Shifting Shapes, Turning Tides: The Evolution of Malaysia's Electronics and Electrical (E&E) Industry

The global electronics and electrical (E&E) industry has experienced several transformations since the start of the new millennium. Firstly, post its ascension to the World Trade Organisation (WTO) in 2000, PR China has emerged as the world's largest E&E exporter, with aspirations to rapidly move up the value chain. Secondly, the progression towards more modern smart devices and wireless technology came to some extent at the expense of traditional personal computers (PCs) and parts manufacturers, which has been one of the industry's main drivers of growth until the Global Financial Crisis (GFC). Conversely, the increasing ubiquity and proliferation of electronics into all types of products, besides PCs and telecommunication equipment, have provided greater support for semiconductor manufacturers. Thirdly, the more diffused global E&E supply chain has also led to the increased competition among economies in attracting and retaining foreign direct investments (FDIs) from multinational companies (MNCs). Taken together, all these forces have prompted many participating economies and firms to recalibrate their strategies in the E&E industry.

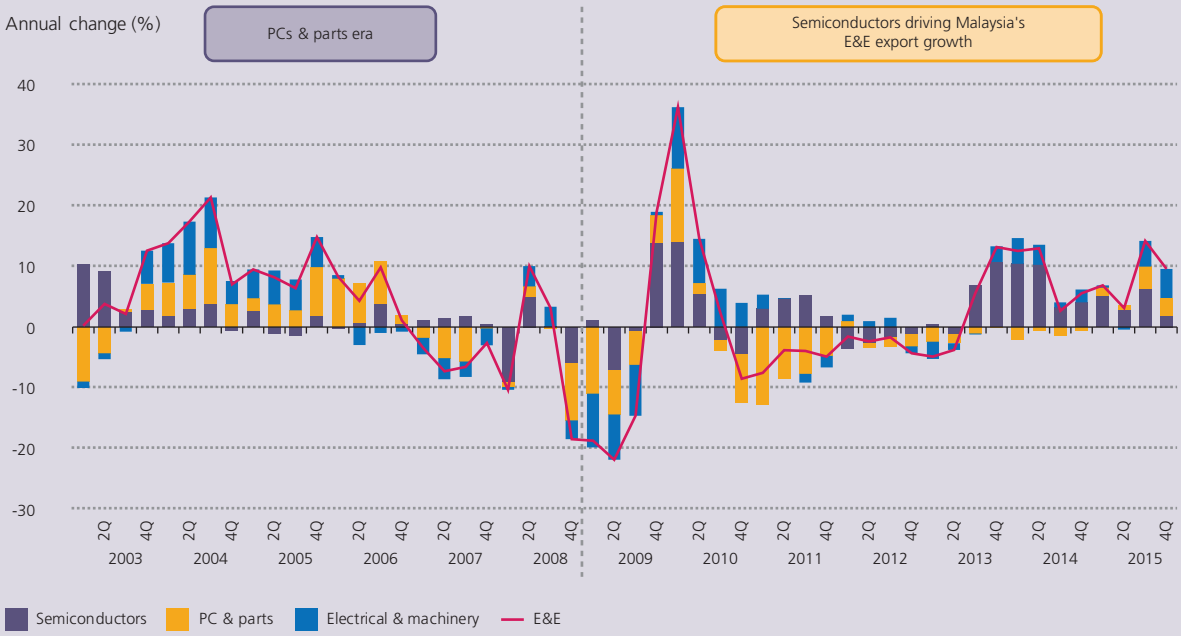
Against this backdrop, Malaysia's E&E industry has had to adapt to the changing global environment to remain both relevant and competitive. In addition, the recent downturn in global commodity prices has drawn greater attention to the ability of Malaysia's E&E exports to mitigate the impact of the downturn in commodities and overall exports, whilst providing support to growth. These structural adjustments are observed in the on-going diversification of the local E&E industry away from PCs and parts into new emerging growth areas as well as products that are higher up in the value chain.

Shifting Shapes

From the early 2000s until the financial crisis in the advanced economies, Malaysia's E&E output and exports were mainly driven by products related to the PCs and parts industry (Chart 1). This ranged from testing and assembly services for integrated circuits (ICs) to the manufacturing of components. It can be observed that while the financial crisis caused a **cyclical weakness** in demand for electronic

Chart 1

Growth of Malaysia's E&E Exports



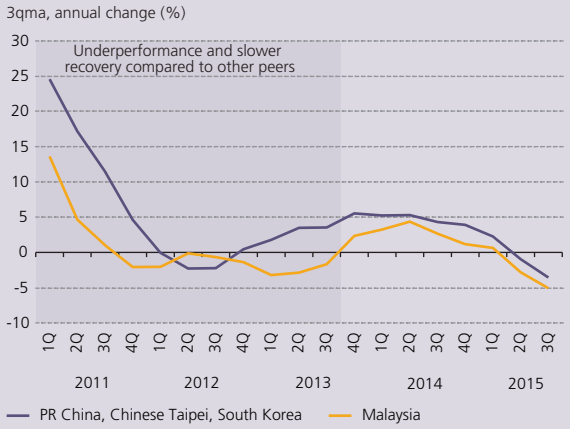
Source: Department of Statistics, Malaysia

products, Malaysia's E&E export performance was further affected by a **structural shift** in consumer preferences away from PCs to smartphones and tablets. Combined with the prolonged weakness in demand from advanced economies after the financial crisis, Malaysia registered a much weaker recovery in E&E exports in 2012 and 2013 compared to its regional peers that are more involved in the fast-growing smart devices market (Chart 2).

