

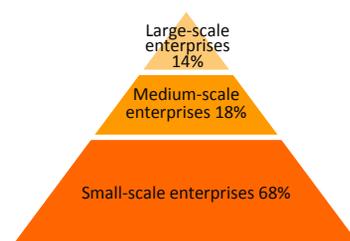
- Krungsri Research expects that electrical appliances distributed to the domestic market will tend to decline in 2018 as consumers are continuing to show some hesitation in making purchases, and air condition and compressor markets which is important segments of the market would shrink in the wake of the La Nina which cause temperature to drop (leading to slower-than-expected market recovery). In 2019-2020, demand for electrical appliances is expected to expand on the back of i) generally improving economic conditions, and strengthening purchasing power for households as debts incurred under the first-car buyer scheme are fully paid off; ii) an expanding real estate sector, which will in turn drive greater demand for household electrical goods; and (iii) increasing demand for replacement electrical appliances; and iv) forecasts for hotter weather, and with that increased demand for air conditioners.
- Over the period 2018-2020, the value of exports of electrical appliances will increase in step with the improving situation in the economies of the main export markets (the ASEAN zone, the United States and Japan). In addition, the sector will benefit from the fact that Thailand is a world-leading exporter of air conditioning units and that transnational companies have plans to continue investing in the expansion of production facilities within the country in order to manufacture for export.

▲ Overview

The Thai electrical appliances sector has a history going back more than fifty years, with government support through the offering of investment promotion strategies (via the BOI) a constant feature. During the sector's early history (1960-1971), the government promoted investment in the sector as an import-substitution strategy and at this first stage, components were imported for the domestic assembly of relatively straightforward products, such as radios, televisions, and fans. **Between 1972 and 1992, official policy was to support the sector as an exporter** and this was helped by the 1987 Plaza Accord^{1/}, which led to a rise in the value of the yen and thus prompted Japanese manufacturers to relocate production facilities overseas, including to Thailand. The country was also able to exploit its low manufacturing costs, its geographical location at the center of the ASEAN zone, and the increase in economic potential of the ASEAN zone following the establishment of the ASEAN Free Trade Area (AFTA) in 2004. These factors all also helped to attract international manufacturers, especially Japanese ones, to the country and so over time, companies have steadily increased investment in production facilities in Thailand to manufacture for export including both electrical appliances and components (compressors, motors, diodes, television displays, speakers, etc.) and electronics parts (such as printed circuit boards, integrated circuits, and capacitors). These developments have all thus fed into the on-going advance of the Thai electronics appliances supply chain.

As of 2016, there were approximately 400 manufacturers operating in the Thai electrical appliances sector (Figure 1). These include (1) large producers with well-equipped technology and funds (14% of total producers) that can be split into two groups : major international brands such as Mitsubishi, Sony, LG, Samsung and Toshiba; and Thai manufacturers, a group which includes both those

Figure 1: Electrical Appliance Producers



Source: E&E Intelligence Unit, as of Jul 2016

Figure 2: Thai Electrical Appliance Markets



Source: OIE, compiled by Krungsri Research

1/ The Plaza Accord was agreed in 1985 and came about as a result of the global consequences of the Japanese government's depreciation of the yen, which had led to a significant rise in Japanese exports and thus to trade imbalances worldwide. In response to this, the G5 (including the USA, UK, Germany and France) pushed for an increase in the value of the yen. This, though, created an economic bubble in Japan and rising costs for Japanese manufacturers forced them to relocate outside the country in order to reduce production overheads and so retain their competitive advantages.

