Moving Up the Value Chain

An Evaluation of the Feasibility of Colombia's Automotive Parts Industry



By

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August, 2014

ABSTRACT

Colombian automotive parts exports have grown significantly in recent years, up to $420M in 2012 in comparison to $80M in 1995. However, in comparison to other heavyweights in the industry such as Germany, Korea, and even Latin American counterparts Mexico and Brazil, Colombia's auto parts industry is still in its infancy. The aim of this paper is to evaluate whether Colombia's auto parts industry has the potential to grow into an international force with high levels of trade, specialization, and innovation within the Colombian industrial cluster. This analysis has the wider scope of determining whether this industry can help Colombia move up the value chain and therefore become a more developed nation with a lesser focus on basic materials.

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INTRODUCTION

The automotive parts industry was selected for two reasons. Firstly, there are favorable market conditions in this area as Colombia´s automobile market has grown rapidly over the past decade. Colombia is also located near markets such as Peru, Ecuador, Venezuela, Central America, and Chile. These countries also have high growth potential as these countries' low car utilization rates start to converge towards more developed nations. This gives Colombia an opportunity to take advantage of the growth by building market share and facilitating trade; as car volumes increase more auto parts will be needed for both aiding in production as well as servicing vehicles once they are on the road. Secondly, the auto parts industry is not extremely sophisticated nor highly capital intensive, allowing a country like Colombia with historically less expertise and a smaller industrial base to start small and grow gradually through experience compared to an industry such as automobile, technology, or pharmaceuticals.

The paper is organized as follows: Section 2 provides an overview of theory on how more sophisticated industries emerge in developing countries. The evaluative framework used in this paper is loosely based on the works discussed therein. Section 3 provides background on the Colombian automobile market and the future opportunities that may lead to a favorable auto parts environment. Section 4 goes more in-depth on the auto parts industry in Colombia in terms of trade trends, company profiles, and competitiveness indicators. These analyses will contribute towards the paper's ultimate view of the current and future outlook of Bogota's industrial cluster formation potential. In Section 5, Colombia's auto parts industry is evaluated based on the research findings in order to address the thesis posed.

SECTION 2: LITERATURE REVIEW

In the literature there has been a great deal of research on factors that are necessary to be in place for a country to industrialize with greater speed and move up the value chain. However a "one-size-fits-all" attitude rarely works in the real world as every economy has a unique history, culture, composition of labor and raw materials that can affect the country's development. That being said, the general factors that lead to economic development "up the value chain" are consistent: qualified labor force, innovation, efficient infrastructure, and stable institutions[i]. A sizeable and educated labor force is essential as economies develop because there is a greater need for workers who can perform complex tasks and adapt rapidly to changes in the production system. In a global market place with high competition, firms must be quick to adapt new technologies in order to increase efficiency. In addition, once a certain level of technology has been reached, there is a greater need for cutting-edge innovation to create new competitive advantages. Governments must help facilitate this by promoting research institutions and collaboration between universities and industry, while private firms must also make sufficient investments in research and development (R&D) to build the technologies. Fully developed infrastructure is important because it allows for movement of supplies, goods, and people between regions and other countries at a low cost. If this factor is lagging then international trade and development of the industrial cluster will be hindered. Finally, political and institutional stability is important as it protects the rights of investors, reduces costs associated with running a business, and ensures confidence in business investments.

Theory supports the view that focusing mainly on inter-trade between Colombia's neighbouring markets can be beneficial in developing the economy, albeit with some conflict. Researchers label trade with developed OECD nations as "North-South" and trade between developing economies as "South-South". The United Nations Conference on Trade and Development (UNCTAD) espouses South-South partnerships[ii]. It must be noted that The World Bank has a contrasting viewpoint. The organization advocates North-South cooperation[iii] (Schiff & Winters, 2003) for the industrialization of developing countries. In the same way that the debate on whether Import Substitution (trade policies aimed at replacing foreign imports with domestic production) or Export Oriented Industrialization

policies are more effective, it is clear that it depends on the individual characteristics of the economy being analyzed. Based on geographic, market, and other factors discussed further in this paper, it appears that Colombia is best positioned to take advantage of South-South trade relationships (with neighbouring countries such as Venezuela, Peru, and others) rather than struggling to serve the harsh demands of the more competitive "North" markets. Thus, the focus of this paper will be gauging the potential of developing business in these countries before looking towards OECD markets as major export partners.

Researchers have also studied the importance of countries developing "industrial clusters" as a means to create competitive advantage in their respective industries, as well as create jobs and deliver opportunities to the poor. Otsuka and Sonobe (2006) are established experts in this research area through their studies of industrial cluster formation. They have surveyed the success of Asian industrial clusters over the past few decades, especially in technology sectors[iv]. Despite the fact that each country they surveyed had different political, market, and skill requirements, they found that the processes of industrial development followed a consistent pattern. They theorized that cluster-based industrial development occurs first through an *Initiation* phase where domestic firms imitate foreign technology and produce cheap products at a low cost as they learn about the industry. Low domestic consumer income means high demand for low-quality products in domestic markets, and high profits. Next follows the *Quantity Expansion* phase where new firms emerge to take advantage of these high profits, creating the beginnings of a cluster, while reducing economic profit per firm. Finally, in the low profit environment, entrepreneurs are forced to improve their products in order to increase margins. In the *Quality Improvement (QI)* phase more engineers and designers are hired, and new innovations occur. Oftentimes at this point some firms can compete globally and develop their own brand names. They tend to acquire the less competitive firms in their cluster and form large international enterprises. However, it is not always easy to reach the QI phase; research and development centers and foreign joint ventures can be helpful in spurring on the needed innovation.

