated F-statistics is higher than the upper bound critical value the null hypothesis H_0 will be rejected (Haq & Larsson 2016; Larsson and Haq 2016) and the existence of the long run relationship is evident regardless of order of the integration.

5.3.5.5 Error Correction Model

The next stage involves the Error Correction Model ECM which determines the causal relationship among the variables propounded by Engle and Granger (1987). When the co-integration is present, the ECM should be negative (Khan 2020) and significant as well as the value of ECM should be higher. Long run causality is determined through negative statistical ECM while short-run causality is explained by the significance of the lagged explanatory variables.

ECM for the model given as:

$$\begin{aligned} \Delta \ln P_t = & \beta_0 + \\ & \sum_{i=1}^q \beta_1 \Delta \ln P_{t-1} + \sum_{i=0}^p \beta_2 \ln \Delta ETR_{t-1} + \sum_{i=0}^p \beta_3 \ln \Delta DT_{t-1} + \\ & \sum_{i=0}^p \beta_4 \ln \Delta CD_{t-1} + \sum_{i=0}^p \beta_5 \ln \Delta X_{t-1} + \gamma ECM_{t-1} + \mu_t \end{aligned} \quad (5.8)$$

$$\begin{aligned} \Delta \ln S_t = & \beta_0 + \\ & \sum_{i=1}^q \beta_1 \Delta \ln S_{t-1} + \sum_{i=1}^q \beta_2 \Delta \ln CD_{t-1} + \sum_{i=0}^p \beta_3 \ln \Delta ETR_{t-1} + \sum_{i=0}^p \beta_4 \ln \Delta DT_{t-1} + \\ & \sum_{i=0}^p \beta_5 \ln \Delta X_{t-1} + \gamma ECM_{t-1} + \mu_t \end{aligned} \quad (5.9)$$

Δ Represents the difference operator, while γ should exhibit the negative significant sign (Alimi 2014) to confirm the long run relation. The null hypothesis for the variable is given as $H_0: \beta_1 = 0$ and the alternative is: $H_1: \beta_1 \neq 0$. F-statistics are used for testing the hypothesis.

5.3.5.6 Sensitivity Analysis

The diagnostics tests such as Ramsey test, ARCH, Jarque-Bera (JB) and LM test will be applied under the sensitivity analysis to ensure the validity of the data used in the model.

Chapter 6

Results and Discussions

6.1 Empirical Results

This section explains the descriptive results, ADF statistics, and long-run short-run ARDL bound statistics.

6.1.1 Descriptive Statistics

The table below (6.1) covers summary of descriptive statistics about the variables. Each variable has twenty total numbers of observations with annual time series data from 2000 to 2019. The average total production $\ln P$ is 10.55 with std. dev. is 0.80. The average and std. dev. of other variables such as sales ($\ln S$) is 11.2 and 0.8 respectively, while average and std. dev. of $\ln ETR$ is 2.7 and 0.1. the average of custom duties ($\ln CD$) is 10.2 and std. dev. is 0.8 respectively. Further the Jarque-Bera test used for normality states that the probability value of Jarque-Bera (JB) is greater than 0.05 which means that all the variables are normally distributed.

Table6. 1: Summary Descriptive Statistics

Descriptive Statistics	LNS	LNETR	LNCD	LNP	LNGFCF	LNDT	INF
Mean	11.2	-2.73	10.2	10.5	2.70	7.75	7.75
Median	11.2	-2.79	10.3	10.5	2.68	7.11	7.52
Maximum	12.3	-2.02	11.4	11.7	2.87	10.9	20.2
Minimum	9.6	-3.49	8.53	8.97	2.52	6.59	2.52
Std. Dev.	0.80	0.35	0.82	0.80	0.09	1.27	4.52
Skewness	-0.40	0.11	-0.67	-0.40	0.15	0.90	1.04
Kurtosis	2.40	2.87	2.75	2.40	2.18	2.76	3.91
Jarque-Bera	0.83	0.05	1.54	0.83	0.63	2.77	4.33
Probability	0.66	0.97	0.46	0.65	0.72	0.25	0.11
Observations	20	20	20	20	20	20	20

6.1.2 Stationary-test for variables (ADF)

Before carrying analysis, it is necessary to determine the relationship among the variables and investigation of the stationarity of the data. For stationarity, ADF test is applied. The results are summarized in Table 6.2. It can be noticed that natural log of some variables exhibits non-stationarity therefore to convert into I (1), first difference form may be used i.e. we evaluate the impact of independent variables on the performance variables, not level.