Table 1: Thai Electrical Appliance Exports World Rankings

Air conditioners			
	Export value (USD)	% share of world exports	Ranking
2015	4,524,346	11.4	2
2016	4,842,745	11.7	2
2017	4,815,299	11.0	2

Compressors			
	Export value (USD)	% share of world exports	Ranking
2015	1,005,114	7.5	4
2016	954,277	7.1	4
2017	909,422	6.6	6

Washing machines			
	Export value (USD)	% share of world exports	Ranking
2015	967,797	7.2	4
2016	1,059,144	7.9	4
2017	1,515,528	10.7	2

Refrigerators			
	Export value (USD)	% share of world exports	Ranking
2015	1,815,980	4.5	7
2016	1,872,057	4.7	7
2017	1,931,305	4.5	7

Rice cookers			
	Export value (USD)	% share of world exports	Ranking
2015	353,683	3.5	8
2016	378,142	3.7	7
2017	347,812	3.1	8

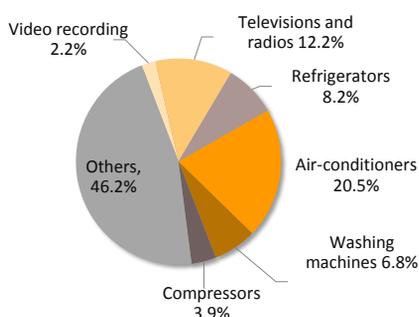
Microwave ovens			
	Export value (USD)	% share of world exports	Ranking
2015	218,593	5.6	3
2016	209,367	5.4	3
2017	212,287	5.2	3

Source: Trade Map

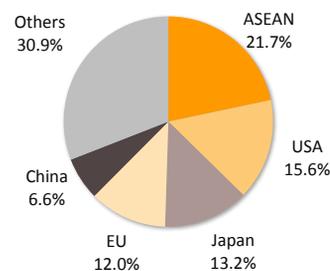
producing to supply other brands (and which are therefore original equipment manufacturers, or OEMs) and those which have their own brands. Examples of these include Tasaki, Saijo-Denki, Uniaire, and Central Air, all Thai brands in the air-conditioning market, and fan manufacturers such as Hatari, Accord, and MasterKool; (2) SMEs that manufacture component parts and electronic components for large operators (86%) but are restricted by lack of advanced technology and low bargaining power.

Data from The Office of Industrial Economics indicate that **some 65-75% of all output from the Thai electrical appliances sector is bound for the export market** (Figure 2). The most important market is the ASEAN zone, which took 21.7% by value of all types of exports of Thai electrical goods in 2017. This is followed by the United States (15.6%), Japan (13.2%), and the European Union (12.0%). In terms of products, the most important category of goods is air-conditioners (20.5% by value of all electrical goods exported), followed by televisions and radios (12.2%), refrigerators (8.2%), washing machines (6.8%), compressors (3.9%), video equipment (2.2%), and others (46.2%) (Figures 3 and 4).

However, **development of the domestic electrical appliances supply chain has been uneven and different parts of the sector have different production capabilities and different statuses** in their respective world markets (Table 1). **The cooling devices segment**, a category which includes air-conditioning and compressors, is relatively mature through the whole supply chain and by value, over 80% of parts used in production are sourced domestically. The production of cooling appliances in Thailand has therefore continued to develop and Thailand is now one of the world's leading exporters of these goods. In 2017, Thailand was the world's second most important exporter of air conditioning units (market share has continuously stood at 11.0%) and with a 6.6% market share, the sixth most important exporter of compressors^{2/}. Thailand is also a major

Figure 3: Export Value Share by Product (2017)

Source: MOC

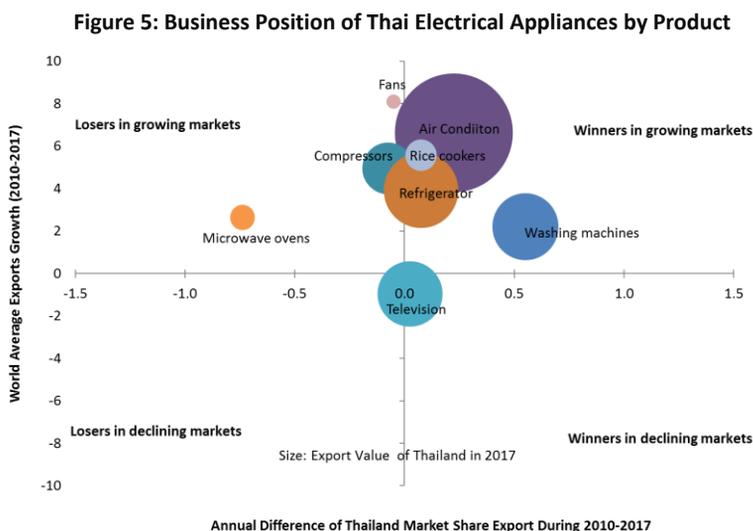
Figure 4: Export Market Share (2017)

