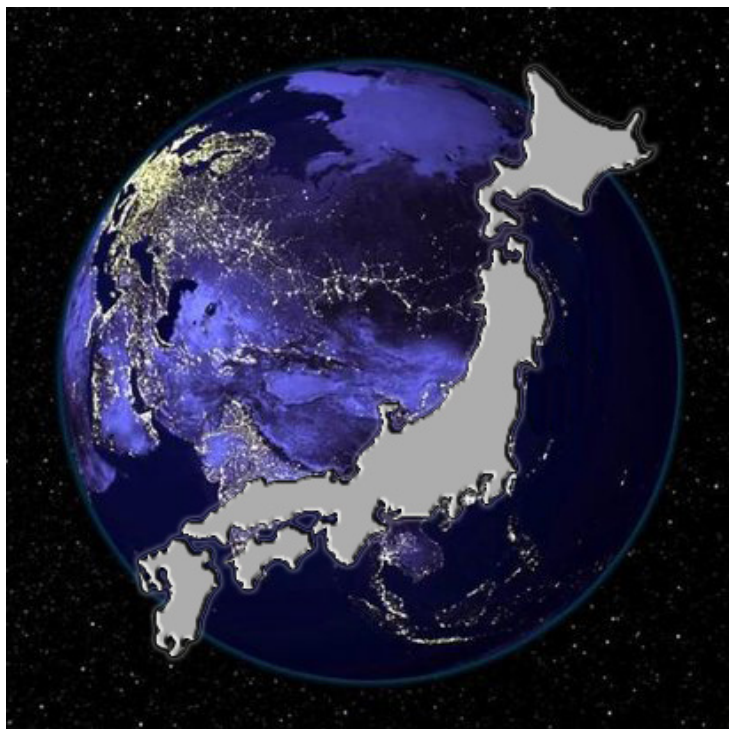


Home Appliances in a Global Context

The appliance of science: Making money from the mundane



- **Tech investing** often boils down to a frantic search for the next big thing, the hottest product, and the must-have item, but at a time when investors are increasingly concerned with tech stocks generally, when growth areas of recent years such as smartphones are showing signs of slowing, and where winning stocks seem to be fewer and fewer, it may be time to look at an area in tech easily overlooked because it appears mundane—home appliances.
- **Home appliances** have actually delivered consistent levels of profitability in the past decade, practically all the leading industry makers make money (the surprising exception being Samsung), and industrywide ASPs are rising rather than inexorably falling as they do in much of tech. In the report, we take an in-depth look at the global appliance market, what is driving its growth, and why it keeps delivering solid levels of profitability.
- **Our top three global recommendations** are **Haier** for China/EMs, **Electrolux** for DMs, and **Panasonic** for Japan/Asia. We have also created a [theme basket](#) for investors to track the major players globally and it is interesting to note how this basket has performed versus a smartphone basket since 2009.



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See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Recent reports on household appliance industries

Analyst Name	Region/Country	Date	Links
Natalia Mamaeva	Europe	2/12/2013	Electrolux (ELUXb.ST) - Time to Buy
Catherine Chan	Hong Kong	3/20/2013	Haier Electronics (1169.HK) - Stepping Up Expansion of Rural Channel
Henry Kim	South Korea	4/11/2013	LG Electronics (066570.KS) - Limited Smartphone OPM Expansion, Near-term Upside Reflected
Mehmet Colakoglu	Turkey	5/2/2013	Arcelik AS (ARCLK.IS) - Not a Good Entry Point, TP Up to 13.6TRY, Neutral Maintained
Graeme McDonald	Japan	5/29/2013	Daikin Industries (6367) - Getting to grips with Goodman
Kota Ezawa	Japan	5/31/2013	Panasonic (6752) - Maintain Buy: Shares down, but profits on course for recovery
Henry Kim	South Korea	7/9/2013	LG Electronics (066570.KS) - Contracting Smartphone Margin, Tough TV Market Competition

Source: Citi Research.

