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# THE PHILIPPINES

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IN THE ELECTRONICS &  
ELECTRICAL GLOBAL  
VALUE CHAIN

MAY 2016

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The Duke University Center on Globalization, Governance & Competitiveness undertakes client-sponsored research that addresses economic and social development issues for governments, foundations and international organizations. We do this principally by utilizing the global value chain (GVC) framework, created by Founding Director Gary Gereffi, and supplemented by other analytical tools. As a university-based research center, we address clients' real world questions with transparency and rigor.

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# The Philippines in the Electronics & Electrical Global Value Chain

## Executive Summary

**FINAL DRAFT FOR REVIEW**

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## Executive Summary

This report uses the Duke CGGC global value chain (GVC) framework to examine the role of the Philippines in the global electronics & electrical (E&E) industry and identify opportunities to upgrade. Electronics and electrical equipment have played an important role in the Philippine economy since the 1970s and form the foundation of the country's export basket today. In 2014, these sectors accounted for 47% of total exports from the Philippines at US\$28.8 billion, of which 41% was from electronics, and 6% from electrical products. From a global perspective, while the Philippines is not the leading exporter in any particular product category, it is known for its significant number of semiconductor assembly and test (A&T) facilities. The global economic crisis (2008-09), combined with the exit of Intel (2009), had a significant negative impact on electronics exports and, although steadily increasing, they have not yet rebounded to pre-crisis levels. Nonetheless, investment in the E&E industries has picked up since 2010; in the past five years, there have been 110 new investments in these sectors. Another positive sign is the low exit rate; with the exception of Intel, companies that have invested in the Philippines have stayed, with several operations dating back to the late 1970s and 1980s. These firms have not only stayed, but have continued to grow and expand in the country due to the quality of the workforce and satisfaction with the Philippine Economic Zone Authority (PEZA) environment. The growth of the industry has significantly benefited from foreign investment and close ties with Japanese firms.

## Global Electronics & Electrical Global Value Chain

The electronics and electrical industry encompasses a broad range of component, intermediate, and final products that feed into a number of different end markets. World exports in 2014 were US\$2.9 trillion of which electronic components were US\$616 billion, electrical equipment was US\$508 billion, final electronic products and specific parts was US\$1.4 trillion, and final consumer appliances, equipment and specific parts was US\$342 billion.

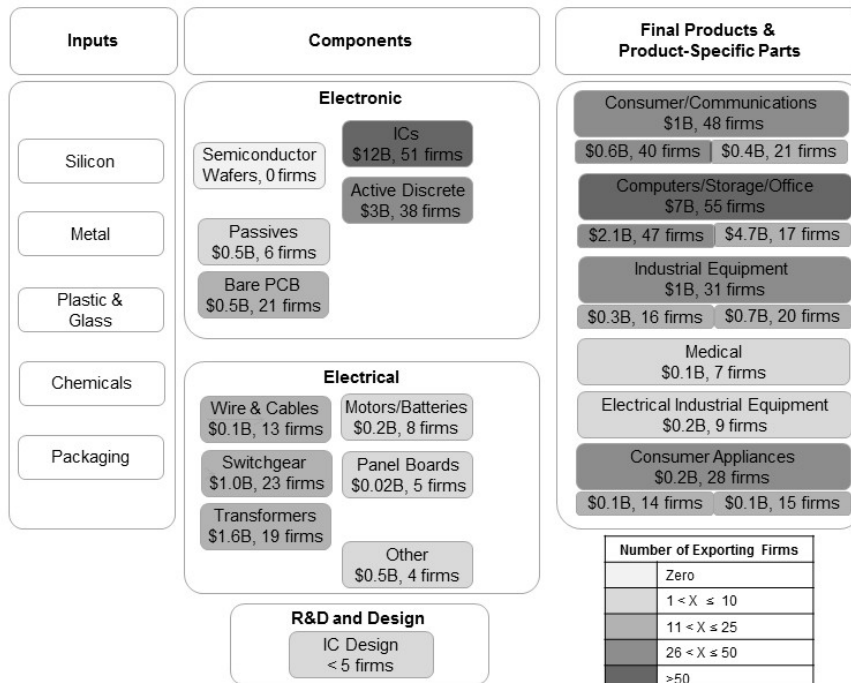
- **The number of products with electronic content is rapidly increasing** due to lower manufacturing costs and consumer demand for connectivity and data access and storage across all walks of life. This trend has gone hand in hand with the proliferation of handheld electronic devices (i.e., mobile phones, tablets, etc.) and the ability to store massive amounts of data 'in the cloud' (large data centers) rather than locally on the device. Electronic content is found in traditional products (computers, televisions, phones), which still make up the largest share of demand; however, fast growing markets include automobiles, industrial equipment, and medical devices.
- **On the supply side, China/Hong Kong is the dominant exporter in all segments of the chain.** In 2014, China and Hong Kong accounted for 39% of overall E&E exports; up from 28% in 2007. **Demand for final E&E products is also increasingly from Asia (particularly China),** which is causing a slow shift towards more regional rather than global manufacturing networks.
- **Three key sets of players exist in the value chain: lead firms, contract manufacturers/Tier I suppliers, and component semiconductor suppliers.** Lead firms are responsible for the marketing, branding, and final product research, design and product development. These firms work closely with key semiconductor firms in technical

