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The Philippines in the Automotive Global Value Chain

Highlights

- The Philippine automotive manufacturing capabilities are mostly oriented towards the domestic market rather than regional or global chains.
- Philippine participation in the automotive global value chain (GVC) is focused on the production of parts and components – particularly in wiring, electronic components, and aluminum components - and systems modules – specifically in the electrical and electronics system (ignition, chassis electronics and interior electronics), and in the chassis system (drive trains, rolling chassis, wheel and tire assemblies, front and rear end modules, and vibration controls).
- The potential for upgrading in the automotive GVC may be anchored on the local industry's well-established global footprint in wire harnesses, a competitive human resource pool, an effective Export Processing Zone (EPZ) regime, CARS' provision of incentives to lead firms, and the commitment of leading industry stakeholders.
- Opportunities for upgrading Philippine participation in the automotive GVC are in smaller, lighter products that do not incur excessive transport costs but require technical knowledge and cost-competitive labor to assemble; the prominence of the electronics and electrical cluster; the established strength in the wire harnesses and electrical wiring; and, assembly which is labor intensive and a potential niche by capitalizing on their cost advantages to attract foreign investments.

The Automotive Global Value Chain

The characteristics of the automotive GVC, outlined below, show a complex organization that continuously evolves. Since the 1990s, the global automotive industry has been shifting from a series of fairly discrete national industries, connected to the outside world mainly through exports and the local assembly operations of multinational firms, to a more integrated global industry.

Motor vehicles tend to be designed, engineered, and tested in the industry's traditional design clusters located in developed countries such as Detroit, Stuttgart, and Tokyo.

The largest automakers have concentrated vehicle development in a few centers to distribute the high cost of vehicle design and engineering across products sold in multiple end markets.

► *The global automotive industry has been shifting... to a more integrated global industry.*

Production tends to be organized regionally or nationally in large countries, with bulky and model-specific parts-production concentrated close to final assembly plants.

Because many automotive parts tend to be heavy and efforts to reduce inventory have driven firms to employ just-in-time delivery to reduce costs, there are limits on how far apart parts production and final assembly can be. As a result, regional parts production tends to feed final assembly plants, which concentrate on national or regional markets. Because of deep investments in capital equipment and skills, local automotive clusters tend to be very long-lived once established.

Lighter, more generic parts are produced at a distance to take advantage of scale economies and low labor costs. When product variety is high, parts for complex sub-assemblies are shipped from distant low-cost production locations to sub-assembly facilities adjacent to final assembly plants, where they can be tailored to the exact requirements of vehicles under assembly.

The automotive industry is in the midst of a profound transition from a technological point of view. The increasing amount of electronics components in motor vehicles have ushered deeper partnerships between global automakers and technology companies. Moreover, the spread of electric vehicles could offer a wealth of new opportunities. Roughly 665,000 e-vehicles are already in use around the world, and millions more are expected to be purchased in the years ahead in emerging markets such as India and China.

The Philippines in the Automotive Global Value Chain

The Philippine automotive manufacturing capabilities are mostly oriented towards the domestic market rather than regional or global chains. The lead firms active in the Philippines—Toyota, Mitsubishi, Mazda, Nissan, and Isuzu—are Japanese automakers that generate vehicles for the domestic market. Most of them have been in the country for decades, facing frequent encounters with volatile situations. The closing of the Ford assembly plant in 2012 highlighted the trend of decreasing assembly of Complete Knock Down (CKD) units in the country, evidenced by decreased sales of CKD kits from 137,365 in 1996 to 67,742 in 2011.

The contraction of the CKD base has, in turn, impaired the development of domestic suppliers. Without demand, lead firms found it difficult sourcing suppliers that have the ability to produce parts in sufficient volume. This led to an overall stagnation in the number of domestic parts producers manufacturing car parts and components of both “Original Equipment” parts (OE) and replacement parts at 240 companies in 1996 to only 256 in 2014.

While there are at least 123 companies situated in the export processing zones, only a handful exports goods in high volume, with the 15 largest companies accounting for 80% of total revenue. Together, these companies helped the Philippines’ increase its automotive exports by roughly 33% from 2007 to nearly US\$4 billion in 2014. That figure is a small fraction of global automotive exports and represented 6.4% of the Philippines’ total goods exports in 2014.

The country’s strength is in the production of electrical and electronic automotive components, with approximately two-thirds of its US\$3.98 billion exports in 2014 falling in one of these categories. Six of the country’s largest 10 exporters are wire harness companies. Wire harnesses, which direct the flow of current and electronic signals throughout the vehicle, are of growing importance with the increasing electronics content of vehicles being manufactured. Exports of wire harnesses increased by 129% from 2007 to 2014, making it the world’s fourth largest global exporter.