Source: MOC

^{2/} Thailand's market share of cooling appliance segment, especially compressors in the global market in 2017 fell as Germany and South Korea (compressor exporters with current market shares of 6-9%, almost the same as Thailand's) have expanded their capacity and export markets. However, expansion of compressor production in Thailand has continued to increase; for example, Siam Daikin and Emerson Commercial and Residential Solutions (Thailand) plan to start production and exports in the next 1-2 years and this move could increase Thailand's market share in global market may rise.

exporter of **white goods**, including washing machines, in 2017 taking an 10.7% global market share which put it in the second place, refrigerators (seventh in the world with a 4.5% market share), rice-cookers (eighth in the world with a 3.1% market share), and microwaves (third in the world with a 5.2% market share).

This is consistent with research into the competitiveness on world markets of the Thai electrical appliances sector between 2010 and 2017, which shows that Thai-made air-conditioning units, compressors, refrigerators, washing machines, and rice-cookers are increasing their market share in growing markets but that Thai-made microwaves and fans are losing market share, although the markets for these goods are also growing (Figure 5).



Source: Trade Map, compiled by Krungsri Research

For the Thai audio-visual (AV) industry, television manufacture has fallen since 2012 due to competition with imported television from China and since 2015 large manufacturers in Thailand (LG, Samsung and Toshiba)'s relocation of production base to other countries such as Vietnam and Malaysia. In addition, television display technology has been rapidly changed^{3/}. Therefore, Thai manufacturers of televisions are limited to the use of old and outdated technologies. Nonetheless, some large manufacturers can develop new ultra-high definition LED television including TV displays and TV assembly^{4/}. In addition, foreign manufacturers, who have set up production facilities in Thailand for manufacturing television to distribute in domestic market and exports, will generally import TV displays from parent companies.

As for the domestic market for electrical goods, this takes 25-35% of the output of the sector by volume. Electrical goods which are owned by more than 30% of Thai such as refrigerators, air conditioners, washing machines, fans, televisions and irons.

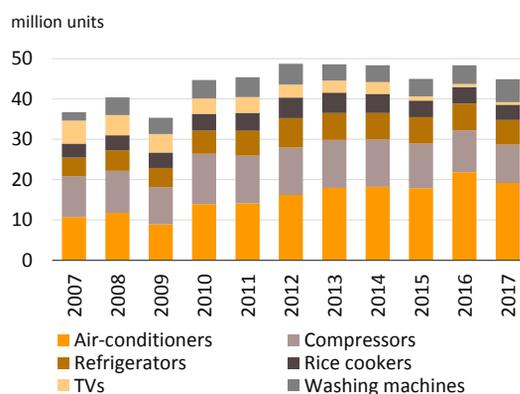
A Euromonitor survey of the domestic market for electrical goods in Thailand (December 2016) revealed that The most valuable categories of goods are air-conditioners and air-purifiers (40% by value of all goods), followed by refrigerators and freezers (17%), washing machines (15%), small household electrical appliances such as irons, vacuum cleaners, kitchen appliances and fans (18%), and others (10%). Those will be distributed through shops retailing electrical goods of which there are over 3,000 spread across the country or around 60-65% of total market value in Thailand). 30-35% of goods are distributed through modern trade outlets, including discount stores, department stores, and home improvements stores, while the remaining 5% are sold directly or through the internet.

Figure 6: Manufacturing Production Index (MPI)



Source: OIE

Figure 7: Thai Electrical Appliance Production by Product



Source : OIE

3/ Development of TV display technology from CRT (Cathode Ray Tube) to CLD Color Layout Descriptor) and to 4K ultra-high definition LED (Light-Emitting Diodes) displays.

4/ Cybo Co.,Ltd., Thai manufacturer of TV displays, is able to produce LCD displays, 4K LED displays and curve LED displays, and "PrismaPro" branded televisions.