The following section will evaluate the growth potential of Colombia's automobile market.

SECTION 3: COLOMBIAN AUTOMOBILE MARKET

3.1 INTRODUCTION

As stated earlier, a background in and analysis of the attractiveness of Colombia's automobile industry is useful in determining the potential for Colombia's auto parts market.



Figure 1 Vehicle imports by countriy of origin; Source: BBVA Research

As shown in Figure 1, the main motor vehicle imports come from Mexico, South Korea, and China. The major brands sold are Chevrolet and Renault (produced domestically) followed by Hyundai, Kia, and Chinese brands that are imported. Based on the import countries, it appears that Colombian cars tend to be basic and of lower quality.

After reviewing Colombia automobile association sales data by model type, this notion is confirmed. Colombian imports and domestically produced vehicles tend to be the basic low to mid-range models of the aforementioned brands (See Figure 2). This may actually be an opportunity for Colombian auto parts manufacturers because these types of cars will require the lower quality parts that Colombian firms tend to provide, as discussed earlier in the *Literature Review* section. It appears that lower priced, lower quality domestic auto parts producers are capable of meeting the needs of the domestic vehicle market of basic cars. In the next subsection, the growth potential of the automobile market will be evaluated.



Figure 2 Most popular vehicle models in Colombia

3.2 Domestic Growth Potential

The domestic automotive production in Colombia is dominated by three major companies: GM Colmotores, SOFASA Renault, and CCA Mazda. These three firms supply 32% of car sales, while the remaining 68% are imported[v] (See Figure 3).

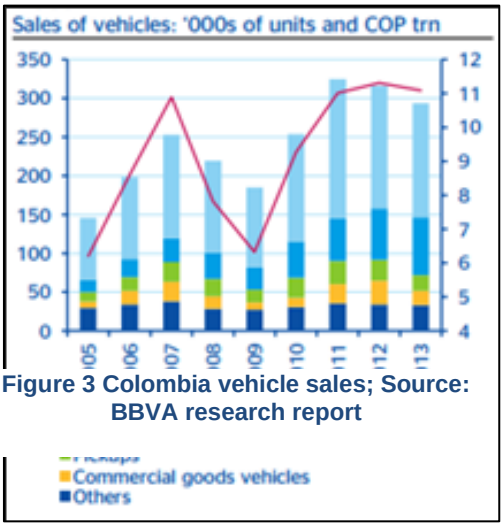


Figure 3 Colombia vehicle sales; Source: BBVA research report

1. **GM Colmotores** – Produced 64,000 vehicles in 2012[vi].
2. **SOFASA Renault –** Produced 71,000 vehicles in 2012.
3. **CCA Mazda** – Produced 7,000 vehicles in 2012 and recently shut down operations due to a lack of economies of scale.

BBVA, a bank and in investment research firm, has released a research study that forecasts Colombia will add 3.5M cars to its stock and sustain an average annual growth rate of 8% between years 2010 to 2020. It is the government's intent that Colombia's automotive production rates move closer to the "big three" producers: Argentina, Brazil, and Mexico. Optimally, it would be beneficial for both the general Colombian car market to expand as well as domestic producer market share. Alternatively, an excellent opportunity would be if a Korean producer such as Hyundia-Kia were to begin producing vehicles in Colombia. Regardless, as general demand for vehicles increase, domestic production by GM Colmotores and SOFASA Renault will continue to increase. As these domestic producers increase sales one can deduce that they will have a greater demand for domestic auto parts as well due to geographic and coordination conveniences.

Domestic Production 2013	
Colombia	143,000
Argentina	791,000
Brazil	3,740,000
Mexico	3,052,000

Figure 4 Motor vehicle production; Source: OICA data

3.3 International Growth Potential

In addition to domestic growth potential, Colombia is in close proximity to a large market with growth potential in the Andean region of Ecuador, Peru and Chile. They would be considered "South – South" trading partners. These markets are close culturally,

geographically, and economically to Colombia, have high growth rates, and are less competitive.

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Chile	200,000	200,000	230,000	252,690	180,696	303,360	356,183	362,331	395,000
Colombia	150,000	205,000	235,000	210,000	195,000	285,000	295,000	285,000	285,300
Ecuador	93,057	89,558	91,778	112,684	92,764	132,172	139,893	121,446	115,000
Panama	25,000	30,000	26,000	35,000	33,000	38,000	44,000	48,000	48,100
Peru	23,346	32,876	51,017	92,539	76,932	120,800	150,037	190,761	202,000
Venezuela	174,757	209,203	318,572	200,341	136,517	125,202	120,689	130,553	98,878
TOTAL	**666,160**	**766,637**	**952,367**	**903,254**	**714,909**	**1,004,534**	**1,105,802**	**1,138,091**	**1,144,278**

Source: OICA Database, motor vehicle sales

Figure 5 Motor vehicle sales by country

From 2005 to 2013, despite global economic turmoil, Colombia and its nearby Latin American neighbours have almost doubled car sales during the time period (See Figure 5). Peru and Chile have particularly seen high growth, while Venezuela has been suffering from a recession.