The ADF test is performed both in level I (0) and differenced forms I (1) with and without the trends i.e. with and without the intercept (γ). Some of the variables exhibit the stationarity at level (when adjust for trend) and some at first difference I (1) and no presence of higher-order integration I (2) is found in time series.

Taxes (custom duties, direct taxes, effective tax rates) are the main explanatory variables used in this study. Some variables are either I (0) or I (1) at the trend term for instance in case of custom duties, effective tax rate, total production and total sales „CD“ „ETR“, „P“ and „S“ are I (1) at no trend and I (0) at trend while the instrumental variables Inflation rate „INF“ and explanatory variable direct tax „DT“ is stationary at I (1). Therefore, the ARDL is most appropriate methodology for our model in contrast with other models for instance Johansen's test that is only appropriate for the variables (Haq & Larsson, 2016; SANN, 2017) exhibiting I (0) or I (1) not the mix integration.

Table6. 2: Augmented Dickey Fuller Test (ADF)

Variable	Level	1st Difference
ETR	-1.28	-4.37
DT	0.53	-3.17
CD	-2.32	-2.95
P	-1.45	-3.77
S	-1.45	-3.78
GFCF	-1.64	-3.50
INF	-2.04	-4.95

*Note: (1) Null Hypothesis H₀= Data is non-stationary i.e. existence of unit root. H₁ Data is stationary i.e. has no unit root. (2) Rejection of null hypothesis H₀ (i.e. p value less than 0.05) (3) Significance level 1%,

6.1.3 Short-Run and Long-Run test

To evaluate the long run and short run relation among the model variables ARDL is applied for the entire period from 2000-2019. The table 6.3 shows the statistics summary of ARDL bound test. The ARDL bound test estimation involves the two stages the first stage consists of testing the co-integration relationship among the variables. Further the long-run relation is established when the lagged values of the variables are statistically significant. This will lead us to the 2nd stage which consists of estimating the long run and short run co-efficient of ARDL model. If the F-statistics estimated value is less than then the lower bound critical value (Makuyana & Odhiambo 2017, Afzal, Malik et al. 2013) then the H₀ will be accepted i.e. no co-integration will be accepted i.e. not significant therefore establishing no long run relation. Further if the F-statistics value occurs between upper and lower bound critical values then the results will become inconclusive. The value of the F-statistics depends on the sample size, explanatory variables and constant/trend of ARDL.

Error correction model is used to capture the short-run dynamics of the variables in first differenced form. The table below (6.3) summarizes the long run bound test. The F-bound test statistics show that the performance variables share long run relationship. These results of long run relationship support the findings of other studies such as those (Haq & Larsoon, 2016, Afzal, Mailik et al, 2013, and Khan 2016).

6.1.3.1 Long-Run Empirical Results

The empirical results show that the relationship between the production and tax components is positive and is statistically significant. Here the tax revenue includes direct taxes, effective tax rates and custom duties. Whereas the long run tests estimates show s that an increase in direct tax revenue production will also raise while the impact of direct tax revenue on production is significant at 5%. Similarly, the impact of effective tax rates on production is positive. A 1% rise in tax revenue in effective tax rate will lead to an increase in production by 20%. The impact of custom duties CD revenue on the production of automobile sector is statistically significant at 5%. Gross fixed capital formation has a positive impact on the production. About a 1 % rise in GFCF will cause an increase of 15% in production. But it has statistical insignificant relationship with the production in automobile industry, whereas 1% increase in direct tax revenue will increase the production by 9%. The probability value of the inflation rate is 0.39 which is greater than 0.05 ($p > 0.05$). The estimated coefficient shows that the long run relation between inflation and production is statistically insignificant.