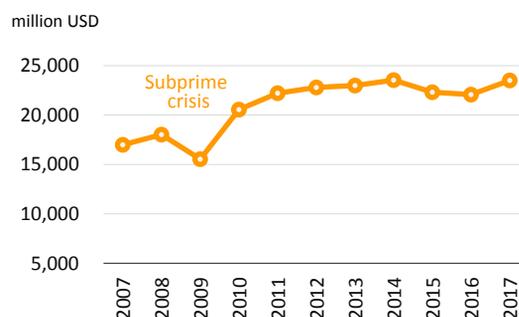
▲ Situation

Production of electrical appliances in Thailand grew at the average rate of 11% per year in the period 2002 to 2007. This rapid rate of expansion was driven by growth in the economies of export markets, which stimulated greater demand for electrical goods imported from Thailand, while raised domestic demand was supported by an expanding economy in Thailand itself (annual GDP growth for the period averaged over 5%). **However, following the subprime crisis of 2008, the Thai electrical appliances sector slipped into a depressed state** and the value of exports shrank in the second half of 2008. In 2009, exports continued to fall, sliding 13.8% YoY in the year. The domestic market contracted too, though at the lesser rate of 1.9% YoY as domestic political conflict caused a weakening of consumer confidence. **In 2010, though, the situation improved** and output jumped by 26.4% YoY. The value of exports expanded at the even higher rate of 32.4% YoY, while by volume the domestic market grew at the slightly slower but still impressive rate of 20.7% YoY. By value, though, growth was significantly lower, running to 3.8% YoY. These impressive rates of growth are partly explained by comparison with the very low base in the year before, when rates had been heavily depressed by the global financial crisis.

Between 2012 and 2016, annual average growth in the electrical appliances sector managed to hit only the relatively anemic level of 1.4%. This was due to the following factors.

- Over the five years from 2012 to 2016, the volume of electrical goods distributed to the domestic market has fluctuated.** In 2012, a total of 17.7 million units from the main categories of electrical appliances^{5/} (including air conditioners, compressors, refrigerators, washing machines, televisions and rice cookers) were sold in Thailand. This heavy demand was supported by the need to replace goods lost in the heavy floods in the second half of the previous year. In addition, the flooding prompted work on a number of condominium projects to be sped up and owners of these new properties also then needed to buy additional electrical appliances. This helped maintain elevated demand through 2013 and 2014, while excessively hot weather also underpinned stronger demand for air conditioners. However, in 2015 and 2016, the consequences of earlier heavier than normal demand began to be felt because many electrical appliances have a life cycle of around 8-12 years and replacements will not normally be bought until the end of that period. Beyond this, the real estate sector saw sluggish business conditions in these years and this too helped to suppress demand. Thus, in 2015, the volume of electrical goods distributed to the domestic market shrank 6.1% YoY, before growing at the somewhat low rate of 2.0% YoY in the following year. However, more positively, a Euromonitor report shows that the release of new electrical consumer goods that utilize recent advances in technology has helped to support higher retail prices and that on the domestic market value, these grew by an average of 6.3% per year in the period 2012-2016.
- For exports, it was difficult to maintain growth through this period and indeed,** by value, exports slipped by an average 0.1% per year. This was because: (i) the world economy recovered; (ii) some Thai electrical appliance production facilities began to lose competitiveness (this was especially so for producers of audio-visual equipment); (iii) the extensive flooding in Thailand at the end of 2011 caused significant damage to Thai production facilities; and (iv) the 2012 increase in the national minimum wage to THB 300/day prompted some foreign operators to move production facilities from Thailand to other countries.