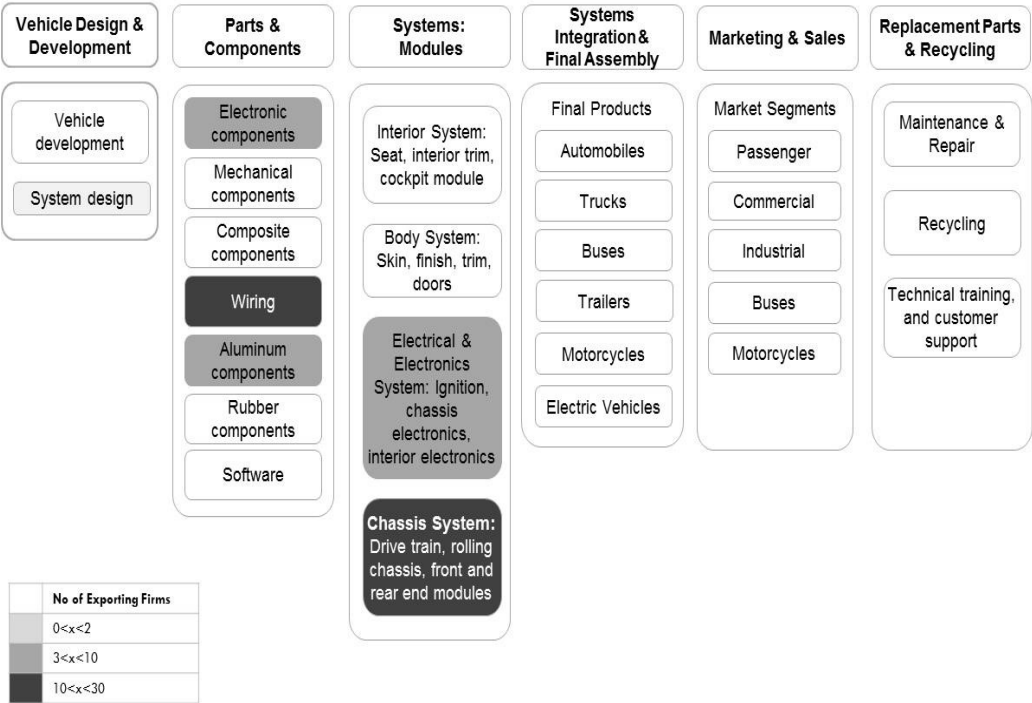
Beyond wire harnesses, the second largest export category is a broad one that captures wheel and tire assemblies, drive trains, and vibration controls. However, growth in this category has been sluggish in recent years — with 44 companies exporting US\$862

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million in 2007, down to 30 firms exporting US\$674 million in 2014. The third largest export category—gear boxes or transmissions—has been demonstrating more consistent growth, although there are only four companies active.

Figure 1 illustrates that Philippine participation in the automotive GVC is focused in the production of **parts and components – particularly in wiring, electronic components, and aluminum components - and systems modules** – specifically in the electrical and electronics system (ignition, chassis electronics and interior electronics), and in the chassis system (drive trains, rolling chassis, wheel and tire assemblies, front and rear end modules, and vibration controls). Wiring and Chassis System are where Philippine participation is substantial.

Figure 1. Philippine Participation in the Automotive GVC



Source: Duke GVCC

Advantages

Government remains focused on initiatives aimed at strengthening the competitiveness and potential upgrading of the local industry’s participation in the automotive GVC. Advantages to facilitate upgrading in the automotive sector include:

Well-established global footprint in wire harnesses. There are at least 15 wire harness firms active in the country, and two of the industry leaders—Yazaki and Sumitomo—have long-standing investments, with major suppliers such as Lear and Furukawa expanding to the Philippines in more recent years. All four companies have undergone a range of upgrades, cumulatively expanding or implementing new projects.

Commitment of leading industry stakeholders. Stakeholder engagement by government, particularly the Department of Trade and Industry and the Board of Investments, has engendered a supportive environment for industry policy development in the manufacturing sector in general. The lead firms active in the Philippines have demonstrated a strong commitment to the local market. Industry associations, as well, have collaborated in policy formulation such as the Comprehensive Automotive Resurgence Strategy (see CARS segment below), and on initiatives such as the industry road map project.

Government remains focused on initiatives aimed at strengthening the competitiveness and potential upgrading of the local industry’s participation in the automotive GVC.

Competitive labor environment. The country's human capital is one of the most desired and sought after in the global setting owing to, but not limited to, relatively low wage rates, a deep pool of engineers, widespread English skills, and low attrition rates.