product development. Lead firms and semiconductor companies have headquarters in the main consuming markets (US, Europe, Japan), with an increasing number from emerging Asian countries, particularly South Korea, Singapore, Taiwan, and China. Lead firms often outsource production to contract manufacturers (referred to as electronic manufacturing service (EMS) providers), or in the case of non-electronic end markets (i.e. automotive, aerospace, medical devices), the lead firms work with Tier I supplier that are responsible for coordinating production of electronic subassemblies. Tier I suppliers either manufacture in-house or work with EMS providers.

### Philippines in the Electronics & Electrical Global Value Chain

In 2014, the Philippines exported US\$29 billion in E&E related products; of this total, 87% was electronic and 13% was electrical. Electronic and electrical equipment have played an important role in the Philippine economy since the 1970s and continue to form the foundation of the country's exports today. In 2014, these sectors accounted for 47% of total exports from the Philippines. The export-oriented industry is an important source of employment and is characterized by large, labor-intensive operations. The 258 E&E firms operating out of the Philippines employ some 344,450 workers. These firms also tend to be branch plants of foreign MNCs, and E&E accounts for the majority of all FDI in the country. While the sector is strong locally, globally the Philippines is still a relatively small contributor to the industry, accounting for just 1% of global E&E exports in 2014. The Philippines participates primarily in the component stage of the value chain; it accounts for over two-thirds of exports and firms. Within electronic components, integrated circuits, particularly A&T activities for analog semiconductors, is the main area.

Figure 1. The Philippines in the Electronics & Electrical Global Value Chain



Source: Authors. Note: Values are 2014 exports (US\$, billions). The number of firms and shading is based on firms with exports >\$1 million in segment in 2014. Omitted or white boxes are segments in which data is not available.

### Philippines Advantages for Upgrading

- **The Workforce**, particularly at the operator level; specific strengths include English language skills, supply (availability, stability), cost, loyalty (low turnover rates), and the overall quality of workers (flexible, trainable).
- **The Philippine Export Zone Authority (PEZA)** is considered a key advantage to E&E companies. Beyond incentives, the responsiveness and stability of the organization are why firms have stayed and expanded their operations in the Philippines. The overall cost of manufacturing (attributable to the workforce and PEZA) is also seen as a strength.
- **Footprint in Integrated Circuits and Automotive E&E products:** Accounting for 2.8% of world IC exports, the Philippines has been among the top 10 exporters for at least the last decade. Several of the largest IC global companies have locations in the Philippines including Texas Instruments, STMicroelectronics, NXP, ON Semiconductor, Analog Devices and Maxim among others. Within ICs, the Philippines is particularly dominant in analog A&T activities. In the automotive industry, two-thirds of exports are in E&E components and the Philippines is among the top five exporters of wire harnesses globally. Collectively, E&E and auto exports accounted for 53% of the country's exports in 2014.

