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INTERNATIONAL TRADE CHARACTERISTICS OF THE TURKISH AUTOMOTIVE SECTOR

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ABSTRACT

The automotive sector is one of the most significant sectors in Turkey. This study reveals characteristics of international trade activities of the Turkish motor vehicle assembly and automotive parts supply industries. This study also establishes that the Turkish automotive sector is highly open and integrated with the global automotive sector, especially well with the European automotive value chain. This study suggests diversification of international trade markets of the Turkish automotive industry by accessing rising regions, namely Asia-Pacific and the MENA having displayed remarkable growth in the automotive sector over the past decade. This study also recommends getting more involved in the automotive parts supply section of the automotive industry that increasingly accounts for a larger section of the automotive industry.

Keywords: Motor Vehicle Assembly, Motor Vehicle Market, Automotive Import, Automotive Export, Turkey

JEL Codes: F14, L62, O52

Introduction

The automotive sector is of high significance for the Turkish economy. This study is to identify international trade characteristics of this significant sector, while examining trends in this sector over the last decade. Hence, this study aims to provide a better understanding of this significant sector reflecting transformations that the Turkish economy has gone through during the last decade. This study first introduces the Turkish automotive sector within its historical context with reference to distinct periods of the Turkish economy. Second, this study determines the recent cross-border automotive trade relations of Turkey with regions and how these relations have changed in relation to 2003.

In contrast to former studies (please see Ansal, 1990; Karabag, Tuncay-Celikel, & Berggren, 2011; Turker, 2012) on the Turkish automotive industry, this study examines both automotive parts and motor vehicle imports and exports characteristics of the Turkish automotive sector.

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This study also considers characteristics of the Turkish motor vehicle market that has not been widely analysed before. Therefore, this study can provide more accurate analyses and insights into the Turkish automotive sector.

Building upon its experience in motor vehicle assembly since 1960s, and having a large and competitive automotive parts supply base, the Turkish automotive industry has not only become a regional motor vehicle assembly hub but it has also developed substantial skills in design and innovation. Turkey constitutes more than 1% of the world automotive imports, exports, motor vehicle assembly and market. More than 70% of Turkey's motor vehicle assembly are exported. Imported motor vehicles constitute more than 70% of Turkey's motor vehicle sales. Motor vehicle assembly of Turkey is also larger than its sales by one third. This translates into that the Turkish automotive sector is highly open and integrated with the global automotive sector, especially well with the European automotive value chain as a motor vehicle assembly hub and market. Despite still having a lower motor vehicle ownership rate, Turkey also has a relatively large and growing motor vehicle market in its region and its motor vehicle market is far away from saturated, thereby creating opportunities for the Turkish automotive industry.

International automotive trade constitutes more than 10% of Turkey's total cross-border trade. Therefore, it is one of the most significant contributors to Turkey's international trade. First, being in the neighbourhood of Europe, receiving a large amount of automotive investment from Europe and having a Customs Union with the European Union (EU), Turkey carries out around 80% of its cross-border automotive trade with Europe. Therefore, intra-regional trade is highly prominent in the Turkish automotive sector. Turkey generally imports automotive parts from and exports motor vehicles to Europe in line with Turkey's regional motor vehicle assembly hub structure. Nevertheless, having a large internal motor vehicle market, Turkey has recently been importing motor vehicles as a larger share of its automotive imports from Europe. Second, the Middle East and North Africa (MENA) is the second largest destination of Turkey's automotive exports after Europe. Nonetheless, despite having wide cross-border trade relations with the MENA in other sectors, Turkey has not developed extensive cross-border trade relations with the MENA in the automotive sector. Third, Asia-Pacific is the second largest source of Turkey's automotive imports after Europe. The vast majority of these automotive imports are in the form of automotive parts. On the other hand, Asia-Pacific is the fourth largest destination of Turkey's automotive exports after Europe, the MENA and Americas, and most of these automotive exports are in the form of automotive parts. Nevertheless, Asia-Pacific is one of the largest growing motor vehicle markets in the world along with the MENA but Turkey has not extensively involved in these markets. Last, the Americas are a growing partner of the Turkish automotive sector, as well.

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Structure of the Turkish Automotive Sector

In Turkey,[1] almost all motor vehicle assemblers are joint ventures with European, Asian and American assemblers, and there are local motor vehicle assemblers, as well. Table 1 lists motor vehicle assembling enterprises operating in Turkey along with their major enterprise characteristics.[2] In Turkey, there are fourteen major motor vehicle assembling enterprises manufacturing passenger cars, commercial vehicles and farm tractors under licences of major international motor vehicle groups. The Turkish automotive industry, in particular, the automotive value chain is located in the western regions of Turkey in close geographic proximity to Europe.

Its establishment dating back to mid-1950s and mainly to late 1960s during the period of the import substituting industrialisation policy, the Turkish motor vehicle assembly industry firstly grew in 1980s due to then export oriented economic policies. The Turkish motor vehicle assembly industry was secondly expanded by international investment from Asian motor vehicle groups in mid-1990s owning to the Customs Union of Turkey with the EU in 1996. The Turkish motor vehicle assembly industry thirdly developed in 2000s due mainly to its increased competitiveness.

Table 1 also reports that average international ownership amongst motor vehicle assembling enterprises in Turkey weighted by motor vehicle assembly of corresponding enterprises was around 52.9% in 2015. Furthermore, Table 1 presents that around 1.4 million units of motor vehicles including farm tractors were assembled in Turkey that resulted in a capacity utilisation of about 78.5% in 2015.

Largest automotive parts suppliers in Turkey are also generally joint ventures with international automotive parts suppliers or fully international owned. Therefore, both assembly and supply sections of the Turkish automotive industry are highly international in terms of ownership. On the other hand, locally owned small enterprises constitute the vast majority of automotive parts suppliers in Turkey. As indicated earlier that the automotive industry including automotive parts supplying enterprises generally concentrate in the western regions of Turkey.[3]

[1]Please see Taymaz and Yilmaz (2008) for an overview of the Turkish economy.