Japan in a Global Context reports

Analyst Name	Region/Country	Date	Links
Hironari Nozaki	Japan	9/30/2011	Japanese Banks in a Global Context - Are Japanese banks attractive?
Graeme McDonald	Japan	10/27/2011	Japanese Industrials in a Global Context - Can the success story continue?
Arifumi Yoshida	Japan	11/24/2011	Japanese Auto Parts in a Global Context - Strong competitiveness and greater independence bring longer-term opportunities
Takao Kanai	Japan	1/12/2012	Japanese Chemicals in a Global Context - Japan's chemical firms accelerating tech-driven global push
Soichiro Fukuda	Japan	1/27/2012	Japanese Games in a Global Context - Social games and cloud gaming: the next growth chapter
Nobuyoshi Miura	Japan	2/16/2012	Japanese Tobacco in a Global Context - JT's global growth potential
Arifumi Yoshida	Japan	5/16/2012	Denso (6902) - More confidence in our Global Context thesis
Kota Ezawa	Japan	9/10/2012	Japanese Consumer Electronics in a Global Context - A drama of collapse—and revival?
Atsushi Ikeda	Japan	10/12/2012	Toray Industries (3402) - Sticking to its knitting: Toray in a Global Context
Kota Ezawa	Japan	12/3/2012	Japanese Consumer Electronics: Global Context Redux - Device explosion: The digital convergence cliff
Tsubasa Sasaki	Japan	2/27/2013	Japanese Med Tech in a Global Context - Can Japan's med tech Davids take on the global Goliaths?

Source: Citi Research.

Other thematic reports by Tsubasa Sasaki

Analyst Name	Region/Country	Date	Links
Tsubasa Sasaki	Japan	1/17/2012	OLEDs - The next generation of displays
Tsubasa Sasaki	Japan	7/20/2012	Lithium-ion batteries - A Japanese tech growth story?
Tsubasa Sasaki	Japan	10/25/2012	Long Term Evolution - Innovation in communication services, devices, and handsets
Tsubasa Sasaki	Japan	1/22/2013	Touchscreen industry - Nitto Denko benefits from film shift for tablet touchscreens
Tsubasa Sasaki	Japan	2/27/2013	Japanese Med Tech in a Global Context - Can Japan's med tech Davids take on the global Goliaths?

Source: Citi Research.

1. Executive Summary

We estimate the global household appliance market is worth just over \$300bn, about a third of the size of the consumer electronics market, and we believe it looks attractive for its long-term growth potential (we model a 6% CAGR through 2017) and stable earnings. We expect growth in both emerging and developed markets, mainly on the spread of appliances in emerging markets (9% CAGR) and the uptrend in unit prices. Demand is also relatively stable through the business cycle and price competition is limited, so margins have been steady, at around 5% for most players. Appliance markets are fragmented by product spec, region, and lifestyle habits, so several leading firms coexist in each region. Japanese firms may have lost competitiveness in digital consumer electronics, chips, and LCDs, but they have stayed competitive in appliances, with Panasonic at No. 2 in the global sales ranking in 2012 and generating a respectable margin. We think appliances have a leading role to play in the revival of Japan's electronics industry (see our September 10 report, [Japanese Consumer Electronics in a Global Context - A drama of collapse—and revival?](#))

In researching this report, we made some surprising (to us) discoveries: 1) investor darling Samsung struggles to make money in household appliances but much maligned Sharp has one of the best margins in the industry; 2) global ASPs are actually rising, as appliances grow more sophisticated, and ASPs have even been rising in deflation-plagued Japan; 3) unlike in large tracts of digital consumer electronics, such as compact digicams and PCs, there is no smartphone/tablet cannibalization to worry about (see our April 11 report, [Global Technology Hardware - Device Destruction: The Worst Is Imminent for PCs](#)); 4) growth is being driven by the world's burgeoning middle-classes, with 440mn people in emerging market Asia alone set to join the middle-class in the coming decade, according to our June 10 report, [Asia Retailers](#); 5) analog technologies still rule the industry, conferring a rare advantage for Japan's legacy analog and engineering know-how; and 6) there is no single dominant company globally, with the industry still heavily localized and fenced with labyrinthine barriers to entry, and profitability is not tied to scale—some of the fattest margins are found at niche players such as Dyson and Sharp.

Our three top picks are Haier, Panasonic, and Electrolux, while we also highlight Arcelik and LG Electronics for their emerging markets exposure and Fujitsu General for its geographically well-balanced global presence in air-conditioners.