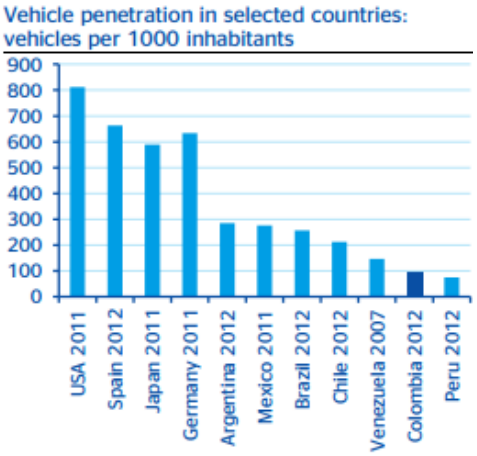


Figure 6 Source: Worldbank, BBVA

According to a World Bank study (See Figure 6), Latin American countries have very low automobile utilization rates compared to the rest of the world. Curiously, Colombia's neighbouring countries such as Peru and Venezuela have particularly low motor vehicle penetration rates, even in comparison to other Latin American countries. As a point of reference, Colombia has less than 100 motor vehicles per 1000 people (a stock, may be slightly higher now), while a developed country will typically purchase at a rate of 30 **new** motor vehicles per year, per thousand people (a flow). This shows the opportunity as the middle class emerges and begins purchasing cars.



Figure 7 Colombia's strategic location

As Figure 7 shows, Geographically, Colombia has a strategic location as the country serves as a conduit between South and North America. It also has a close proximity to the Panama Canal. An example of how Colombia is already being used to access the Andean markets can be seen in the original equipment

manufacturer (OEM) industry. In 2011, OEM firm shipped vehicles worth $290M mainly to Ecuador, but also Panama, Peru, Chile, and Costa Rica[vii].

Overall, Colombia can be used as a production base to serve Colombia, and the surrounding regions such as Central America, the Andean regions quite effectively. As Colombian automobile producers build more vehicles to meet these needs there is a greater likelihood that Colombian auto parts suppliers will have opportunities to gain sales. Further analysis of the auto parts industry specifically can confirm the viability of this strategy going forward.

SECTION 4: AUTO PARTS INDUSTRY POTENTIAL

4.1 INTRODUCTION

In order for the Colombian automotive parts industry to succeed, it is essential that industrial clusters are formed. Currently, this would likely occur in Bogota, the capital city, and where most business as well as automotive manufacturing occurs.

According to the Otsuka/Sonobe model of industrial development, engineers are an essential piece in expanding clusters by producing new automotive parts. From there, others will begin to imitate these innovations and grow the cluster, lowering profitability, but increasing the size of the market. As this occurs, auto parts firms are forced to innovate again to increase profit margins. Entrepreneurs begin hiring skilled workers and engineers to devise production methods and better quality products. In addition, the firms must begin marketing and differentiating their product, creating a brand image that will command higher prices. It is at this point that export growth occurs, as seen in Korea's auto parts industry[viii].

This model is useful in the analysis of Colombia's budding auto parts industry. The formation of clusters in Colombia will be explored, as well as quality of labour, and the ease of doing business in order to promote entrepreneurialism. It is especially pertinent given the fact that the National Government is promoting growth and modernization in the auto parts sector by means of the Productive Transformation Program, with the following

objective of increasing the sectors's exports from US$668M in 2010 to US$3000M in 2032 through the expansion of the region's exporting base.

4.2 Industrialization Factors

An analysis of the major factors in industrializing an economy will aid in an evaluation of Colombia's industrial cluster formation potential. Bogota is the most likely candidate to develop as an industrial cluster in the auto parts industry as it has the largest population, is the capital city, and already has a base of auto parts firms. Therefore, whenever a city location pertains to the analysis, Bogota will be the main focus.

4.21 Labor Market

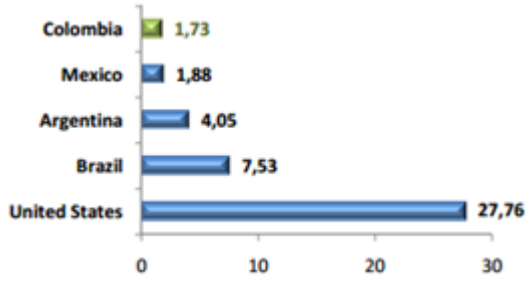


Figure 9 Colombia automotive labor costs per hour; Source: World Bank

Despite having 60 years of experience in the automotive sector, Colombia's labour pool has very competitive wage levels and currently employs 22,000 people. According to a 2009 World Competitiveness survey, a manufacturing operator's hourly wage in Colombia was $1.73 per hour compared to $4.05 and $7.53 per hour for Argentina and Brazil, respectively. Specialized labour is also lower than its peers at approximately $7 per hour. From 2001 to 2008, 11,300 professionals and 3,600 technicians graduated from post-secondary institutions in the automotive sector. It would be fair to assume that similar numbers will have graduated since that time until the end of 2014. This is a sizeable pool of talent that could pave the way in innovation as the industrial cluster develops.