Figure 8: Electrical Appliance Exports by Value



Source: MOC

Table 2: Electrical Appliance Exports by Product

	Million USD				
	2014	2015	2016	2017	% YoY
Video recording	680	559	510	520	2.0
Television receiver	4,015	3,667	2,836	2,855	0.7
Refrigerators	1,932	1,846	1,884	1,935	2.7
Air conditioner	4,610	4,594	4,870	4,824	-1.0
Washing machine	1,089	1,077	1,148	1,600	39.4
Compressors	1,112	1,022	965	911	-5.6
Others	10,100	9,553	9,860	10,859	10.1
Total	23,538	22,318	22,072	23,503	6.5

Source: MOC

For 2017, output for the Thai electrical appliances sector fell 7.2% YoY to a total of 44.9 million units, with the index of electrical appliance production declining in 2017 to 119.8 from its 2016 figure of 128.6 due mainly to a contraction in domestic sales of electrical appliances, compared to the same period last year, although exports experienced a minor increase. However, by value the situation was better and in this regard, considered overall the market expanded due partly to rising prices of electrical goods that use new technology innovation.

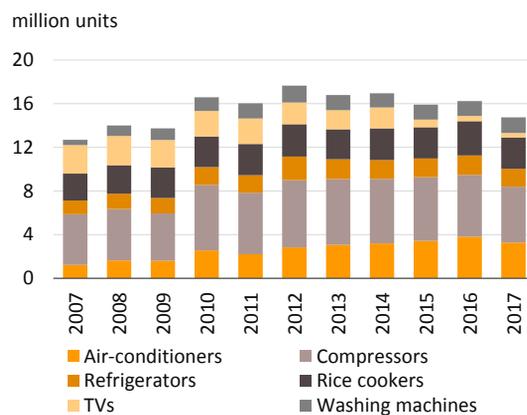
- **On the domestic market in 2017, a total of 14.7 million units were sold, which represented a contraction of 9.2% YoY, close to the value in 2016** as the weather was cooler than the year before and that the extreme heat of the earlier El Niño during 2015-2016 had brought forward purchases of certain goods and as a result sales of air-conditioners and compressors fell sharply by 13.9% YoY and 9.8% YoY, respectively. The continuing weakness of the real estate market also suppressed demand for other electrical goods and the combined sales of these (including refrigerators, televisions, rice-cookers, washing machines) shrank by 6.1% YoY.
- **Exports of electrical appliances in 2017 came to a total of USD23.5 bn., up 6.5% YoY** as a further recovery of major export markets' economies -- the US, Europe, Japan, and China (which together take 47% by all electrical appliance export value). Growth was seen in some key categories of goods, including televisions (USD2.85 bn., up 0.7% YoY), refrigerators (USD1.94 bn., up 2.7% YoY), washing machines (USD1.6 bn., up 39.4% YoY), radios (USD520 mn., up 2.0% YoY), and others (e.g. fans, microwaves, shower heaters which had a combined value of USD10.86 bn or up 10.1% YoY). Other key categories did, however, see declines and these included air-conditioners (USD4.8 bn., down 1.0% YoY), and compressors (USD911 mn., down 5.6% YoY).

▲ Outlook

The expectation is that for 2018, the volume of electrical appliances produced in Thailand is likely to shrink by 1-3% YoY but that the sector will return to growth of 3-5% per year in 2019 and 2020. The economies of export markets are forecast to strengthen and this will support an expansion in exports, especially in the ASEAN zone (22% of all exports of Thai electrical goods by value). The domestic market is also expected to improve gradually from 2019 onwards (but is slower than earlier expected as air conditioning market growth is limited due to unfavorable weather), helped by the improving Thai economy and consumer spending power that will steadily strengthen as debts taken on under the first-car buyer scheme are fully paid off. In addition, the real estate sector is returning to growth and this is helping to build demand for electrical appliances, while some consumers can be expected to purchase new goods as their existing appliances come to the point in their life cycle when it becomes necessary to replace them. On the part of manufacturers and retailers, it is likely that following several years of sluggishness in the market, they will put in place marketing strategies to induce consumers to make purchases.