Effective Export Processing Zone (EPZ) regime. There are large concentrations of firms in the EPZs in the Laguna and Cavite regions. The consistent and sound EPZ regime provides a haven for locators with a range of specific benefits, including tax incentives, assistance with visas, and streamlined import and export procedures.

CARS' provision of incentives to lead firms. The Comprehensive Automotive Resurgence Strategy (CARS) program, implemented in 2015, is the most recent effort to enhance the domestic assembly of motor vehicles and create a robust supply base in the country. The program aims to generate economies of scale in the domestic market by offering US\$600 million in incentives to a limited number of lead firms. By capping the output-based assistance to a maximum of three models, the program enables local parts makers to generate economies of scale by producing components for a small number of products.

▶ *The CARS Program... aims to generate economies of scale in the domestic market by offering US\$600 million in incentives to a limited number of lead firms.*

Challenges

Addressing the following constraints will facilitate upgrading of the local industry's participation in the automotive GVC as well as improve capabilities and capacities of domestic producers. These include:

Gaps in supply chain. Only 330 of the 20,000-30,000 total vehicle parts are produced in the Philippines (DTI, 2014). The gaps span all levels of the supply chain: lead firms listed body shells and stamping plants, engines, air conditioning units and suspension systems; wire harness manufacturers import electrical switches, terminals, and specialized parts from both the region and Europe and North America; and, transmission producers rely on India for polished metal and China for forged parts.

Comparatively small market for new motor vehicles. While Philippine annual motor vehicle sales have been on an upward trajectory, the country ranks below its regional peers such as Indonesia, Malaysia, and Thailand. Even when the market achieves the projected 500,000 annual sales of motor vehicles by 2020, demand will still likely be lower than Indonesia, Malaysia, and Thailand. The lack of further expansion in assembly capabilities poses a risk on insufficient demand for suppliers to increase their capacity. These prospects make the country an unlikely candidate for investments by global lead firms.

Low to moderate support for R&D activities. Automotive companies such as Furukawa, Denso, and F-Tech R&D have made recent investments in EPZs for knowledge-intensive business functions. However, government support for R&D activities trails regional peers such as Malaysia and Thailand.



Potential Upgrading Trajectories

Considering the current and emerging landscape of the automotive GVC and evaluating the local industry's growth trajectory, the potential for upgrading the sector's GVC participation may be anchored on the well-established global footprint in wire harnesses, a competitive human resource pool, an effective Export Processing Zone (EPZ) regime, CARS' provision of incentives to lead firms, and the commitment of leading industry stakeholders.

Product and process upgrading to increase wire harness exports. The Philippines' major advantage in wire harnesses, the presence of leading firms, and some backward linkages into wire and coatings present opportunities to further increase exports. Because motor vehicles have long production cycles, the demand for simpler wire harnesses with high labor content will be long lived, even as segments of the market change with extreme rapidity. However, pressure from lead firms to their suppliers to provide more technologically sophisticated wire harnesses at lower cost to support the greater interplay between electronics hardware and software and other developments will require exporters to undertake both product and process upgrading to maintain competitiveness. Strengthening backward linkages in wire harness production may also play a role particularly with electronics and the electrical industries, as these account for 70% of imports from the sector's exporters.

Functional upgrading into R&D for wire harnesses. Although the Philippines still does not support R&D activities in a systematic way, the country's base of engineers, its strong workforce, its entrenched network of Japanese lead firms, and its demonstrated history of success in the information technology services sectors offers promise for future expansion.

Chain upgrading into aerospace wire harnesses. The Philippines has the potential opportunity to upgrade into the electrical systems of the aerospace industry by leveraging its automotive wire harness experience. The country is already participating in interiors and flight controls and could leverage its capabilities in automotive wire harnesses to enter the aerospace value chain (a single A380 aircraft has approximately 500 kilometers of wires). Moreover, with wire for automotive applications becoming lighter and finer in order to save weight and accommodate lower voltage, there is increasing overlap with the wiring used in electronics.