4.22 Capacity to Innovate

According to business surveys conducted by fDi Consulting, Colombian auto parts manufacturers are viewed as unable to build cars from scratch. If this is true, this limits the production scope of domestic auto parts manufacturers. Foreign businesses surveyed also stated

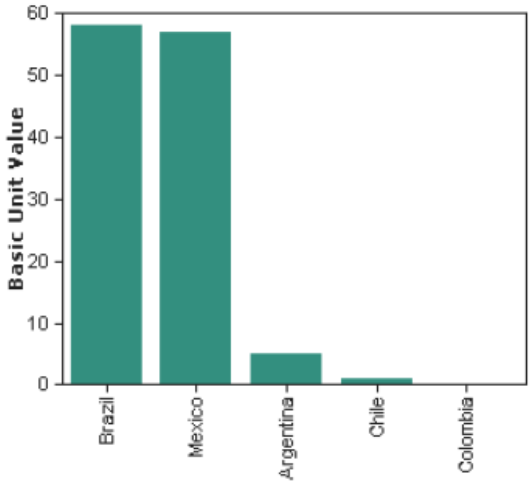


Figure 8 Automotive patents filed, 2009; Source: fDi Consulting, US Patent Office

that Colombian firms are less capable in creating specialized products and processes in comparison to Mexico, Argentina, and Brazil. This assertion is reinforced by the lack of automotive patents filed in Colombia (See Figure 8). Unfortunately, it appears the Colombian auto parts industry merely produces parts designed and developed elsewhere, unlike Mexico, Brazil, and Argentina. In order to combat this problem, the government recently proposed a Productive Transformation Program in eight industries, including automotive parts. The program's intent is to work towards producing specialized auto parts that can be exported to Brazil, Argentina, Central America, and the US[ix]. Through the *Colombian Automotive Industry's Technology Development Center* (CDTA), the government will make investments estimated at $60M in order to generate research, innovation, and development in several segments with strong production potential in the sector. This is critical as at this time Colombian auto parts firms struggle to innovate and create patentable designs.

4.23 Infrastructure



Figure 10 Major auto parts manufacturer locations; Source: ACOLFA, Google Maps

Colombia has a challenging geography due to the various Andes mountain ranges spread throughout the country, and the fact that the Pacific coast is blocked by jungle (meaning ports are in the North on the Atlantic side). Due to these issues, transport costs can be quite high. The Colombian government has acknowledged this and is planning on making large investments to increase infrastructure standards[x] via the National Infrastructure Agency (ANI). The government has put together a Fourth Generation of Tolls plan that will include over 8,000 kilometers of motorways, 1,270km of dual carriageway and 159 tunnels. This is easier said than done however due to the geological risks in undertaking these projects as well as land rights disputes and a bad track record in timely execution.

The needs are urgent as in March, 2014 the World Bank ranked Colombia a dismal 97th place in the world under logistics and infrastructure[xi] due to two major reasons. Firstly,

Colombian trade struggles with slow delivery times; it takes 14 days to export goods from factory to port in Colombia, compared to 12 days in Mexico and Peru. Secondly, Colombia has poor quality roads and port connectivity. Colombia only has 900km of divided highways and five ports (Buenaventura and Cartagena are the major ones). As a form of comparison, Chile has 1500kms of divided highways and 32 ports on the Pacific. The average speed of a truck on the National road system is between 30 – 40 km/h. This restricts trade both domestically and internationally, making it difficult to further develop the industrial cluster in Bogota. For example, GoodYear S.A., the largest auto parts manufacturer in Colombia, decided to base itself in Medellin rather than Bogota due to its closer proximity to ports. Colombia will need to work on these issues in the future in order for the country to fully take advantage of its free trade agreements, such as the US FTA agreement.

4.24 Ease of Doing Business

In order for a successful cluster to develop in Colombia, it is essential that Colombia allows new and existing businesses to run without excessive hassles and bureaucracy. The *Doing Business Survey* (DBS) has been used as a way to gauge Colombia's overall business friendliness. The DBS evaluates a country's ease in starting a business, getting electricity, getting credit, trading across borders, enforcing contracts, and resolving insolvency, among other factors[xii].

Colombia ranked 43rd overall in the survey in comparison with 189 economies, only behind Chile (33rd) and Peru (42nd) in the LatAm region. The table below compares Colombia's performance in some of the survey items against other LatAm economies with developed auto sectors. Colombia surprisingly beat Mexico overall and fared significantly better than Brazil in 116th place (the largest LatAm automotive parts producer). The major issue Colombia faces, as discussed earlier, is a weakness in infrastructure that increases export/import timeliness and costs as well as electricity prices. On the other hand, Colombia is comparable to Mexico in that it generally excels in handling business and construction paperwork, less hindered by bureaucracy and red tape in comparison to its Southern counterparts in Brazil and Argentina. Also of note, Bogota is rated as the top Colombian city in terms of ease of doing business compared to other major cities like Medellin, Cali, and Cartagena.

Furthermore, in April, 2014 the Government announced that it would eliminate all tariffs on the imports of raw materials and inputs for the automotive sector if they are not produced in Colombia. Overall, the government has moved away from protectionist trade policies (such as a 35% auto parts import tariff) and has made the automotive industry more attractive to investors, despite increased competition for domestic auto parts producers.

4.35 Analysis of Factors

Colombia has fairly solid political and administrative institutions in place that have effectively reduced bureaucracy and promote business. The major issue Colombia faces in developing a more mature auto parts industrial cluster in Colombia's interior capital city, Bogota, is a lack of sufficient infrastructure. This weakness limits firms' abilities to export goods to the Northern ports or to neighbouring countries while also restricting the supply of base materials coming into the country. Secondary issues that Colombia must grapple with are tied together. Although Colombia has a solid labour base, the government must continue to work on building the quality of its education, especially in fields such as engineering and applied manufacturing. Colombia has graduated 15,000 people trained in the automotive sector from 2001 to 2008 – and likely has doubled this number up to today – but it must ensure that the country's intellectual capital is up to the latest technological and process standards. A part of this effort will be effectively promoting innovation both privately and publicly, developing existing research institutions, and facilitating cooperation between the private and public sectors. Overall, Colombia's automotive parts industry is well poised to continue profiting from the growth of its own domestic market and neighbouring countries. Hopefully as its intellectual capital develops over time, the Bogota industrial base will be more capable of innovating and producing more specialized products. As infrastructure improves, these products will have an easier time being shipped across the world and perhaps begin competing in the global market.