[2]Please see Eraslan and Bulu (2007) for a review of each motor vehicle assembling enterprise operating in Turkey.

[3]Please see Cambazoglu and Simay Karaalp (2014), Berument, Denaux, and Emirmahmutoglu (2015) and Aydogan (2017) for an overview of inward international direct investment into Turkey. Please also see Onder and Karal (2013), Aybar (2016), and Cergibozan and Demir (2017) for an overview of outward international direct investment from Turkey.

Table 1: Motor Vehicle Assembling Enterprises in Turkey in 2016

Enterprise	Plant Location	Est. Date	Licence	International Ownership (%)	Capacity Thousand (2016)	Assembled Thousand (2015)	Share in Assembly (%)	Capacity Utilisation
Anadolu Isuzu	Kocaeli	1966	Isuzu	29.7	13.2	11.2	0.8	84.8
Ford Otosan	Eskisehir	1983	Ford	41	415	334.6	23.7	80.6
	Golcuk/Kocaeli	2001						
	Yenikoy/Kocaeli	2014						
Hattat Tarim	Tekirdag	2002	Valtra, Universal, Hattat	0	15	3.7	0.3	24.7
Honda Turkiye	Kocaeli	1997	Honda Motor Europe	100	50	12.7	0.9	25.4
Hyundai Assan	Kocaeli	1997	Hyundai Motor	70	245	226.5	16.1	92.4
Karsan	Bursa	1966	Hyundai Motor, Breda Menarini Bus	0	52.2	7.2	0.5	13.8
M.A.N. Turkiye	Ankara	1966	Man Truck & Bus AG	99.9	1.7	1.7	0.1	100
M.Benz Turk	Istanbul	1968	Mercedes Benz	85	21.5	23.9	1.7	111.2
	Aksaray	1985						
Otokar	Sakarya	1963	Land Rover, Fruehauf	0	10.3	4.6	0.3	44.7
Oyak Renault	Bursa	1971	Renault	51	360	339.2	24.1	94.2
Temsa Global	Adana	1987	Temsa	0	11.5	2.9	0.2	25.2
Tofas	Bursa	1971	Fiat	37.8	400	278.3	19.7	69.6
Toyota	Sakarya	1994	Toyota	100	150	115.9	8.2	77.3
Turk Traktor	Ankara	1954	CNHI	37.5	50	47.5	3.4	95
	Sakarya	2014						
Total				52.9	1 795.4	1 409.9	100	78.5

Notes: This list includes only motor vehicle assembling enterprises in Turkey those are members of the Automotive Manufacturers Association (OSD).

Nevertheless, enterprises listed here account for almost all motor vehicle including farm tractor assembly in Turkey.

Source: The OSD, accessed at http://www.osd.org.tr/homepage.

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The Turkish automotive or motor vehicle assembly industry established in mid-1950s and mainly late 1960s initially assembled farm tractors and commercial vehicles, and then passenger cars under licence with joint ventures providing technical assistance and support to satisfy internal motor vehicle demand. This initiative was the result of import substituting industrialisation policy period of 1960 to 1980 in Turkey. This economic approach was a reflection of the economic policy adopted around the world especially in developing countries. Heavy government involvements and interventions were common economic policies in Turkey. Highly protectionist economic policies, i.e. quotas, high customs tariff and local content requirements, foreign exchange allocations were implemented in Turkey to create a protected economy based on five-year development plans. These policies created protective walls around the motor vehicle market in Turkey against international competition in the early days of the Turkish motor vehicle assembly industry. These policies also had implications for the Turkish automotive parts industry: due to local content requirements in the automotive industry, motor vehicle assembling enterprises were required to collaborate with and transfer technology to local automotive parts supplying enterprises, especially after 1970s. On the other hand, product and process technologies lagged behind their contemporaries. Since the automotive industry was inward oriented and local demand was not particularly sufficient and stable, the automotive industry had excessive capacity, and hence it was on an inefficient scale. This period was more identified with satisfying internal demand, local capability building, and in particular localisation of motor vehicle assembly and automotive parts production in Turkey. As a result, these policies resulted in balance of payment crises in Turkey, and hence they were unsustainable.

After unsustainable policies of import substituting industrialisation during the period of 1960 to 1980, export oriented economic policies in Turkey were implemented from 1981 reflecting the worldwide common economic policies. There was widespread opening-up and liberalisation in the movements of first product and then capital. Therefore, all protectionist policies implemented in the preceding period were eliminated one by one. During this period, the Turkish automotive industry underwent restructuring, in particular vertical disintegration; assemblers leaving production of certain automotive parts to suppliers reflecting the trend in the global automotive industry. There was also more involvement of international ownership enabling the Turkish automotive industry to adopt modern product and process technologies. Therefore, there were investments in the Turkish automotive industry during this period that resulted in capacity building. Compared to the previous period, there was higher internal demand for motor vehicles. The automotive industry also increasingly engaged in exports. Nevertheless, due to the economic crisis of 1994 in Turkey, motor vehicle sales plummeted putting the automotive industry in decline.

Opening-up of the Turkish economy was advanced by Turkey's economic integration with the EU.[4] In 1995, the Turkish government of that term signed a Customs Union agreement with the EU coming into effect in 1996. With this agreement, tariffs and non-tariff barriers between

[4] It was the European Community at that time.