The results show that the coefficients $\ln ETR$, $\ln CD$, $\ln DT$ and $\ln GFCF$ are significant in explaining the relationship with sales and production in automobile sector of Pakistan whereas the inflation has long run negative relation with the sales. The inflation rate is found statistically insignificant.

Table6. 3: Long-Run Empirical Results

Variable: Production	Asymptotic Critical Values		Asymptotic Critical Values Var: Sales	
Critical values (Sig)	I (0)	I(1)	I (0)	I (1)
10%	2.08	3	2.08	3
5%	2.39	3.38	2.39	3.38
2.5%	2.7	3.73	2.7	3.73
1%	3.6	4.15	3.6	4.15

Dependent Variable	Function	F-Statistics	Co-integration status
Production	F(ETR,DT,CD,GFCF,INF)	12.67***	Co-integrated
Sales	F(ETR,DT,CD,GFCF,INF)	12.47***	Co-integrated

Table6. 4: Long-Run Empirical Results (Production)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_DT	0.09	0.01	8.46	0.00
LNETR	0.20	0.06	3.01	0.01
LNCD	0.92	0.02	39.9	0.00
LN_GFCF	0.15	0.07	2.11	0.06
INFLATION_RATE	-0.01	0.00	-0.88	0.39
C	0.39	0.23	1.67	0.12

Long-Run Empirical Results (Sales)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNETR	0.20	0.06	3.08	0.01
LNCD	0.93	0.02	39.9	0.00
LN_DT	0.09	0.01	8.37	0.00
LN_GFCF	0.15	0.07	2.11	0.06
INFLATION_RATE	-0.02	0.00	-0.86	0.40
C	1.07	0.23	4.57	0.00

6.1.4 Error-Correction Model for Sales and Production

Error correction model is applied in order to analyze the short-run impact of taxation on the performance of the automobile industry. The result estimated in the table below (6.5, 6.6) shows that the error correction coefficient and custom duty is negative and is statistically significant at level which confirms the existence of co integration among the variables. Therefore it assures that there exist the long run relationship among the variables such as production / sales, custom duties, effective tax rates and gross capital formation. In the short run changes in the custom duty revenue have negative impact on the production, while effective tax rate collection have positive impact on the production. Further the Durbin-Watson test confirms the non-existence of autocorrelation.

In the second stage ECM is applied to analyze the short run impact of taxation on the sales and production of automobile industry. The results demonstrate that ΔETR and ΔCD are statistically significant with the p-values 0.01 and 0.0 respectively. Whereas there exists the negative relation between ETR and sales while positive relation among the CD and sales. This meant that in the short run increase in ΔETR revenue will decrease the auto sales, while custom duties revenue (ΔCD) have significant positive impact on the sales of auto industry. This implies that in the short run effective tax rates have no immediate positive impact towards the sales while custom duties have no immediate positive impact towards the production of the automotive industry. The value of Durbin-Watson i.e. 2.06 shows that no correlation exists. The value of R-squared (0.98) demonstrates that 98% change in variation in dependent variable is due to independent variable.

Table6. 5: ECM Test (Production)

Variable	Coefficient	t-Statistic	Prob.
D(LNETR)	0.83	33.0	0.00
D(LNCD)	-0.11	-2.86	0.01
CointEq(-1)*	-1.71	-11.9	0.00
R-squared	0.98		
Durbin- Watson stat	2.06		

Table6. 6: ECM Test (Sales)

Variable	Coefficient	t-Statistic	Prob.
D(LNETR)	-0.11	-2.80	0.01
D(LNCD)	0.83	32.9	0.00
CointEq(-1)*	-1.72	-11.8	0.0
R-Squared	0.98		
D-Watson	2.0		

6.1.5 Diagnostic Test

The diagnostic tests were estimated to check the serial correlation, normality, model's stability and heteroskedasticity. The p-value of all the tests must be greater than 0.05%. The results displayed for the variables passed all the diagnostic test of normality serial correlation and heteroskedasticity.