### Philippines Challenges for Upgrading

- **Stagnant export growth:** The Philippines had a negative export CAGR since 2007 (-2%) compared to a positive world rate (4%), although exports have increased since the economic crisis and the exit of Intel. This is compounded by the fact that the export profile of the country has remained largely the same (IC A&T activities and storage devices) with little change in product mix.
- **Loss of engineering talent to other countries and minimal functional upgrading:** top engineering talent has had a tendency to leave for better opportunities in other countries, which poses a challenge to moving into higher value activities in the chain across segments. In order to engage in more functional upgrading (which has been minimal), the Philippines will need to address the issue of losing skilled workers to other countries. There is a relatively limited supply of industry-specific technicians that would be needed to move into new product areas, end markets, or more skill-intensive functions.
- **Competition from other ASEAN countries** with similar backgrounds and aspirations. These countries are also trying to entice foreign investors to set up operations in their countries, so it is important for the Philippines to be aware of their strategies. Focusing on industries and firms that fill gaps across multiple industries and establishing a niche will help the country stand out compared to competitors.

Given the current dynamics of the E&E industry both globally and in the Philippines, five areas have been identified as targets for upgrading, with three of these having a strong tie to the automotive industry.

**Table I. Potential Upgrading Trajectories for the Philippines**

Time Frame	Potential Upgrading Trajectory	Key Benefits	Philippines Challenges
Short to Medium Term	Product upgrading in storage devices	<ul style="list-style-type: none"> <li>Remain relevant &amp; competitive as industry innovates</li> <li>Skilled employment and enhancement of knowledge capabilities</li> </ul>	<ul style="list-style-type: none"> <li>Industry dominated by MNCs with production strategy developed in HQs outside Philippines</li> </ul>
Medium to Long Term	Entry into electrical equipment: networking & infrastructure improvements & industrial end market	<ul style="list-style-type: none"> <li>Leverage domestic &amp; regional demand to drive economies of scale</li> <li>Improve telecom &amp; energy grid infrastructure</li> <li>Employment generation</li> </ul>	<ul style="list-style-type: none"> <li>Limited presence in the electrical business</li> <li>Competition from ASEAN countries with larger domestic markets</li> </ul>
Short to Medium Term	Strengthen and expand automotive E&E (EMS, batteries, motors, etc.)	<ul style="list-style-type: none"> <li>Continue to build automotive E&amp;E cluster; niche area within ASEAN</li> <li>Employment</li> <li>Higher value; lower volume products leverage competitive advantages</li> <li>Move beyond competitive semiconductor A&amp;T</li> <li>Future opportunities in aerospace and shipbuilding</li> </ul>	<ul style="list-style-type: none"> <li>Competition from other ASEAN countries</li> <li>Experience focused only on one area – wire harnesses; limited experience in other areas (e.g. batteries, motors)</li> <li>Limited global awareness</li> </ul>
Short to Medium Term	Backward linkages in common electro-mechanical products (e.g. passive components, circuit boards, electrical equipment)	<ul style="list-style-type: none"> <li>Close supply chain gaps</li> <li>Add value to copper raw materials</li> <li>Increase domestic component of exports, capture more value by expanding participation along chain and increase employment</li> <li>Help grow EMS/Tier I segment in the country</li> </ul>	<ul style="list-style-type: none"> <li>Local firms lack capital, scale and expertise to provide products &amp; services for MNCs</li> <li>Information asymmetries regarding capabilities impede linkage formation</li> <li>Slowdown in copper refining locally (only for copper wires).</li> </ul>
Long Term	Functional upgrading in analog and power ICs for automotive applications	<ul style="list-style-type: none"> <li>Skilled employment</li> </ul>	<ul style="list-style-type: none"> <li>Minimal involvement in non-manufacturing segments of the chain</li> </ul>

Source: Duke CGGC.