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Turkey and the EU on all industrial and processed agricultural products were removed. In other words, relevant to the context that tariffs on motor vehicles and automotive parts became effectively zero in 1996. The prospect of the Customs Union led to investment of first Toyota and then Honda and Hyundai in the Turkish motor vehicle assembly industry. These investments also enabled a large automotive parts supply base to thrive. During this period, there were significant increases in quality of the motor vehicles and automotive parts produced by the Turkish automotive industry resulting in acquirement of competitiveness in the global automotive industry.

Internal demand in Turkey for motor vehicles was severely disrupted by economic crises of 1999 and 2001 resulting in fluctuations in the motor vehicle market. Therefore, motor vehicle assemblers in Turkey constantly sought external markets especially in Europe. During early 2000s, both motor vehicle assembling and automotive parts supplying enterprises developed further capability and integration with the European automotive value chain (please see Burgess & Gules, 1998; Gules & Burgess, 1996; Wasti, Kozan, & Kuman, 2006; Wasti & Wasti, 2008 for motor vehicle assembler and automotive parts supplier relations in the Turkish automotive industry). Compared to the previous period, after 2004 internal motor vehicle market has been relatively strong and expanding. External motor vehicle demand is also large, on average around two thirds of the motor vehicle output of the industry are destined for export markets.

Since 2004 average capacity utilisation in the Turkish motor vehicle assembly industry has been about 80% with varying rates similar to that of the industry average (Klein & Koske, 2013) but the Turkish motor vehicle assembly industry was characterised by excessive capacity and had an average capacity utilisation of around 50% during non-crises years of 1990s.[5]

After gaining strong competitiveness, the Turkish automotive industry has had several capacity building investments in motor vehicle assembly during the post-2000 period. In addition to these investments, the Turkish automotive industry has extensively engaged in design, and research and development (R&D) activities to maintain its competitiveness and further develop skills in innovation.[6] The Turkish government also regards the automotive industry as one of the key industries and provides generous R&D and capacity building investment incentives to both motor vehicle assembling and automotive parts supplying enterprises.

[5]The OSD, accessed at http://www.osd.org.tr/homepage.

[6]A case in point is that in early 2000s a project on design of a light commercial motor vehicle for small and medium-sized enterprises (SMEs) financially supported by the EU was realised thanks to wide collaborations of several European automotive groups. A substantial part of design of this project was carried out in Turkey. Subsequently, the Turkish automotive industry has acquired key skills in design and become the largest commercial vehicle assembler in Europe.

As a result, building upon its experience in motor vehicle assembly since 1960s and having a large and competitive automotive parts supply base, the Turkish automotive industry has not only become a regional motor vehicle assembly hub but it has also developed substantial skills in design and innovation. Therefore, the Turkish automotive industry is integrated with the global automotive industry, especially well with the European automotive value chain.

In 2014, units of motor vehicles per 1,000 inhabitants or motorisation rate in Turkey was around 189.4 corresponding to a motor vehicle ownership rate that was much lower than Europe's average and comparable countries'. There are a number of reasons for lower motor vehicle ownership in Turkey. First, per capita income in Turkey is much lower than Europe's average and income distribution in Turkey is not particularly favourable for the motor vehicle market, either. Therefore, affordability of motor vehicles across a large section of the society is very low in Turkey. Second, during 1990s macroeconomic environment in Turkey was not stable especially there were high fluctuations in the foreign exchange markets coupled with high inflation rates. In particular, economic crises of 1994, 1999 and 2001 resulted in plummeting of motor vehicle sales. Therefore, unstable macroeconomic environment rendered the Turkish motor vehicle market unsteady and weak, and hence resulted in excessive capacity in the motor vehicle assembly industry during 1990s and early 2000s. Third, high interest rates and lack of finance in Turkey are other major reasons directly resulting in lower motor vehicle ownership. Fourth, there are high taxes on purchase of passenger cars, which significantly increases prices of motor vehicles in Turkey. Fifth, there are high taxes on ownership of motor vehicles after purchase considerably affecting motor vehicle ownership decisions. Sixth, there are large taxes levied on oil resulting in higher oil prices in Turkey. Last, demographic dynamics in Turkey are highly different from the EU's. In 2015, median age in Turkey was 30.7, whereas it was 42.4 in the EU reducing the segment of the society that can own motor vehicles.[7] As a result, real cost of owning motor vehicles is very high for low income individuals constituting a large portion of the Turkish society resulting in low motor vehicle ownership in Turkey. In addition to relatively lower motor vehicle ownership, average age of motor vehicle fleet of Turkey was higher than average age of motor vehicle fleet of the EU. In 2014, average age of motor vehicle fleet in Turkey was about 11.5, while it was around 9.6 in the EU (ANFAC, 2014). Therefore, motor vehicle in use in Turkey was about 2 years older than motor vehicle in use in the EU in 2014.

On the other hand, during the recent years compared to 1990s the Turkish motor vehicle market has been relatively strong and expanding thanks to stable macroeconomic environment and rising living standards in Turkey. Motor vehicle fleet in Turkey increased by around 70% between 2005 and 2014, while it rose by about 11% in the EU. In addition to this, units of passenger cars per 1,000 inhabitants in Turkey expanded by about 55%, whilst it was around 7.8% in the EU between 2005 and 2014 (ANFAC, 2014). Therefore, despite still having a lower motor vehicle ownership rate, motor vehicle market, and hence motor vehicle fleet in Turkey has grown significantly during the last decade.

[7]Please see Eurostat's online data coded demo_pjanind.

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Motor vehicle demand in Turkey mainly comes from relatively wealthy regions, namely the western regions of Turkey, these regions also home the Turkish automotive value chain as underlined earlier. These regions constituted about two thirds of the motor vehicle sales and about 65% of the motor vehicle fleet in Turkey in 2014.[8] Therefore, both the automotive value chain and motor vehicle market concentrate in the western regions of Turkey.