The serial correlation is determined by LM test (SANN, 2017). H0 states that there is no serial correlation among the variables. The p-value of LM test for both estimated model is 0.1540 and 0.1323, greater than 0.05 therefore we will accept the H0 and confirms that data is white noise.

Ramsey proposed the RESET (Regression Specification Error Test) in 1969. The purpose of this test was to analyze whether the errors (Khan, 2016) in the model follow multivariate normal distribution. Since the p-values for both estimated model are 0.3620 and 0.3443 i.e. greater the 0.05 which states that model is well specified and free from omitted variables. Similarly, Jarque-Bera (JB) is used to detect normality. The results estimated shows that JB is greater than 0.05 which means data is normally distributed. The diagnostic test further confirms that no heteroskedicity is observed in the models i.e., 0.098, 0.09 > 0.05. The ARCH test concludes that the error terms are white noise i.e., doesn't follow the specific pattern.

Table 6. 7: Diagnostic Test

Test	Probability (Production)	Probability (Sales)
ARCH	0.74 (0.10)	0.78 (0.07)
White test	0.09 (7.8)	0.09
LM	0.15 (2.0)	0.13 (2.2)
Jarque Bera	0.79	0.79
Ramsey Reset	0.36(0.8)	0.34(0.9)

6.1.6 Discussion

The study purposes to analyze the impact of taxation on the performance of automobile industry of Pakistan while inflation rate and gross capital formation are used as the instrumental variables for the period 2000-2019. Autoregressive Distributed Lag model (ARDL) is applied for the long run analysis while Error Correction Model (ECM) is utilized for short run. And for the sensitivity analysis diagnostic test is applied which involves LM serial correlation test, Ramsey (RESET) test, Jarque-Bera (JB) and Arch and White test. Therefore, the results show that the model can explain the short run and long run impact of taxation on the performance of the automobile industry.

Pre-estimation tests such ADF is applied which demonstrates that all the variables are stationary at level I (0) and first difference I (1). Therefore it ensures that the time series data is stationary at mixed I(0) and I (1) and ARDL method is the most appropriate approach. While the negative sign of error correction term also confirms the short run relationship among the dependent and independent variables.

Further the empirical results suggest that the tax revenue impact on the performance of the automobile industry is significant. The coefficient on tax revenues with the positive sign indicates that the performance of the industry improves with the rise in revenues. The performance indicators used here are production and sales.

The impact of instrumental variables (INF), inflation on the performance of the auto industry is insignificant with the negative relationship among the inflation rate and the production and sales of automobile industry. The statistical analysis reveals that the p-value of inflation is greater than 0.05 both for the production and sales (i.e. 0.3 and 0.4 respectively) meant that inflation has no

significant impact towards the automobile production and sales. These results are consistent with the findings of the Larsson and Haq (2016); and Pehlivanoglu and Riyanti, (2018)

Gross fixed capital formation (GFCF) has a positive impact on the performance of the automotive industry. This result is supported by the findings of the (Larsson and Haq), as if country can save more will spend more on the investment and which will further increases the output. In this study the GFCF is a factor that positively adds to the performance of automobile industry.

6.2 Qualitative Analysis

This section narrates qualitative analysis, an attempt done to explore the various issues facing by the auto industry of Pakistan such as policy implications, duty and tax challenges, and administrative issues that impact the performance of automobile industry. This sector also covers policy recommendations based on the findings of the study which will support the auto industry in making sustainable and profitable.

The following sections explain the research process in detail including the research design and procedure of conducting surveys and interviews.

6.2.1 Research Strategy

Qualitative approach is best to use when a study is based on the perception of individual experiences (Stake, 2010) and expertise. Since the purpose of this section is to gain the experts' opinion on the fiscal policy implications and performance of the auto industry of Pakistan.

6.2.2 Research Design

The research design is explanatory in nature as it deals with the question „why“ and explains why the particular phenomena are occurring. Explorative research (Reiter, 2017) asks how well the hypothesis or theory explains and how meaningful a fruitful the explanation is.