Investment opportunities in appliances

Household appliances lack pizzazz at first blush, but in reality they are a promising market

Household appliances are an industry that lacks pizzazz at first blush and some readers may be wondering why we chose them as the subject of a report. However, we see long-term growth potential here, companies can generate stable earnings, and there are many leading firms and hence lots of investment opportunities, so we conclude that household appliances are a promising market. There are few global analyses of the household appliance industry, so here we have mounted a full-scale survey.

Growth in household appliances continues in both developed and emerging markets

We see the appeal of the household appliance market as lying in its long-term growth potential. We forecast that the market, which was worth \$308bn in 2012, will grow at an annualized 6% through 2017. Above all, the appeal lies in continued growth in both developed and emerging markets, on 1) the spread of household appliances in emerging markets owing to rising per-capita GDP and 2) the uptrend in unit prices globally.

Household appliances can generate stable earnings

The average operating margin in household appliances is around 5%. So while it is admittedly not one of the high-margin industries, margins have been stable, as demand is relatively stable and the industry is not easily subjected to price wars. Major capex outlays are unnecessary, so household appliances could be called cash cows. Indeed, the share price performance of household appliance makers has outstripped various indexes and a basket of their shares is setting all-time highs.

Household appliances present myriad investment opportunities

Another aspect of household appliances' appeal is that there are many leading companies and hence many investment opportunities. Household appliance product life cycles are long and markets are fragmented by product spec, region, and lifestyle customs. As a result, multiple companies can make fairly decent profits in

each region. One instance of this is Japanese firms, which have been losing competitiveness in the “black goods” world of digital consumer electronics, but are maintaining impressive competitiveness in the “white goods” world of household appliances.

Investment strategy

Stock-picking criteria for household appliance makers

Big names in the household appliances market include Daikin Industries, Hitachi, Toshiba, Mitsubishi Electric, Panasonic, Fujitsu General (Japan); LG Electronics and Samsung Electronics (Korea); Haier, Gree, Midea, (China); BSH, Electrolux, Philips, Indesit, Arcelik (Europe); and Whirlpool and General Electric (US). In addition, there are significant differences between company characteristics like regional sales compositions and business models (pure-play or divisions of an integrated electronics company). For these reasons, when looking for exposure to household appliances, we believe investors should select companies that either: 1) have a focus on emerging markets with high growth potential; 2) have established dominant positions in developed markets through technology and brand power; or 3) are shifting their focus to household appliances through structural reforms or other restructuring measures.

Emerging market plays: Fujitsu General, Haier, LG, Arcelik

We highlight Haier, LG Electronics, and Arcelik, and Fujitsu General as household appliance makers that are likely to expand in emerging markets. Among these, we have Buy ratings on Fujitsu General and Haier. Citi Research analyst Catherine Chan believes Haier has good long-term growth potential because it is well placed to benefit from market expansion in China (please see her April 19 report [Haier Electronics \(1169.HK\) - A Good Start to FY13](#)). Fujitsu General derives around 30% of its sales from emerging markets and we believe it is also positioned to benefit from emerging market growth (please see our July 17 report [Fujitsu General \(6755\) - Initiating at Buy: An air-conditioner titan](#)).

We have Neutral ratings on LG Electronics (its smartphone business is struggling) and Arcelik (valuations are demanding). However, LG Electronics has sales channels around the world, and is particularly strong in emerging markets, and Arcelik has a strong household appliance presence in Turkey. We believe both companies have high growth potential. Chinese household appliance majors Gree and Midea (not rated) may benefit from Chinese market growth.

Competitive advantage in developed markets: Electrolux

We nominate Electrolux as a company with a competitive advantage in developed markets. Electrolux derives around 50% of sales from Europe and North America and has a strong presence in these markets. Our lead analyst Natalia Mamaeva upgraded Electrolux to Buy in February because she forecasts 1) it will expand market share in Europe through new products and in North America through sales channel expansion; and 2) it is well placed to benefit from a US market recovery (please see her February 12 report [Electrolux \(ELUXb.ST\) - Time to Buy](#)). We believe Whirlpool (not rated), the largest US household appliance maker, could also benefit from a US market recovery.