- **Domestic electrical goods market in 2018 is likely to improve slower than earlier forecast. Demand for electrical goods is forecast to contract by 5-10% YoY by volume.** As a consequence of the emergence of a La Niña in 2017, Thailand's monsoon season has been wetter and cooler than normal and relative to that of the year before, this has weakened demand for air conditioners and compressors, important segments of the electrical appliances sector. This was offset somewhat by the 2018 World Cup, which helped to feed greater demand for televisions, while promotional campaigns organized by manufacturers and retailers have boosted sales of some product groups, especially of smaller household appliances that have a shorter replacement cycle. Overall, by value, as a result of the higher prices commanded by goods that exploit new innovation^{6/} (e.g. the new generation of air conditioners that use inverters to reduce electricity consumption and home appliances that can be controlled by smartphones) **the domestic market in 2018 will be similar in size to that of 2016-2017.**

Figure 9: Domestic Sales* by Product



Source: OIE

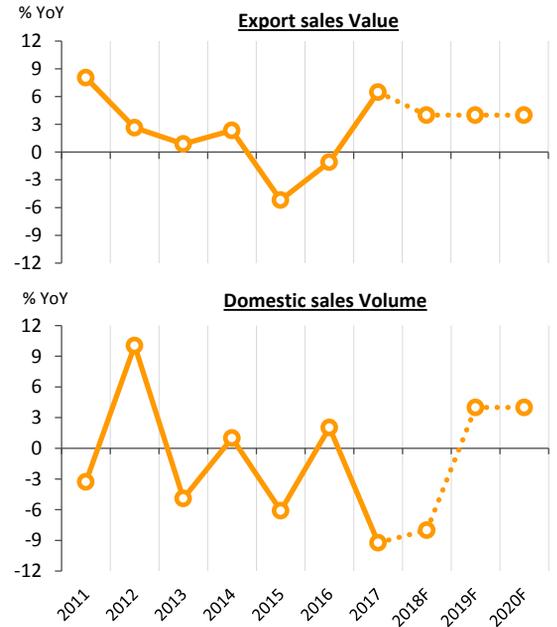
Note: *From an Office of Industrial Economics survey of the volume of Thai-made electrical goods distributed on the domestic market.

^{6/} A report by The Mall Group on the market for electrical goods over the past decade (i.e. since 2008) reveals that in these years, there has been continuous development of new products. The market has moved from one in which appliances have a single purpose to the current situation, where smart appliances are connected to the internet and can instead be used to carry out a wide range of functions. The result of this has been that 'basic' goods (i.e. those that fulfill a single function) comprise 40% of all those distributed on the domestic market, while the remaining 60% are items that use new technology and innovation, and this is pushing up prices for goods by an average of 5-10% annually (source: positioningmag.com).

- **In 2019 and 2020, demand for electrical goods within Thailand is forecast to grow in terms of both volume and value.** With regard to the former, growth of 3-5% per year by volume is expected and this expansion will be built on a strengthening of the residential property market, the need of some consumers to buy new goods as those they currently own reach the point in their replacement cycle when this becomes necessary, and a possible rise in demand for air conditioners if climatic conditions return to an El Niño state and with this temperatures rise, as may occur in 2019 and 2020. In addition, manufacturers and retailers will likely also attempt to stimulate sales by running promotional campaigns. As regards the value of the market, this is forecast to grow by 8-10% per year as innovative high tech and therefore higher priced products are released to the market.

- **Exports of electrical appliances are forecast to grow by an average of 3-5% annually in the period 2018-2020,** this growth being underpinned by exports to the United States, Europe (which together comprise 30% of Thai exports of electrical goods by value) and Asia, in particular to the ASEAN zone since the population of these countries typically have fairly low levels of ownership of electrical goods^{7/} but at the same time, consumer demand is growing from the expanding middle class^{8/}. The position of Thai exporters also benefits from the country's being a global center for the export of electrical goods, which continue to be highly competitive on the world stage. This is especially the case for cooling devices, such as air conditioners, refrigerators, freezers and compressors and in fact, large transnational manufacturers of goods in these categories have plans to expand their investment in Thai-based production of, in particular, air conditioners, compressors and parts for these and this will strengthen Thailand's central role as a manufacturer of these goods. Nevertheless, the situation is not entirely positive and exports of washing machines have been put into doubt by the recent moves by the United States to impose barriers to their import in the form of a 'safeguard'^{9/} and these developments will likely lead to a fall in exports to the American market. (In 2017, by value, the United States was responsible for buying 33% of all washing machines exported from Thailand.)
- **Over the mid- to long-term, it is possible that the Thai electrical appliances sector will experience high levels of growth** thanks to the development of the Eastern Economic Corridor (EEC). Within this project, the government is emphasizing the development of the so-called 'future industries', or 'industry 4.0', and this is attracting increasing investment to fund innovation in the manufacture of electrical appliances and as has been described above, Thailand is especially competitive in the production of cooling products and white goods, items that will benefit from trends in demand for electrical appliances that exploit high technology.