6.2.3 Research Instrument

To achieve the qualitative objectives of the research, semi-structured open-ended interviews have been carried out with the respondents (i.e. Experts from FBR, Ministry of Industries and Production, PIDE).

6.2.4 Interviewing

Semi-structured interviews were carried out by the experts at different departments including the Federal Board of Revenue. The qualitative analysis was designed to get the useful information and to get the in-depth analysis of the automotive industrial structure and its link with the fiscal policy variables.

For the interviews with the taxation staff, questions focused on the benefits and ambiguities in the tax structure and its impact on the performance of the automobile industry of Pakistan.

6.2.5 Sample Selection & Pretesting

On the basis of the empirical work done on automobile taxation and performance, a questionnaire was developed to carry on some interviews. The questionnaire was tested through a pilot survey and then it was refined. The Key respondents were mainly targeted from FBR, Ministry of Industries, and Economists at PIDE. The interviews method was adopted followed by a good discussion. The respondents were having relevant experience on automobile taxation and related issues. Initially respondents were contacted by phone and email. On getting time from respondents, interviews were done by personal visits and one interview was done on Zoom. Survey results have shown important findings given in the following section.

Table6. 8: Qualitative Analysis

Theme	Subtheme	Description
Fiscal policy	Sunset clause	Tax incentives are provided for limited period
Automobile imports	Vehicle manufacturing and imports	Vehicles are not manufactured locally, high reliance is on imports
Complex tax structure	Protection mechanism	Vehicles are imported through gift schemes not proper mechanism is followed
Different factors impact the performance	Policy indicators	Policies are formulated under IMF, World Bank framework
Production side policies	Production/Consumption side policies	Exemptions/incentives are offered to the particular sector
Taxes are not key performance indicators of the automobile industry.	Fiscal Policy Variable	Number of different factors that impact the performance of the auto industry such currency fluctuation etc.
Suggestions to improve performance of industry	Competitive environment	To introduce the competitive environment upstream and downstream industry needs reforms

6.2.6 Discussion

Performance of auto industry under fiscal policy (i.e. tax regime)

When interviewees were asked about the performance of the industry under tax regime, they stated that tax incentives are provided for some limited period time (sunset clauses are provided). In the Auto industry higher tax incentives were not provided in previous years as it does not take part in the export sector as compared to the other industries for instance textile sector.

In addition to above, one interviewee said that;

Fiscal policy variables i.e. taxes are not the key performance indicator of the automobile industry. Tax proportion impact is low while other monetary variables i.e. exchange rate fluctuation, policy rate greatly impact the performance of the industry.

A high proportion of imports in the automobile industry

All the interviewees agreed that high proportion of imports in the automobile industry is because vehicles are not manufactured locally at a low rate and therefore, to meet the demand we need to import. Further the interviewees indicated that the local production lacks safety and quality standards.

Another interviewee stated that „cartelization“ is another serious issue in the auto industry. There are specific players in auto industry with no competitive environment.

The complicated tax structure of auto industry

The findings of the interview about the different tax structure indicated that under federal level one ordinance/act is followed whereas only services tax system is different.

Another interviewee further asserted that.

Most of the policies are formulated under the IMF and World Bank framework and therefore all the industries cannot enjoy the identical tax structure. In order to follow the IMF directions, tax credits are favored as the IMF is against the tax reduction/exemption policy. Therefore, in the light of these decisions sales tax exemptions are reduced to the greater extent.

In accordance with the above-mentioned statement, one interviewee stated that.

To support the particular industry, tax exemptions are provided to the special economic zones and technology zones.

Policies are concentrated on production side

On asking questions about production and consumption side challenges, an interviewee has view that;

In the history tax exemptions brought no fruitful results. While on the consumer side purchase decisions are not impacted much still the demand does not fall. Tax related policies are inefficient towards the demand side.

Further another interviewee had views that, policies are often designed to target one particular group thereby isolating the other groups.

Another interviewee asserted that;

Tariff custom duties are very high and no proper mechanism is followed i.e. unchecked protectionism provided. Further, vehicles are imported through gift scheme. Existing companies target protectionism to achieve specific target.