4.3 Major Players & OEM Market

The majority of auto parts manufacturers were drastically affected due to the recent

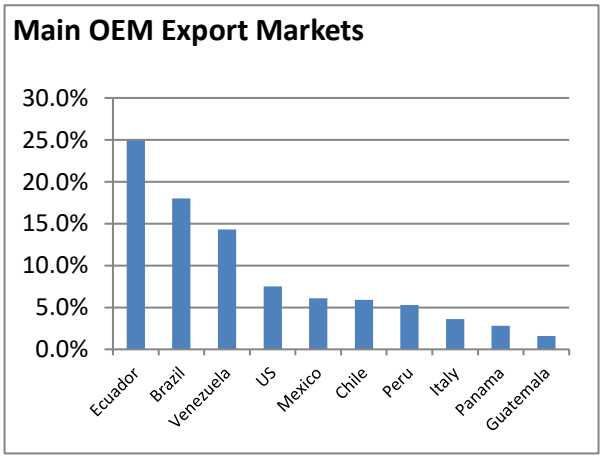


Figure 11 Colombia's OEM Export Markets; Source: Invest in Colombia materials

economic downturn with many firm's sales declining 30% or more. These declines in sales may also be a product of a reduction in trade barriers in recent years, opening up the market to foreign competitors. See Appendix 1 for a table outlining the major auto parts manufacturers in Colombia (>US$1MM in 2013 revenues). After reviewing the locations of the major auto parts manufacturers it is clear that Bogota has already begun building an industrial base as the vast majority of sales and producers are found there.

The majority of these auto parts suppliers sell to the domestic OEM market with companies like HINO trucks, Chevrolet and Renault buying $5.7B in auto parts from domestic suppliers in 2011. About 10% of these are exported, with $500M in OEM exports in 2013 (See Figure 8). Currently, one can deduce that the Colombian auto parts cluster has formed mainly to serve the OEM markets and not to compete on a global scale. This is not surprising as Colombian firms may lack of specialization in designing innovative parts. This explains why Colombia struggles to compete on a global scale in this industry and mainly trades with other "South" countries like Ecuador. They likely attract OEM's merely based on lower prices and proximity to their plants. Further analysis on trade trends may add more understanding on these issues.

4.4 Evaluation of Trade

4.41 Trade Trends

An analysis of historical trends in trade may bring insights into where the auto parts market is heading. To conduct a more detailed analysis on specific segments within the auto parts industry Comtrade data was used based on the H6 code list (See Appendix 3).

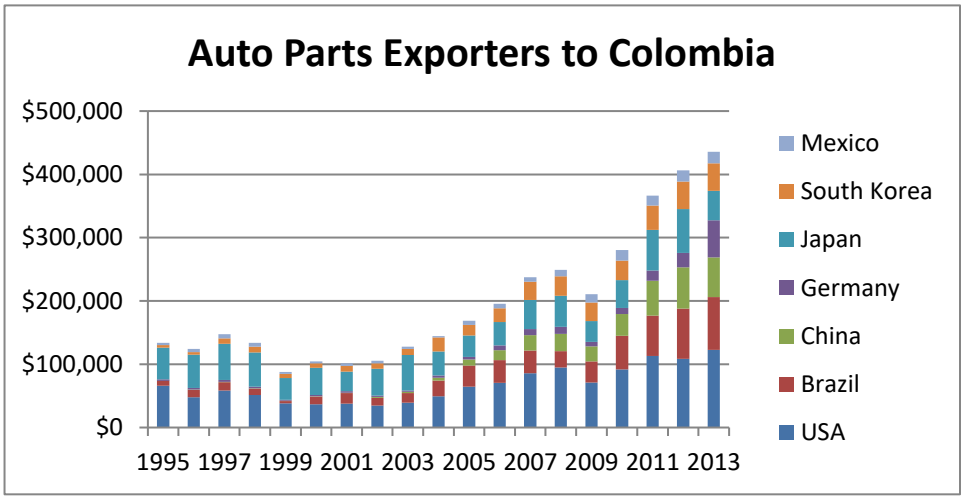


Figure 12Sources of Colombia's auto parts imports, market value; Source: UNCTAD STAT

USA is Colombia's largest trading partner in auto parts, followed by Brazil. This is likely explained by the proximity of the two countries with each other. The USA mainly supplies chassis fitted with engines, parts for vehicle bodies, brakes, drive axles, and suspension shock absorbers. Surprisingly Mexico, despite the country's proximity to Colombia and dominance in the auto parts industry, has a relatively small level of trade with Colombia.