Appliances may revive the Japanese electronics industry

Appliances have leading role to play in the revival of Japanese electronics industry

We have been frequently asked by investors who have become interested in Japanese equities thanks to the rally over the last six months where the appeal of Japan's electronics manufacturers lies aside from forex. Our response is that it lies in 1) earnings improvement through restructuring, 2) the emerging markets growth scenario, and 3) the recovery in domestic demand. Household appliances fulfill all these criteria, in that 1) they could well become a key plank in a restructuring-driven earnings recovery, 2) Japanese firms are internationally competitive and there is lots of room for growth in emerging markets, especially in Asia, and 3) even in Japan's

Japanese firms deliver on competitiveness, growth potential, and profitability in appliances

deflationary environment, price have continued to rise, and household appliances are poised to benefit from the recovery in domestic demand resulting from Abenomics. We think household appliances could engender opportunities to invest in Japan's electronics makers.

One of the dominant topics in Japan's electronics industry in the last few years has been the huge losses posted by Panasonic and Sharp. We note, though, that the main reason for these losses was earnings deterioration in FPD TVs, mobile phones, and other "black goods" and in LCDs, semiconductors, and other electronic devices. In contrast, Panasonic and Sharp have been generating stable margins in household appliances. Many Japanese firms are delivering on competitiveness, growth potential, and profitability, with Panasonic standing at No. 2 in the 2012 global household appliance sales ranking. This is in interesting contrast to Samsung Electronics, which has struggled in household appliances.

Japanese makers doing well in appliances owing to 1) appliances being analog, 2) rising domestic average prices, and 3) overseas business development

We identify the following three reasons for Japanese makers holding up well in household appliances. 1) As described earlier, the household appliances arena is conducive to Japanese makers leveraging their quality control and technological prowess, and their design and manufacturing expertise. 2) They have profitable business structures in the domestic household appliances market, owing mainly to its stable scale, and the average-price growth trend even amid deflation resulting from sustained product-mix improvement. 3) They are successfully tapping external demand principally in emerging economies, via aggressive development of overseas operations.

Panasonic: Typical example of an integrated electronics firm for which appliances can drive recovery

Panasonic is one company for which household appliances offer recovery prospects. The firm is in the midst of structural reforms, centered on headcount reductions, and is focused mainly on reducing losses at struggling businesses like TVs, semiconductors, and consumer market batteries. Once the structural reforms have dealt with the negative legacies, we think market attention will turn to what efforts are being made to grow earnings through core businesses. In this context, household appliances offer potential for steady earnings growth given Panasonic's status as one of the leading global manufacturers.

Moreover, although household appliances account for a small proportion of overall earnings, other general electronics firms like Sharp, Hitachi, Toshiba, and Mitsubishi Electric are putting their energies into household appliances as part of efforts to improve earnings structures.

Daikin has leveraged M&As to succeed in expanding overseas

Daikin seems to have a promising future in appliances. Our investment rating is Neutral due to demanding valuations, but the firm is technologically strong and has managed to grow via M&A-backed overseas expansion. Another firm with a promising future is Fujitsu General, which is successfully expanding its air conditioner business overseas, and which we rate Buy.

Appliances as flagship products of Japanese electrical equipment makers

Hitherto, black goods in the form of flat-screen TVs and mobile phones and electronic devices in the form of LCDs and semiconductors were generally considered to be the flagship businesses of Japanese makers of electrical equipment, while household appliances were considered rather uninteresting. Nevertheless, we think Japanese makers are globally competitive in appliances precisely because they have been able to accumulate design and manufacturing expertise, tap into domestic and overseas demand, and create a profitable business structure despite deflationary conditions by driving up average prices. We focus on the possibility of appliances becoming viewed as the flagship business of Japanese electric equipment makers, in a reversal of the previous situation.

2. Investment case

Spotlight on appliances as a growth market

Smartphones and tablets becoming commoditized

Expansion in the smartphone and tablet markets has been the growth driver of the global electronics industry in the last few years but we think that since 2012, the markets have entered a maturing phase (see our November 2, 2012 report, [Asia Pacific Technology - Device Explosion: Smartphone Shipments to Hit 1.1bn in 2013](#), for more details). With growth in the electronics market set to slow on the commoditization of smartphones and tablets, we think investors need to search for the next growth scenario.