Figure 10: Growth of Electrical Appliance Sales Forecasts



Source: OIE, MOC, Forecast by Krungsri Research

7/ for example, Asian countries which have air conditioner penetration rate of below 20% include India, Indonesia, the Philippines, Myanmar, Cambodia and Laos.

8/ A forecast by Nielson (2015) predicts that the middle class population of the ASEAN region will grow at 17.7% CAGR in the period 2015-2020.

9/ Barriers to imports (or 'safeguards') put in place by the United States have had effect from 7 February 2018 on the import of washing machines under HS code 845020, 845090 and 845011. These put in place import quotas of 1.2 million machines per year and collect tariffs at the rate of 20%, 18% and 16% in years 1 to 3 respectively. For over-quota imports, tariffs are collected at the rate of 50%, 45% and 40% in years 1 to 3 instead. This is a significant increase on the previous tariff rate of 1.4%.

▲ **Krungsri Research's view:** The forecast is that between 2018 and 2020, turnover for players in the Thai electrical appliances sector will grow at similar rates to those recorded for 2017. Positive factors supporting this outlook are the importance placed by parent transnational companies on developing new technology and innovation for the next generation of goods within Thailand, export markets that are tending steadily to expand, and a domestic market that can be expected to strengthen gradually as consumer spending power improves.

- **Manufacturers of cooling appliances:** Players in this segment will be able to maintain income at normal levels thanks to Thailand's world-leading competitiveness in this area. The latter has helped export markets return to growth and to convince transnational manufacturers to continue expanding investment in Thailand and so strengthen the country's position as a regional production center. However, the influence of La Niña conditions has lowered average temperatures throughout the ASEAN zone in 2018 and this may have temporarily limited the ability of the ASEAN market (including the Thai domestic market) to expand. In 2019 and 2020 this situation is likely to be reversed, though, and production is forecast to grow on expanding economies and with that, rising demand for electrical appliances. If, as expected, El Niño conditions reemerge in the two years ahead, this will also raise regional temperatures and thus help stoke additional demand for air conditioners and compressors.
- **Manufacturers of other household electrical appliances:** It is forecast that overall, turnover will tend to remain stable. Exports will likely grow, and those of washing machines in particular are expected to rise (Thailand is a world-leading manufacturer of washing machines) as the possibility of expanding into markets in Asia increases. Should this happen, this will help to compensate for the loss of exports to the United States that may occur as a result of the recent erection of barriers to the import of washing machines by the current US administration. However, the export of other types of household electrical goods is likely to encounter rising levels of competition, which will come particularly from Chinese products that are not only cheaper but also increasingly manufactured to a higher quality. On the domestic market, demand is also forecast to rise, most notably for washing machines and smaller household items, such as rice cookers, vacuum cleaners and microwaves. On the downside, demand for audio-visual appliances is likely to shrink as portable electronic devices (smartphones, tablets and notebooks) take an increasingly large market share.
- **Distributors/retailers of electrical appliances:** 2018 will see only low levels of growth in the market for electrical appliances but the situation should pick up in 2019 and 2020. Large modern retailers such as Power Buy and Power Mall, which enjoy advantages in terms of finance, the range of stock that they are able to carry, their number of branches, and their ability to exploit pricing and marketing strategies to attract customers, will be best placed to benefit from an improving market for electrical appliances. On the other hand, general retailers of electrical goods, most of which are more traditionally styled, are likely to face greater levels of competition from large distributors such as HomePro, homeWorks, Tesco Lotus, and Big C and thus their turnover may weaken to less satisfactory levels.

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