A major trend in Turkey is that motor vehicle import intensity in Turkey was about 25% during early 1990s. After the Customs Union with the EU in 1996, motor vehicle import intensity started to rise and became around 70% in 2015.[9] There are two main reasons for this level of penetration of imported motor vehicles in the Turkish motor vehicle market. First, the Turkish motor vehicle assembly industry particularly specialises in manufacture of light commercial vehicles and small engine sized motor vehicles. On the other hand, motor vehicle demand has been recently shifted towards passenger cars with relatively large engines. Second, there is high demand for motor vehicle variety in Turkey. In this respect, 435 models of passenger cars and light commercial vehicles were sold in Turkey in 2015.[10] As a result, there is variation between motor vehicles assembled and demanded, and high demand for motor vehicle variety in Turkey resulting in growing motor vehicle import intensity.

In addition to providing R&D and capacity building investment incentives to the Turkish automotive industry stated earlier, the Turkish government has implemented motor vehicle scrap programmes to directly stimulate the motor vehicle demand and extensively undertaken investments in transportation infrastructure, namely roads and motorways, bridges and tunnels laying the foundation for a developed motor vehicle market during the last decade. For example, asphalt concrete road network in Turkey more than doubled between 2005 and 2015.[11] Therefore, the Turkish government has supported the automotive sector on both supply and demand sides.[12]

As a result, Turkey has a relatively large and growing motor vehicle market in its region and its motor vehicle market is far away from saturated compared to other countries in Europe, thereby creating opportunities for the Turkish automotive industry.

[8] Please see http://www.turkstat.gov.tr/PreTablo.do?alt_id=1051 to access the Turkish Statistical Institute (TurkStat)'s Road Motor Vehicle Statistics.

[9] The OSD, accessed at http://www.osd.org.tr/homepage.

[10] The Automotive Distributors' Association (ODD), accessed at http://www.odd.org.tr/web_2837_2/index.aspx.

[11] General Directorate of Highways cited by the TurkStat, accessed at http://www.turkstat.gov.tr/PreTablo.do?alt_id=1051.

[12] Environment related policies and regulations, especially emission standards are aligned with those of the EU's. This is due to Turkey's Customs Union with the EU and Turkey's EU accession process.

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International Automotive Trade Characteristics

This study constructs a list of automotive parts and motor vehicles from three sources, namely European Commission (2009), Office of Transportation and Machinery U.S. Department of Commerce (2011) and Republic of Turkey Ministry of Economy (2012) to compile relevant automotive data. These sources reflect their local considerations, so there are variations on the number of digits employed by these three sources but at 6-digit Harmonized System (HS) level, they are highly similar. After obtaining automotive lists from these three sources, this study thoroughly examines and harmonises these three lists to establish a comprehensive and accurate list of automotive parts and motor vehicles at 6-digit HS level.

International trade data presented in this section is retrieved from the United Nations' (UN) publicly available International Trade Statistics Database (Comtrade) based on 6-digit automotive parts and motor vehicle HS codes.[13] The UN constructs this dataset by compiling international trade data reports of each individual country. In particular, data presented here is based on reporting of international trade data by Turkey to the UN.

Automotive Imports of Turkey from Regions

Table 2 indicates that Turkey's automotive imports, in 2015 were about $25.8 billion increased by 228% from about $7.9 billion in 2003. In 2015, Turkey sourced 77.4% of its automotive imports from Europe decreased by 9.3% the only fall amongst regions from 85.3% in 2003 still resulting in Europe becoming the largest source of Turkey's automotive imports in both 2003 and 2015. Turkey's automotive imports from Asia-Pacific, in 2015 constituted 16.4% of its automotive imports increased by 34.4% from 12.2% in 2003 leading Asia-Pacific to be the second largest source of Turkey's automotive imports in both 2003 and 2015. Turkey, in 2015 sourced 4.1% of its automotive imports from the Americas increased by 109.9% the third largest increase after the MENA and free zones' amongst regions from 1.9% in 2003 leading the Americas to be the third largest source of Turkey's automotive imports in both 2003 and 2015. Turkey's automotive imports from the MENA, in 2015 made up 1.1% of its automotive imports increased by more than eleven-fold the largest increase amongst regions from about 0.1% in 2003 leading the MENA to overtake the place of Africa in 2003 and resulting in the MENA becoming the fourth largest source of Turkey's automotive imports in 2015. Turkey, in 2015 sourced 0.6% of its automotive imports from Africa increased by 85.1% the fourth largest increase after the MENA, free zones and the Americas' amongst regions from 0.4% in 2003 still leading Africa to lose its place to the MENA in 2003 and resulting in Africa being the fifth largest source of Turkey's automotive imports in 2015.

Table 2 also reports that in 2015, 46.3% of Turkey's total automotive imports were in the form of motor vehicles increased by 4.3% from 44.4% in 2003, while the remaining automotive

[13] Please see https://comtrade.un.org/data/ to access this database.

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imports of Turkey were in the form of automotive parts. In 2015, 76.2% of Turkey's automotive imports from the MENA were in the form of motor vehicles increased by 210.8% the largest increase amongst regions from 24.5% in 2003 leading the vast majority of automotive imports of Turkey from the MENA to be in the form of motor vehicles and also resulting in the MENA having the highest share in 2015. 58.7% of Turkey's automotive imports from the Americas, in 2015 were in the form of motor vehicles increased by 151.3% the second largest increase after the MENA's amongst regions from 23.3% in 2003 leading the majority of automotive imports of Turkey from the Americas to be in the form of motor vehicles and also resulting in the Americas having the second highest share in 2015. 51.4% of Turkey's automotive imports from Europe, in 2015 were in the form of motor vehicles increased by 9.7% from 46.8% in 2003 leading more than 50% of automotive imports of Turkey from Europe to be in the form of motor vehicles and resulting in Europe having the third highest share in 2015. 28% of automotive imports of Turkey from Africa, in 2015 were in the form of motor vehicles leading Africa to have the fourth highest share. 19.2% of Turkey's automotive imports from Asia-Pacific, in 2015 were in the form of motor vehicles decreased by 41.5% the second largest fall after free zones' amongst regions from 32.8% in 2003 leading the vast majority of automotive imports of Turkey from Asia-Pacific to be in the form of automotive parts and resulting in Asia-Pacific having the fifth highest share in 2015.