▶ *Lastly, the Philippines could possibly position itself to enter the e-vehicle value chain by producing batteries for lead firms targeting Chinese consumers.*



Product and functional upgrading into automotive electronics. The Philippines is well-positioned to take advantage of recent developments toward explicit partnerships and the increasing electronics content of vehicles. A number of firms such as Continental Temic, Fujitsu, and IMI that have expertise in both electronics and automotive GVCs are present in the country and the output of these firms generally fit the country's competitive advantage i.e. in smaller, lighter products that do not incur excessive transport costs but nonetheless require technical knowledge and cost-competitive labor to assemble. To illustrate, electronic radar, chassis, wheel, and braking sensors are in high demand and are already being produced in the country. Moreover, shifting growth towards the Asia-Pacific region further amplifies the Philippines' strategic value in these firms's supply chain

Chain entry into batteries for e-vehicles. Lastly, the Philippines could possibly position itself to enter the e-vehicle value chain by producing batteries for lead firms targeting Chinese consumers. As part of a US\$500 million project it launched in 2012 to develop energy-efficient tricycles and motorcycles in the country, the Asian Development Bank (ADB) identified the creation of a lithium-ion battery supply chain in the Philippines as one of its targeted outcomes. Additionally, the government has included batteries for e-vehicles as part of its 2014 Investment Priorities Plan, which provides tax holidays and other financial incentives for investors.

Conclusion

With the automotive industry in the midst of a profound transition from a technological point of view, the prominence of the electronics and electrical cluster affords the country a number of upgrading opportunities, while the strong foothold in the wire harnesses and electrical wiring may very well serve as a springboard for higher-value activities.

With lighter, more generic parts being produced at a distance to take advantage of scale economies and low labor costs, opportunities will be in smaller, lighter products that do not incur excessive transport costs but require technical knowledge and cost-competitive labor to assemble. Since production tends to be organized regionally or nationally in large countries, with bulky and model-specific parts-production concentrated close to final assembly plants, assembly, being labor intensive, present developing countries prospects for cornering the market by leveraging on their cost advantages in attracting foreign investments.

Addressing constraints, such as gaps in the supply chain and nominal support for research and development activities, further guarantee the viability of the industry. Otherwise, the relatively small size of the domestic market will constrain the development of the industry, with local companies unable to generate the economies of scale necessary to compete in an increasingly consolidated global environment.

Table 1 plots the potential upgrading trajectories within a timeline (from short to medium term, and medium to long term). It also identifies the key benefits derived from achieving trajectories, and capacities required of individual firms in light of Philippine challenges.

Table 1. Upgrading Trajectories in Automotive GVC

Time Frame	Potential Upgrading Trajectory	Key Benefits	Capacities Required of Individual Firms	Philippines Challenges
Short-Medium Term	Product & Process Upgrading to Increase Wire Harness Exports	<ul style="list-style-type: none"> • Position the Philippines as the global automotive E&E hub • Leverages capabilities in the sector and economies of scale • Labor-intensive employment generator for semi-skilled workers 	<ul style="list-style-type: none"> • Human capital • Access to inputs • R&D capabilities to adapt to increasing complexity 	<ul style="list-style-type: none"> • Underdeveloped backward linkages for some inputs • Logistics & transportation infrastructure • Temporary decline in labor availability due to changes in education system
Medium Term	Functional Upgrading into R&D for Wire Harnesses	<ul style="list-style-type: none"> • Position the Philippines as the global automotive E&E hub • Potential to generate higher unit value products • Higher skilled employment 	<ul style="list-style-type: none"> • Human capital • Technology • Access to customers 	<ul style="list-style-type: none"> • R&D still being done in traditional manufacturing bases • Little clustering of automotive lead firms outside wire harnesses
Medium Term	Chain Upgrading into Aerospace Wire Harnesses (Electrical Wiring Interconnection Systems)	<ul style="list-style-type: none"> • Position the Philippines as the global producer of aerospace electrical systems • Leverage expertise for higher value products • Employment generation for semi-skilled and skilled workers 	<ul style="list-style-type: none"> • Certifications • Technical knowledge • Access to customers 	<ul style="list-style-type: none"> • No established reputation in the aerospace industry • No experience in regulated aerospace wire harness manufacturing
Medium Term	Product & Functional Upgrading into Automotive Electronics	<ul style="list-style-type: none"> • Leverages country's capabilities in electronics • Higher unit value exports • Continuation of success in segment where Philippines is competitive 	<ul style="list-style-type: none"> • Human capital • Technical knowledge • Access to finance • Access to customers 	<ul style="list-style-type: none"> • No established reputation in the automotive industry • Logistics • Lack of specialized human capital • Limited R&D commercialization experience
Medium-Long Term	Chain entry into batteries for e-Vehicles	<ul style="list-style-type: none"> • Position the Philippines to earn foothold in nascent industry • Potential spillovers of technology and skills into wire harness and electronics segments • Possible for both semi-skilled and high-skilled employment 	<ul style="list-style-type: none"> • Human capital • Access to technology • Access to inputs • Access to customers 	<ul style="list-style-type: none"> • Lack of specialized human capital • No major foreign investments in technology • Possible underdeveloped backward linkages

Source: Duke GVCC

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The views and opinions expressed in this policy brief are of the author/s and do not necessarily reflect Philippine government policy.

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