Different factors impact performance of the industry

It was revealed by all the interviewees that, not only one policy indicator impacts the performance of the industry there are number of other factors involved such as political economy of country, absence of competitive environment, not true implementation of policies due to the challenges while on production side, there exist no active participation of the firms in policy framework. Policies are often one sided due to the influence of the influential groups. While it was also suggested that government should not intervene through subsidies, let the market adjust itself. Moreover, the producers' focus is towards the profit motives.

Suggestion to improve performance of auto industry

The interviewees suggested that, to bring the competitive environment in the automotive industry, upstream industry (supply chain) and downstream industries can be managed through cost-effective mechanism for instance cost reduction is important for the downstream industry.

Analysis of the Statement

The research was an exploratory, descriptive, and contextual qualitative study. To achieve the objective of the study the researcher adopted the phenomenological approach. The study conducted the open ended, unstructured qualitative interviews with the experts from the Federal Board of Revenue and PIDE who were purposely selected as participants.

The findings and recommendations are based on the interviews of the experts, the research questions, objectives and themes emerging from the qualitative analysis.

The research questions to be answered were

Do changes in the tax structure have subsequent consequence on the automobile industry (evaluation of tax regimes in terms of being growth friendly).

The study achieved the following objectives

- Understanding of the Pakistan auto industry under the taxation regime” and the policy indicators impact on the performance of automobile industry.

6.2.7 Conclusion of Qualitative Analysis

Tax incentives are time bound for automobile industry. Tax proportion impact is low while other variables (exchange rate fluctuation, IMF policy impact, political economy of country, absence of competitive environment, non-implementation of policies) greatly impact the performance of the industry. On other side, there exists no active participation of the firms in policy framework. Government must involve firm”s representatives in policy making process.

It is recommended that the government should not intervene through subsidies; it should let the automobile market adjust itself. There must be some participation of firm”s representative in policy forums.

CHAPTER 7

Conclusion

7.1 Conclusion

In the view of analysis, the performance of the domestic automotive industry is coupled with low quality and performance, literature studies shed light on the historical background of the auto industry illustrates that the initial industrial state of the country was inert. Although government introduced several policy initiatives and the sector enjoyed the high protection rate in order to nurture the domestic infant industry. However the domestic industry still deficient in establishing a competitive product and adapting innovative strategies to catch up with the market leaders. Further the study depicts that the industry is still highly dependent on the imports due to the lack of the technological prowess and the share of the production to the global vehicle value chain is very low.

The analysis of the three automobile companies based on the profit margins and market share revealed that the Indus Motors shows the higher profit margins while the performance of the Pak Suzuki is at lower level. While analyzing the revenue ratios, it is concluded that the Honda and Indus motors revenue increased over time except in 2020 due to the pandemic while Pak Suzuki illustrates the positive trend in the revenue during the 2020. On other hand in the preceding years, the market share of the Pak Suzuki motors was remaining high as compared to the Indus Motors and Atlas Honda.

It is clear from the research that the macroeconomic variables are important factors in determining the performance of the industry. The world is transforming towards the higher technology penetration therefore the industrial structure needs constant aggrandizement. Product

development, technology infringement and well-structured policy frameworks are the some key ingredients to attain the global integration.

6.2 Policy Recommendation

In order to inspect the impact of (taxation) fiscal policy variable on the performance of domestic Automobile industry, an in-depth analysis is made which proclaimed that growth in the automotive industry is linked with the efficient business units for instance the industrial policies which are sector specific, creates inefficiencies, such that the high level of protection to the automotive industry and high-cost structure which disables the industry to achieve the high economies of scale. For instance, due to the higher input costs; local assemblers (OEMs) couldn't maintain the quality standards. While at the same time assemblers must rely on the imported inputs to manage the quality standards. And hence brings the poor competitiveness in the global markets.

- Therefore, the government could respond in the market through uniform policy structure for instance the tariff policy must not favor specific sectors, which is crucial in determining the competitiveness in the international markets.