Faced with this structural shift in the industry, many E&E manufacturing firms in Malaysia – both multinational and domestic – decisively moved towards diversifying away from the traditional PCs and parts segments into faster-growing and higher value-added segments. For example, many in the data processing semiconductor industry, especially data storage firms, have leveraged on the rising demand for cloud computing – arising from increasing internet-related activities – by increasing their involvement in the enterprise servers market. Another significant development is Malaysia's increasing involvement in automotive semiconductors (Chart 3). With continued robust demand for automotive sensors driven by safety and efficiency reasons, this industry is projected to experience long-term and stable growth compared to the smartphones and tablets segments. This will likely provide impetus for more sustained growth of Malaysia's semiconductor industry. These on-going E&E diversification efforts have enhanced Malaysia's ability to capitalise on the growth upturn in the advanced economies.

Chart 2

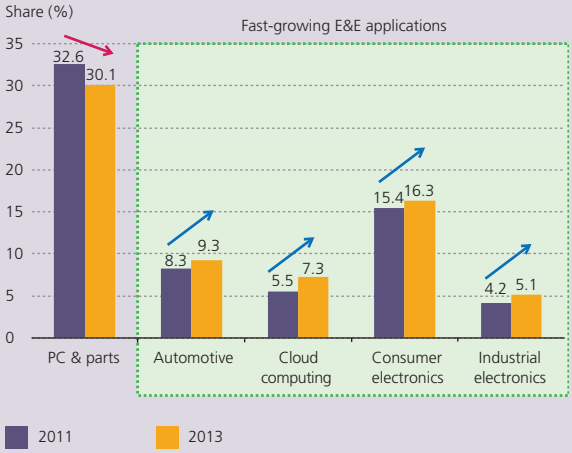
E&E Export Growth for the Major Asian Economies (in USD)



Source: Global Trade Atlas

Chart 3

Share of Malaysia's Total Semiconductor Sales



Source: Gartner Dataquest (December 2013) and Bank Negara Malaysia estimates

However, despite the encouraging tailwinds in the E&E industry, there remains room for further diversification of Malaysia's semiconductor product mix into other fast-growing segments. For example, in the coming years, the increasing pervasiveness of sensors and semiconductors in a great variety of industrial and consumer products, integrated by wireless technology and sophisticated software – known colloquially as the ``Internet of Things (IoT)´´ – will provide a strong catalyst for the growth of Malaysia's E&E industry. While still at its infancy, the wide product coverage in the IoT space, ranging from wearables, common electrical appliances as well as bio-medical devices, represent exciting diversification opportunities for semiconductor players in Malaysia. In fact, many in the industry are already positioning themselves in this new growth area.

Recognising that public policy would need to act in concert with the E&E manufacturers to reap the most gains from this diversification process, the Government has launched, among others, the National IoT Strategic Roadmap and the National Aerospace Blueprint 2015-2020. These provide both the strategic spotlight and the framework to allocate public resources in support of greater entry into these new frontiers. The re-orientation of incentives and greater selectivity towards higher value-added investments further complement existing initiatives to spur more innovation-driven

operations in Malaysia. It is important for policymakers to conduct periodic re-assessments of existing incentives and policies to ensure that Malaysia catches the next technological wave early enough to derive significant economic benefits. Continuous collaboration with the private sector to identify and respond to emerging trends is necessary to maintain Malaysia's relevance in the global E&E value chain. Also, the National Exports Council (NEC) was created to spearhead policies that further enhance Malaysia's exports competitiveness, including that of the E&E industry.

Turning Tides?

While the adaptability in gaining a strategic foothold in new fast-growing market segments is vital in ensuring Malaysia's competitive edge in the E&E industry, it still needs to be complemented with measures that bolster its underlying fundamentals. The increased access to larger markets and the added attraction for FDIs provided by the Trans-Pacific Partnership Agreement (TPPA) are likely to draw focus on the ability of Malaysia's E&E industry to maximise its potential in an environment of increasing competition. This will require Malaysia to concurrently build on the progress made towards driving automation and to increase the supply of high-skilled talent. The latter is crucial in deepening Malaysia's presence in research and development (R&D) and design and development (D&D) activities, which is paramount given the increasing competition and limited space for growth in the lower value-added segments. Despite successes in incentivising major global E&E players to further increase their exposure in these high value-added activities in Malaysia through policy interventions, there is still some way to go before a critical mass of firms is achieved. While the transition up the value chain and higher productivity will likely exert pressures on those that are overly reliant on labour-intensive operations, the re-orientation of Malaysia's focus to more innovation-driven investments and activities is crucial in achieving a high value-added and high-income economy.

Current signs point towards a brighter future and a major role of the E&E industry in Malaysia's diversified economy provided the industry continues to undertake the necessary measures needed to further enhance its competitiveness. As more frequent technological disruptions become the norm, the ability to spot changing trends and to adapt accordingly will be an increasingly critical factor that affects the competitiveness of the economies involved in the E&E industry. With a major presence in the global value chain, Malaysia is strategically positioned to benefit from the positive developments in the industry.