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Table 2: Automotive Imports of Turkey from Regions and Major Countries (in current million US dollars)

	2003			2015			Change 03/15			Share of Automotive		
	Value	MV	PCT	Value	MV	PCT	Value	MV	PCT	2003	2015	Change
Africa	27.6	0	0.4	167.5	28	0.6	507.1		85.1	3.4	8.1	138.5
Americas	151.8	23.3	1.9	1 044.6	58.7	4.1	588.3	151.3	109.9	3.1	6.2	102.2
Areas NES				0.8	3.5	0					0	
Asia-Pacific	960.7	32.8	12.2	4 235.30	19.2	16.4	340.9	-41.5	34.4	9.3	7.8	-16.6
Europe	6 704.3	46.8	85.3	19 941.8	51.4	77.4	197.4	9.7	-9.3	14.6	18.4	26.1
Free Zones	8.2	14.7	0.1	92.1	0.1	0.4	1 025.2	-99.6	243.1	0.7	7.1	981.6
MENA	7.2	24.5	0.1	295	76.2	1.1	3 992.9	210.8	1 148	0.1	2	1 631.6
Total	7 859.8	44.4	100	25 777.1	46.3	100	228	4.3		11.3	12.4	9.7

Notes: Shares are rounded, so they may not add up to 100%. MV means motor vehicle. PCT stands for percent. Areas NES means areas not elsewhere specified.

Source: Calculations are based on the UN Comtrade.

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Last, Table 2 presents that in 2015, Turkey's automotive imports constituted around 12.4% of Turkey's total imports increased by 9.7% from 11.3% in 2003. 18.4% of Turkey's imports from Europe were in the automotive industry in 2015 increased by 26.1% from 14.6% in 2003 leading Europe to have the largest automotive import intensity amongst regions in both 2003 and 2015. 8.1% of Turkey's imports from Africa were in the automotive industry in 2015 increased by 138.5% the third largest rise after the MENA and free zones' amongst regions from 3.4% in 2003 leading Africa to overtake the place of Asia-Pacific in 2003 and resulting in Africa having the second largest automotive import intensity amongst regions in 2015. 7.8% of Turkey's imports from Asia-Pacific were in the automotive industry in 2015 decreased by 16.6% the only fall amongst regions from 9.3% in 2003 leading Asia-Pacific to lose its place to Africa in 2003 and also resulting in Asia-Pacific having the third largest automotive import intensity amongst regions in 2015. 6.2% of Turkey's imports from the Americas were in the automotive industry in 2015 more than doubled from 3.1% in 2003 leading the Americas to have the fifth largest automotive import intensity amongst regions in 2015. About 2% of Turkey's imports from the MENA were in the automotive industry in 2015 increased by more than sixteen-fold the largest rise amongst regions from about 0.1% in 2003 still leading the MENA to have the sixth largest automotive import intensity amongst regions in 2015.

Motor Vehicle Imports of Turkey from Regions

Table 3 presents that Turkey's motor vehicle imports, in 2015 were about 722.5 thousand units increased by more than twofold from around 234.5 thousand units in 2003. This increase in units of motor vehicle imports of Turkey was smaller than the increase in value of automotive imports of Turkey by around 20 percentage points between 2003 and 2015.

In 2015, Turkey sourced 80.6% of its motor vehicle imports from Europe decreased by 7.7% the third largest fall after free zones and Asia-Pacific's amongst regions from 87.3% in 2003 still leading Europe to be the largest source of Turkey's motor vehicle imports in both 2003 and 2015. Share of Europe in Turkey's motor vehicle imports was larger than share of Europe in Turkey's automotive imports in both 2003 and 2015 and even the gap widened in 2015. Asia-Pacific, in 2015 constituted 10.9% of Turkey's motor vehicle imports decreased by 9.3% the second largest fall after free zones' amongst regions from 12% in 2003 still leading Asia-Pacific to be the second largest source of Turkey's motor vehicle imports in both 2003 and 2015. Share of Asia-Pacific in Turkey's motor vehicle imports was smaller than share of Asia-Pacific in Turkey's automotive imports in both 2003 and 2015. Turkey, in 2015 sourced 4.6% of its motor vehicle imports from the Americas increased by more than six-fold the second largest rise after the MENA's amongst regions from 0.6% in 2003 resulting in the Americas being the third largest source of Turkey's motor vehicle imports in both 2003 and 2015. Share of the Americas in Turkey's motor vehicle imports was smaller than share of the Americas in Turkey's automotive imports in 2003 but share of the Americas in Turkey's motor vehicle imports turned to become larger than share of the Americas in Turkey's automotive imports by a small margin in 2015. The MENA, in 2015 constituted 3.6% of Turkey's motor vehicle

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imports having the largest increase amongst regions and resulting in the MENA being the fourth largest source of Turkey's motor vehicle imports in both 2003 and 2015. Share of the MENA in Turkey's motor vehicle imports was smaller than share of the MENA in Turkey's automotive imports in 2003 but it turned to become larger by a great margin in 2015. Africa constituted around 0.3% of Turkey's motor vehicle imports leading Africa to be the fifth largest source of Turkey's motor vehicle imports in 2015. Share of Africa in Turkey's motor vehicle imports was smaller than share of Africa in Turkey's automotive imports.