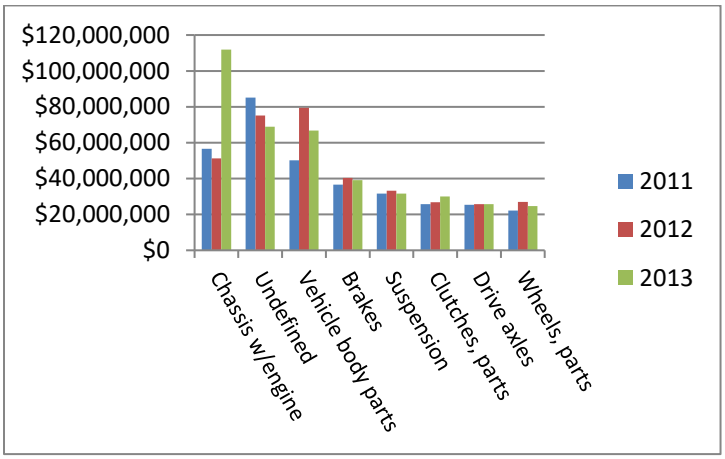


Figure 13 Major types of auto parts imports; Source: Comtrade

Although it is difficult to say with total certainty, it appears that chassis with engines and vehicle bodies tend to be imported in Colombia. Thus, Colombian auto parts producers have been best suited to produce auxiliary parts that are used to complete the finished product (See Appendix 4 for an overview of the automotive parts and production process). This is consistent with findings from business surveys cited earlier in this paper where auto parts manufacturers were unable to build a full car from scratch.

4.42 Revealed Comparative Advantage Analysis

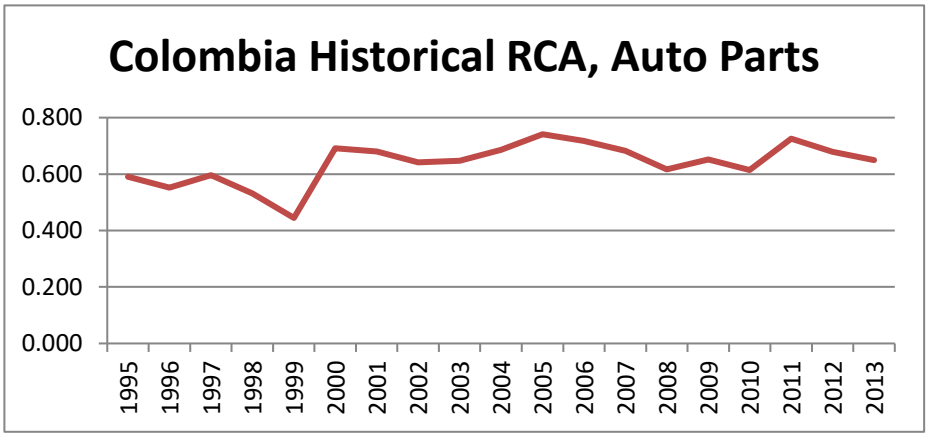


Figure 14 Colombia's revealed comparative advantage 1995 – 2013; Source: UNCTAD Stat

According to the RCA analysis of Colombia vs. World trade, Colombia does not appear to have a revealed comparative advantage in auto parts. After seeing a slight improvement in RCA from the 1995 to 1999 period to the following decade, there does not appear to be any upward trend in this measure. However, this is likely because Colombia's total exports have grown dramatically during the past two decades, masking the rapid growth in the auto parts sector. Overall, this measure shows that Colombia's auto parts industry is still in its infancy and it will take time for this sector to become a stronghold for its economy.

4.43 Value per unit trends

Value per unit trends over time can indicate the level of specialization and types of products being imported from each country. Germany exports the highest value auto parts to Colombia, while China is far lower than the other major trading partner countries. Korea is on the higher end, while Japan, Brazil, and USA are all around the average. This shows that different countries have specialties in the auto parts market. Germany focuses on selling more expensive, specialized parts, while China sells less specialized, cheaper parts.

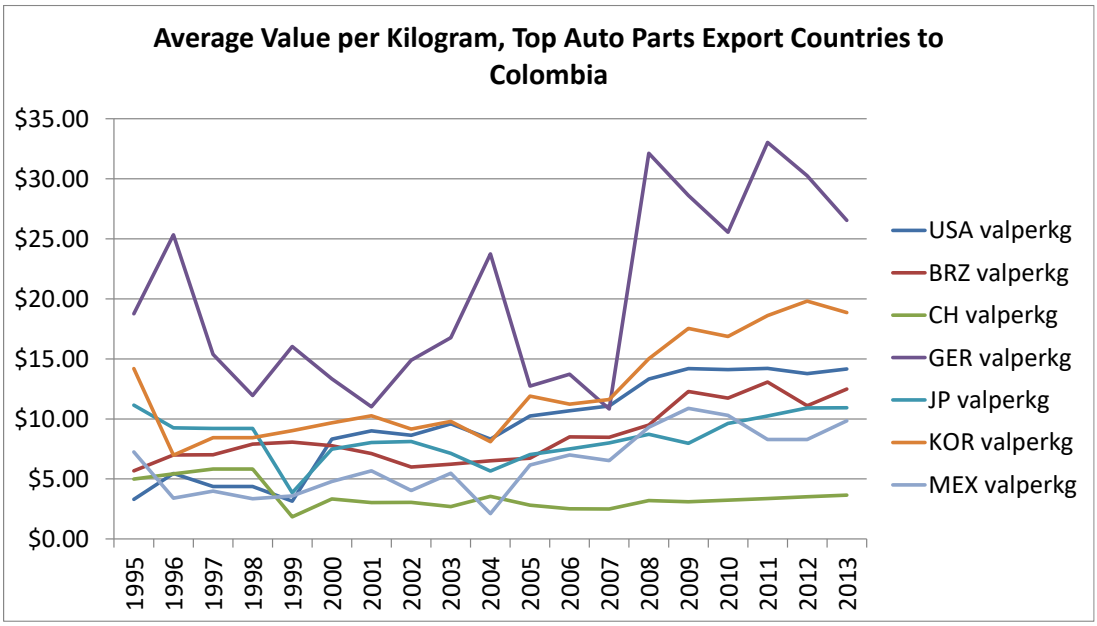


Figure 15 Auto parts value per unit over time; Source: UNCTAD

Colombia's 2013 average value per kg in total auto parts exports was $6.63/kg, which is far below the weighted average trading value per kg of $9.85 in the same year for the top trading partners listed above. This signifies that Colombia produces auto parts