Automobile industry is very sensitive to the business fluctuations. In the time of economic crisis, consumer confidence is declined thereby hitting the industries and markets followed by the decrease in sales and production of automobile industry.

- Therefore to pull the automotive industry from the crisis hit market and avoid the output contraction, industrial policies involves, stimulating the demand and innovation projects are crucial. Further the government can also respond to this crisis by providing incentives to relocate the resources within the country as well outside the country. Further, the

policy related to the knowledge spillover and labor skills up gradation are necessary. in addition to this government should set the local content requirement

Strong industrial base requires continuous reinforcement and establishment. In order to push the industry to the export market the stable policy structure such as tax regulations, export up gradation and technological penetration are the some indispensable elements. The technological prowess and transformation is the key determinants that shape the performance of the automotive industry. Government can provide a technological boost to this sector.

- To deal with the complex tax structure of the automotive industry with several exemptions and tax evasion, a flat tax system should be introduced for all the companies instead of preferential tax structure providing companies with the free economic and industrial zones. This will also induce the regional competition.

Pakistan economy consists of the large population and therefore has massive national market. The country possesses the high demand for automotive.

- The automotive market of Pakistan could be expanded through bilateral and free trade agreements (FTAs). Through central government planning and with firms' enrollment, industrial hubs and clusters must be developed, while the active involvement of employees, business associations, R&D centers and universities is necessary.

Small and medium sized firms are always less protected. In the automotive industry part suppliers take fewer incentives as compared to the original equipment manufacturers (OEMs).

- In order to benefit the part suppliers, global linkage programs (training, vendor linkage) financial support that includes export assistance can be planned. Further, the relevant authorities should revise their protectionist policies.

The market share of automobile companies is concentrated to only few firms. The companies enjoy the oligopolistic market structure. The domestic industry lacks the scale and productivity to export to the regional market.

- Therefore to influence the competition in the industry, policies related to ease of doing business must be encouraged through programs funded by tax revenues.

Performance of the automobile industry is highly dependent on other macroeconomic variables such as inflation and exchange rate beside taxes. Weak demand dynamics due to inflation resulted in the declined sales and production. High interest rate impacts the business and manufacturing sector with capital shortages in the market.

- Therefore, the findings of the study suggests that proportion of tax impact is low other macroeconomic variables must be regulated properly by relevant authorities so it may not effect critically against the performance of the auto industry.

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Appendices

Appendix A

Survey Questionnaire

Q:1 Tax credits and deductions influence the performance of the automotive industry?

Q:2 Do you think the previous year tax incentives bring more benefit to the productivity of the automotive industry?

Q:3 Do you agree with the statement „the tax system is complex as every province has different tax structure“ ?

Q:4 Why the tax structure is not identical in all the provinces?

Q:5 Do you agree with the statement i.e. the tax incentives are mainly concentrated on the production side? The double reduction policy is not encouraged to enhance the production and consumption?

Q:6 EV policy is inclined towards the production side only. Without hitting the consumer side

Q:7 the performance of the industry is only linked to the production side, Yes/No

Q:8 Do you think that the previous year’s policies had a significant impact on the competitiveness of the industry? Yes/No

Q:9 Despite of the high protection provided in terms of tariff incentives, indigenization level is not achieved? Yes/No

Q: 10 Policies lack transparency as they are formulated to benefit the particular sector? Do you agree? Yes/No

Q:11 Do you agree the SROs are inefficient in making the industry competitive? Yes/No How the discrepancies in SROs could be improved

Q:12 in order to catch-up with the international market, policy framework should by revised?

Q:13 The domestic auto companies has deficiencies in establishing competitive product Yes/No, how this could be improved.

Q:14 Industrial policies solely focus on the import substitution mechanism Yes/No why the export oriented policies are not focused.?

Q:15 Fiscal policy variables are the key determinants that shape the performance of the auto industry?

Q:16 What do you suggest the rationalization efforts the government could take in order to achieve the international competitiveness to become the part of the global automotive value chain.?

Q:17 the market share is limited to only few companies Yes/No How the investment could be encouraged?

Q:18 What suggestions do you have to improve performance of the auto industry?