Table 3: Motor Vehicle Imports of Turkey from Regions and Major Countries (in units)

	2003		2015		Change 03/15	
	QTY	PCT	QTY	PCT	QTY	PCT
Africa	0	0	2 310	0.3		
Americas	1 435	0.6	33 378	4.6	2 226	655.1
Areas NES			1	0		
Asia-Pacific	28 193	12	78 736	10.9	179.3	-9.3
Europe	204 841	87.3	582 151	80.6	184.2	-7.7
Free Zones	25	0	5	0	-80	-93.5
MENA	47	0	25 871	3.6	54 944.7	17 770
Total	234 541	100	722 452	100	208	

Notes: Shares are rounded, so they may not add up to 100%.

QTY means quantity. PCT stands for percent. Areas NES means areas not elsewhere specified.

Source: Calculations are based on the UN Comtrade.

Automotive Exports of Turkey to Regions

Table 4 reveals first that Turkey's automotive exports, in 2015 were around $22.5 billion increased by 243.4% from about $6.6 billion in 2003. Increase in the automotive exports of Turkey was also larger than the increase in Turkey's automotive imports. Nevertheless, value of automotive exports of Turkey was smaller than value of automotive imports of Turkey in both 2003 and 2015.

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Second, in 2015, Turkey dispatched 80% of its automotive exports to Europe decreased by 1.1% from 80.9% in 2003 resulting in Europe becoming the largest destination of Turkey's automotive exports in both 2003 and 2015. Share of Europe in Turkey's automotive exports was smaller than share of Europe in Turkey's automotive imports in 2003 but it turned to become larger in 2015. Nevertheless, value of automotive exports of Turkey to Europe was smaller than value of automotive imports of Turkey from Europe in both 2003 and 2015.

Third, Turkey's automotive exports to the MENA, in 2015 made up 8.6% of its automotive exports increased by 9.1% from 7.9% in 2003 leading the MENA to be the second largest destination of Turkey's automotive exports in both 2003 and 2015. Share of the MENA in Turkey's automotive exports was much larger than share of the MENA in Turkey's automotive imports in both 2003 and 2015.

Fourth, Turkey, in 2015 dispatched 6.2% of its automotive exports to the Americas increased by 155.3% the largest increase amongst regions from 2.4% in 2003 leading the Americas to overtake the place of free zones in 2003 and resulting in the Americas being the third largest destination of Turkey's automotive exports in 2015. Share of the Americas in Turkey's automotive exports was larger than share of the Americas in Turkey's automotive imports in both 2003 and 2015 and even the gap widened in 2015.

Fifth, Turkey's automotive exports to Asia-Pacific, in 2015 constituted 3.2% of its automotive exports increased by 6.5% from 3% in 2003 leading Asia-Pacific to be the fourth largest destination of Turkey's automotive exports in both 2003 and 2015. Share of Asia-Pacific in Turkey's automotive exports was much smaller than share of Asia-Pacific in Turkey's automotive imports in both 2003 and 2015 and even the gap widened in 2015. Asia-Pacific was the only region whose share in Turkey's automotive exports was much smaller than its share in Turkey's automotive imports in both 2003 and 2015. Therefore, value of automotive exports of Turkey to Asia-Pacific was much smaller than value of automotive imports of Turkey from Asia-Pacific in both 2003 and 2015 and even the gap significantly grew in 2015.

Sixth, Turkey, in 2015 dispatched 1.2% of its automotive exports to Africa increased by 49.3% from 0.8% in 2003 resulting in Africa being the fifth largest destination of Turkey's automotive exports in 2015. Share of Africa in Turkey's automotive exports was larger than share of Africa in Turkey's automotive imports in both 2003 and 2015 and even the gap widened in 2015.

Table 4 also reports first that in 2015, 57.4% of Turkey's total automotive exports were in the form of motor vehicles decreased by 7.1% from 61.7% in 2003, while the remaining automotive exports of Turkey were in the form of automotive parts. Share of motor vehicles in total automotive exports of Turkey was much larger than share of motor vehicles in total automotive imports of Turkey in both 2003 and 2015 but the gap diminished by a large margin in 2015.

Second, 61.7% of Turkey's automotive exports to Europe, in 2015 were in the form of motor vehicles decreased by 5.4% from 65.2% in 2003 leading more than 50% of automotive exports of Turkey to Europe to be in the form of motor vehicles and resulting in Europe having the highest share in both 2003 and 2015. Europe was the only region to which more than 50% of automotive exports of Turkey dispatched was in the form of motor vehicles in both 2003 and 2015. Share of motor vehicles in automotive exports of Turkey to Europe was much larger than share of motor vehicles in automotive imports of Turkey from Europe in both 2003 and 2015 but the gap diminished by a large margin in 2015.

Third, 47.4% of Turkey's automotive exports to the Americas, in 2015 were in the form of motor vehicles increased by 48.8% the largest rise amongst regions from 31.9% in 2003 still leading the majority of automotive exports of Turkey to the Americas to be in the form of automotive parts in both 2003 and 2015 and also resulting in the Americas having the third highest share in 2015. Share of motor vehicles in automotive exports of Turkey to the Americas was larger than share of motor vehicles in automotive imports of Turkey from the Americas in 2003 but it turned to become smaller in 2015.

Fourth, 39.4% of Turkey's automotive exports to Africa, in 2015 were in the form of motor vehicles increased by 29% from 30.5% in 2003 leading the majority of automotive exports of Turkey to Africa to be in the form of automotive parts in both 2003 and 2015 and also resulting in Africa having the fourth highest share in 2015. Share of motor vehicles in automotive exports of Turkey to Africa was much larger than share of motor vehicles in automotive imports of Turkey from Africa in both 2003 and 2015 but the gap diminished by a large margin in 2015.