goods that are of lower quality, specialization, and therefore of lower cost. This is consistent with previous findings that Colombian auto parts producers mainly supply OEM's for automobiles within the "South" markets. These markets typically opt for lower quality parts that are commensurately cheaper. However, it will be difficult to create a sustained competitive advantage if Colombian producers only compete on price as it lowers their products to a commodity-like status with low margins. To make matters worse, at any moment Chinese or other producers could produce the same products at a lower cost and destroy a large portion of the domestic market.

SECTION 5: CONCLUSION

Due to a rapidly growing domestic and surrounding automobile market, a strategically located and politically stable economy, and a low cost, qualified labour pool Colombia has already started to develop an industrial base in its capital city Bogota. However, due to an underdeveloped infrastructure system, a lack of firm innovation and specialization, and a lack of sufficient scale, it does not seem likely that Colombia will become a competitor in the global auto parts space. Instead, it is more reasonable that firms and government officials focus on building scale in the production of lower quality auto parts to serve domestic and other "South" markets in partnership with OEM's in the near term. It is foreseeable that within the next decade the auto parts market could more than double just from these efforts alone. Assuming that both the projects currently being made in building new infrastructure and investments in research projects within the auto parts industry are effective, the Colombian business environment may be very different by then. Perhaps in 2025, a newly equipped labour force with an opened access to the world through better roads will be able to build upon their basic OEM processes and create innovative designs that are useful worldwide. At that point Colombia will have reached the *Quality Improvement* phase and have created a sustainable competitive advantage in the auto parts industry. At the end of the day, whether it be auto parts, cosmetics, technology, or service industries, Colombia ultimately needs to diversify away from minerals and agriculture. Working to develop these infant industries into global powerhouses, as is being done through the *Productive Transformation Program*, will allow Colombia to develop into a more prosperous nation as has occurred in numerous Asian countries over past decades.

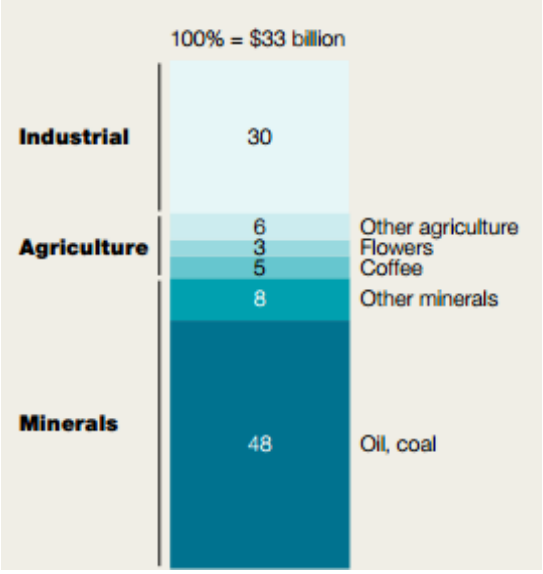


Figure 16 Industry percentages of Colombia's GDP; Source: The Economist

APPENDICES

Company (2013)	COL$ (MM's)	USD (MM's)*	Category	Location
Good Year	$751,400	$398.6	Wheels and Tires	Cali
Fanalca S.A.	$622,400	$330.2	Air Conditioning/Metals	Bogota/Cali
MAC-Johnson Controls	$128,400	$68.1	Electrical Systems	Cali
Incolbest	$95,200	$50.5	Brake Systems	Bogota
Gabriel	$90,200	$47.9	Suspension Systems	Bogota
Yazaki Ciemel	$81,500	$43.2	Electrical Systems	Bogota
Riduco	$72,500	$38.5	Plastic and Rubber Parts	Manizales
Vitro	$53,300	$28.3	Safety Glass	Bogota
Inorca	$49,600	$26.3	Interior Seats Trim	Cali
Madeal	$47,300	$25.1	Wheels	Manizales
IMAL	$46,300	$24.6	Suspension Systems	Bogota
Espumlatex	$45,100	$23.9	Sound proofing foam	Bogota
Trimco	$43,100	$22.9	Interior Seats Trim	Bogota
Andina Trim	$42,300	$22.4	Interior Seats Trim	Bogota
UMO	$41,000	$21.8	Exhaust Systems	Medellin
Bonem	$39,900	$21.2	Clutches	Medellin
COFRE	$35,300	$18.7	Brake Systems	Bogota
Partmo Filtros	$34,000	$18.0	Filters	Bucaramanga
AGP Glass	$33,200	$17.6	Safety Glass	Bogota
Industrias FAACA	$25,200	$13.4	Air Conditioning	Medellin
Industrias Japan	$24,700	$13.1	Accessories	Bogota
Sauto	$24,400	$12.9	Metal Parts	Bogota
Saint-Gobain (autover)	$22,500	$11.9	Safety Glass	Bogota
Transejes	$20,100	$10.7	Transmission Systems	Bucaramanga
TNK	$19,300	$10.2	Steering/Suspension Systems	Bogota
IPT	$16,100	$8.5	Metal Parts	Bogota
Cuperz	$15,500	$8.2	Accessories	Bogota
Fundicom	$15,000	$8.0	Metal Parts	Bogota
Franig Filters	$14,300	$7.6	Filters	Bogota
Servintec	$14,000	$7.4	Exhaust Systems	Bogota
Metalicas JB	$13,600	$7.2	Metal Parts	Bogota
Thermo Form	$12,200	$6.5	Interior Seats Trim	Bogota
Multipartes	$11,500	$6.1	Electrical Systems	Cali
TI Automotive	$9,900	$5.3	Accessories	Bogota
Iderna	$8,200	$4.4	Metal Parts	Manizales
Faral	$7,100	$3.8	Plastic and Rubber Parts	Bogota
Inaltra	$5,000	$2.7	Metal Parts	Bogota
Metalbogota	$5,000	$2.7	Brake Systems	Bogota
Apsa Group Auto Plastics	$4,400	$2.3	Interior Seats Trim	Bogota
Guayas B&G	$3,200	$1.7	Metal Parts	Bogota
TOTAL	$2,643,200	$1,402.2		