Fifth, in 2015, 38.6% of Turkey's automotive exports to the MENA were in the form of motor vehicles decreased by 34.9% from 59.3% in 2003 leading the vast majority of automotive exports of Turkey to the MENA to be in the form of automotive parts in 2015 opposite to 2003 and also resulting in the MENA having the fifth highest share in 2015. Share of motor vehicles in automotive exports of Turkey to the MENA was larger than share of motor vehicles in automotive imports of Turkey from the MENA in 2003 but it turned to become smaller in 2015.

Sixth, 35.2% of Turkey's automotive exports to Asia-Pacific, in 2015 were in the form of motor vehicles decreased by 10.1% from 39.2% in 2003 leading the vast majority of automotive exports of Turkey to Asia-Pacific to be in the form of automotive parts in both 2003 and 2015 and resulting in Asia-Pacific having the sixth highest share in 2015. Share of motor vehicles in automotive exports of Turkey to Asia-Pacific was larger than share of motor vehicles in automotive imports of Turkey from Asia-Pacific in both 2003 and 2015 but the gap widened in 2015.

Furthermore, Table 4 presents first that in 2015, Turkey's automotive exports constituted around 15.7% of Turkey's total exports increased by 12.8% from 13.9% in 2003. Share of automotive exports in total exports of Turkey was larger than share of automotive imports in total imports of Turkey in both 2003 and 2015 and even the gap widened in 2015.

Second, 22.6% of Turkey's exports to Europe were in the automotive industry in 2015 increased by 35.5% the second largest increase after the Americas' amongst regions from 16.7% in 2003 leading Europe to have the largest automotive export intensity amongst regions

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in both 2003 and 2015. Turkey's automotive export intensity to Europe was larger than Turkey's automotive import intensity from Europe in both 2003 and 2015 and even the gap widened in 2015.

Third, 15.2% of Turkey's exports to the Americas were in the automotive industry in 2015 increased by 305.8% the largest increase amongst regions from 3.8% in 2003 leading the Americas to overtake the place of free zones in 2003 and resulting in the Americas having the second largest automotive export intensity amongst regions in 2015. Turkey's automotive export intensity to the Americas was larger than Turkey's automotive import intensity from the Americas in both 2003 and 2015 and even the gap widened by a large margin in 2015.

Fourth, 7.8% of Turkey's exports to Africa were in the automotive industry in 2015 decreased by 26.7% from 10.6% in 2003 still leading Africa to have the third largest automotive export intensity amongst regions in both 2003 and 2015. Turkey's automotive export intensity to Africa was larger than Turkey's automotive import intensity from Africa in 2003 but it turned to be smaller in 2015.

Fifth, 5.7% of Turkey's exports to the MENA were in the automotive industry in 2015 decreased by 39.5% the second largest fall after free zones' amongst regions from 9.4% in 2003 still leading the MENA to have the fourth largest automotive export intensity amongst regions in both 2003 and 2015. Turkey's automotive export intensity to the MENA was much larger than Turkey's automotive import intensity from the MENA in both 2003 and 2015 but the gap diminished by a large margin in 2015.

Sixth, 5.2% of Turkey's exports to Asia-Pacific were in the automotive industry in 2015 decreased by 22.1% from 6.7% in 2003 leading Asia-Pacific to have the sixth largest automotive export intensity amongst regions in 2015. Turkey's automotive export intensity to Asia-Pacific was smaller than Turkey's automotive import intensity from Asia-Pacific in both 2003 and 2015. Asia-Pacific was the only region this held for both 2003 and 2015.

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Table 4: Automotive Exports of Turkey to Regions and Major Countries (in current million US dollars)

	2003			2015			Change 03/15			Share of Automotive		
	Value	MV	PCT	Value	MV	PCT	Value	MV	PCT	2003	2015	Change
Africa	51.5	30.5	0.8	264	39.4	1.2	412.6	29	49.3	10.6	7.8	-26.7
Americas	160.3	31.9	2.4	1 405.4	47.4	6.2	776.8	48.8	155.3	3.8	15.2	305.8
Areas NES				3.2	58	0					4.1	
Asia-Pacific	199.4	39.2	3	729.3	35.2	3.2	265.8	-10.1	6.5	6.7	5.2	-22.1
Europe	5 311.1	65.2	80.9	18 040.4	61.7	80	239.7	-5.4	-1.1	16.7	22.6	35.5
Free Zones	322.7	41.6	4.9	155.2	15.1	0.7	-51.9	-63.8	-86	15.3	5.5	-64.3
MENA	520.1	59.3	7.9	1 949.1	38.6	8.6	274.8	-34.9	9.1	9.4	5.7	-39.5
Total	6 565.1	61.7	100	22 546.6	57.4	100	243.4	-7.1		13.9	15.7	12.8

Notes: Shares are rounded, so they may not add up to 100%. MV means motor vehicle. PCT stands for percent. Areas NES means areas not elsewhere specified.

Source: Calculations are based on the UN Comtrade.

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Motor Vehicle Exports of Turkey to Regions

Table 5 indicates first that Turkey's motor vehicle exports, in 2015 were more than 1 million units increased by 180.5% from around 370 thousand units in 2003. This increase in units of motor vehicle exports of Turkey was much smaller than the increase in value of automotive exports of Turkey between 2003 and 2015. This increase in units of motor vehicle exports of Turkey was also much smaller than the increase in units of motor vehicle imports of Turkey between 2003 and 2015. Nevertheless, units of motor vehicle exports of Turkey were larger than units of motor vehicle imports of Turkey in both 2003 and 2015.

Second, in 2015, Turkey dispatched 87.6% of its motor vehicle exports to Europe increased by 2.8% from 85.2% in 2003 leading Europe to be the largest destination of Turkey's motor vehicle exports in both 2003 and 2015. Share of Europe in Turkey's motor vehicle exports was larger than share of Europe in Turkey's automotive exports in both 2003 and 2015 and even the gap widened in 2015. Europe was the only region whose share in Turkey's motor vehicle exports was larger than its share in Turkey's automotive exports in both 2003 and 2015. Share of Europe in Turkey's motor vehicle exports was smaller than share of Europe in Turkey's motor vehicle imports in 2003 but it turned to be larger in 2015. On the other hand, units of Turkey's motor vehicle exports to Europe were larger than units of Turkey's motor vehicle imports from Europe in both 2003 and 2015.

Third, the MENA, in 2015 constituted 7.1% of Turkey's motor vehicle exports decreased by 29.3% the third largest fall after free zones and Asia-Pacific's amongst regions and resulting in the MENA being the second largest destination of Turkey's motor vehicle exports in both 2003 and 2015. Share of the MENA in Turkey's motor vehicle exports was larger than share of the MENA in Turkey's automotive exports in 2003 but it turned to become smaller in 2015. Share of the MENA in Turkey's motor vehicle exports was larger than share of the MENA in Turkey's motor vehicle imports in both 2003 and 2015 but the gap diminished by a large margin in 2015.

Fourth, Turkey, in 2015 dispatched 3.4% of its motor vehicle exports to the Americas increased by 171.4% the largest rise amongst regions from 1.3% in 2003 leading the Americas to overtake the place of Asia-Pacific in 2003 and resulting in the Americas being the third largest destination of Turkey's motor vehicle exports in 2015. Share of the Americas in Turkey's motor vehicle exports was smaller than share of the Americas in Turkey's automotive exports in both 2003 and 2015. Share of the Americas in Turkey's motor vehicle exports was larger than share of the Americas in Turkey's motor vehicle imports in 2003 but it turned to be smaller in 2015. Nevertheless, units of Turkey's motor vehicle exports to the Americas were larger than units of Turkey's motor vehicle imports from the Americas in both 2003 and 2015.

Fifth, Asia-Pacific, in 2015 constituted 1.1% of Turkey's motor vehicle exports decreased by 41.5% the second largest fall after free zones' amongst regions from 1.9% in 2003 leading Asia-Pacific to lose its place to the Americas in 2003 and resulting in Asia-Pacific being the fourth largest destination of Turkey's motor vehicle exports in 2015. Share of Asia-Pacific in Turkey's motor vehicle exports was smaller than share of Asia-Pacific in Turkey's automotive exports in

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both 2003 and 2015 and even the gap widened in 2015. Share of Asia-Pacific in Turkey's motor vehicle exports was much smaller than share of Asia-Pacific in Turkey's motor vehicle imports in both 2003 and 2015. Asia-Pacific was the only region whose share in Turkey's motor vehicle exports was much smaller than its share in Turkey's motor vehicle imports in both 2003 and 2015.

Sixth, Turkey, in 2015 dispatched 0.6% of its motor vehicle exports to Africa increased by 158.4% the second largest rise after the Americas' amongst regions from 0.2% in 2003 leading Africa to overtake the place of the Americas in 2003 and resulting in Africa being the fifth largest destination of Turkey's motor vehicle exports in 2015. Share of Africa in Turkey's motor vehicle exports was smaller than share of Africa in Turkey's automotive exports in both 2003 and 2015 but the gap diminished in 2015. Share of Africa in Turkey's motor vehicle exports was larger than share of Africa in Turkey's motor vehicle imports in both 2003 and 2015.

Table 5: Motor Vehicle Exports of Turkey to Regions and Major Countries (in units)

	2003		2015		Change 03/15	
	QTY	PCT	QTY	PCT	QTY	PCT
Africa	867	0.2	6 285	0.6	624.9	158.4
Americas	4 688	1.3	35 688	3.4	661.3	171.4
Areas NES			204	0		
Asia-Pacific	7 096	1.9	11 641	1.1	64.1	-41.5
Europe	315 322	85.2	909 554	87.6	188.5	2.8
Free Zones	5 040	1.4	1 322	0.1	-73.8	-90.7
MENA	36 997	10	73 338	7.1	98.2	-29.3
Total	370 010	100	1 038 032	100	180.5	

Notes: Shares are rounded, so they may not add up to 100%.

QTY means quantity. PCT stands for percent. Areas NES means areas not elsewhere specified.

Source: Calculations are based on the UN Comtrade.

Conclusion

This study aimed to provide a thorough understanding of international trade characteristics of the

Turkish automotive sector, one of the most significant sectors in Turkey. This study first explained the Turkish automotive sector within its historical context with reference to distinct periods of the Turkish economy. Second, this study identified the recent international automotive trade relations of Turkey with regions and how these relations have changed relative to 2003.

A close examination of the recent characteristics of the global and Turkish automotive sectors revealed four major points. First, being in close geographic proximity to Europe, receiving a large amount of automotive investment from Europe and having a Customs Union with the EU, Turkey realises around two-thirds of its international automotive trade with Europe. Second, most growth in the global automotive sector comes from Asia-Pacific. Nevertheless, cross-border automotive relations of the Turkish automotive sector with Asia-Pacific is weak. Therefore, the Turkish automotive sector should develop more cross-border trade relations with Asia-Pacific to diversify its cross-border relations as well as benefit from the recent substantial expansion of the Asia-Pacific automotive sector. Third, being geographically close to the MENA, Turkey has developed substantial cross-border trade relations with this region. Nevertheless, the Turkish automotive industry, in particular, has not developed extensive economic relations with the MENA whose automotive sector has experienced substantial expansion during the last decade. Therefore, the Turkish automotive industry should forge more economic relations with this growing market, as well. Last, cross-border trade of automotive parts gains more prominence in the world automotive trade creating more opportunities for the automotive industry. Hence, automotive enterprises should pay more attention to the automotive parts supply section of the industry to benefit more from this growing trend.

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