Source: Members of Colombian Association of Auto Parts Manufacturers; Grupogia Financial Database
**Based Aug 15, 2014 on spot rates (1885 $COL/USD)*

Appendix 1 Auto parts manufacturers with >$US1MM in revenues

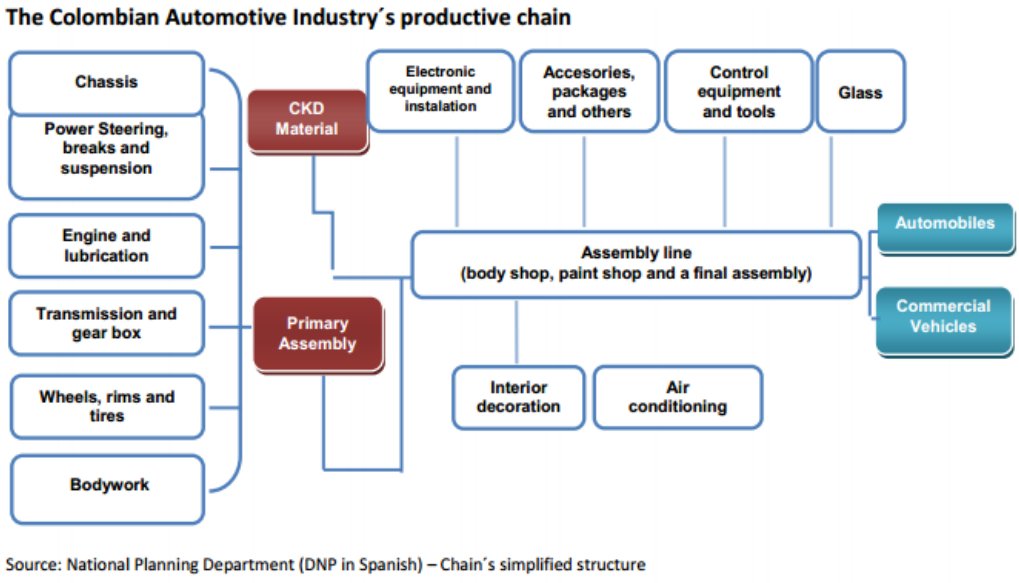
Year 2014	Colombia	Argentina	Brazil	Mexico	Peru	US
OVERALL RANK	**43**	**126**	**116**	**53**	**42**	**4**
Starting a Business (rank)	**79**	**164**	**123**	**48**	**63**	**20**
Procedures (#)	9	14	13	6	5	6
Time (days)	15	25	108	6	25	5
Construction Permits (rank)	**24**	**181**	**130**	**40**	**117**	**34**
Procedures (#)	8	24	15	11	14	16
Time (days)	54	365	400	82	173	91
Getting Electricity (rank)	**101**	**80**	**14**	**133**	**79**	**13**
Procedures (#)	5	6	4	7	5	4
Time (days)	105	91	58	85	100	60
Getting Credit (rank)	**73**	**73**	**109**	**42**	**28**	**3**
Paying Taxes (rank)	**104**	**153**	**159**	**118**	**73**	**64**
Time (hours per year)	203	405	2600	334	293	175
Trading Internationally (rank)	**94**	**129**	**124**	**59**	**55**	**22**
Docs to export (#)	4	6	6	4	5	3
Time to export (days)	14	12	13	11	12	6
Export cost per container ($US)	2355	1650	2215	1450	890	1090
Time to import (days)	13	30	17	11	17	5
Container Cost to import (US$)	2470	2260	2275	1740	1010	1315

Source: Doing Business Survey (2014)

Appendix 2 Doing Business Survey rankings of selected LatAm countries

H6 Tag	Segment
870600	Chassis fitted with engines
870810	Bumpers, parts
870821	Safety seat belts
870829	Parts for bodies of vehicles
870830	Brakes, and servo-brakes
870831	Mounted brake linings
870839	Brakes, and servo-brakes
870840	Gear boxes
870850	Drive axles
870860	Non-driving axles & parts
870870	Road wheels, parts
870880	Suspension shock absorbers
870891	Radiators
870892	Mufflers and exhaust pipes
870893	Clutches and parts
870894	Steerling wheel, columns
870895	Safety airbags
870899	Other parts and accessories

Appendix 4 Auto parts H6 trade codes



Appendix 3 Auto production process and major parts

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