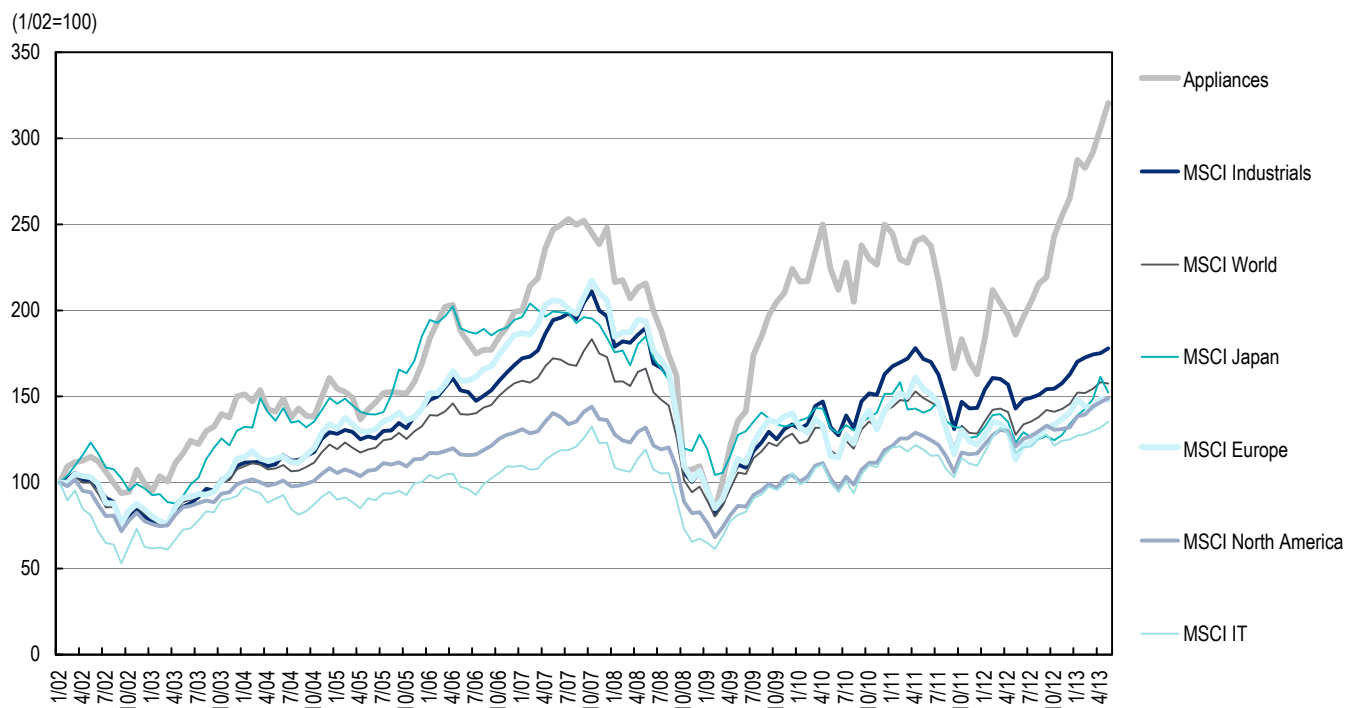
Spotlight on household appliances as a growth industry

We would cite medical devices, household appliances, and a variety of infrastructure-related industries (storage batteries, smart grids, and water treatment, etc.) as new growth markets. We think the medical equipment market is particularly promising (see our February 27 report, [Japanese Med Tech in a Global Context - Can Japan's med tech Davids take on the global Goliaths?](#), for more details). We also conclude that, although at first glance bland, household appliances are a promising industry, as we see it as a long-term growth market, it has stable profit margins, and there are lots of related companies.

Appliance makers outperformed a variety of indices and are setting all-time highs

In the last decade, the share prices of household appliance makers have outperformed a variety of MSCI indices and they are continuing to set all-time highs (Figure 1). Over the last decade, the market cap of Haier has risen c9x and that of Arcelik about 30x, with emerging market firms contributing most to performance, but some developed market firms have also seen their market caps surge over the last decade: Fujitsu General by c5x, Daikin by c3x, and Electrolux by c2.4x. We would cite the attractiveness to consumers of household appliances as a major factor behind the growth of these companies.

Figure 1. 10-year performance of a basket of household appliance makers beat various MSCI indexes



Note: The home appliance index is the sum of the market caps of the following companies: Daikin, Fujitsu General, Haier, Electrolux, Indesit, Arcelik, Whirlpool.
Source: Company data, Citi Research.

Stable earnings growth in appliances

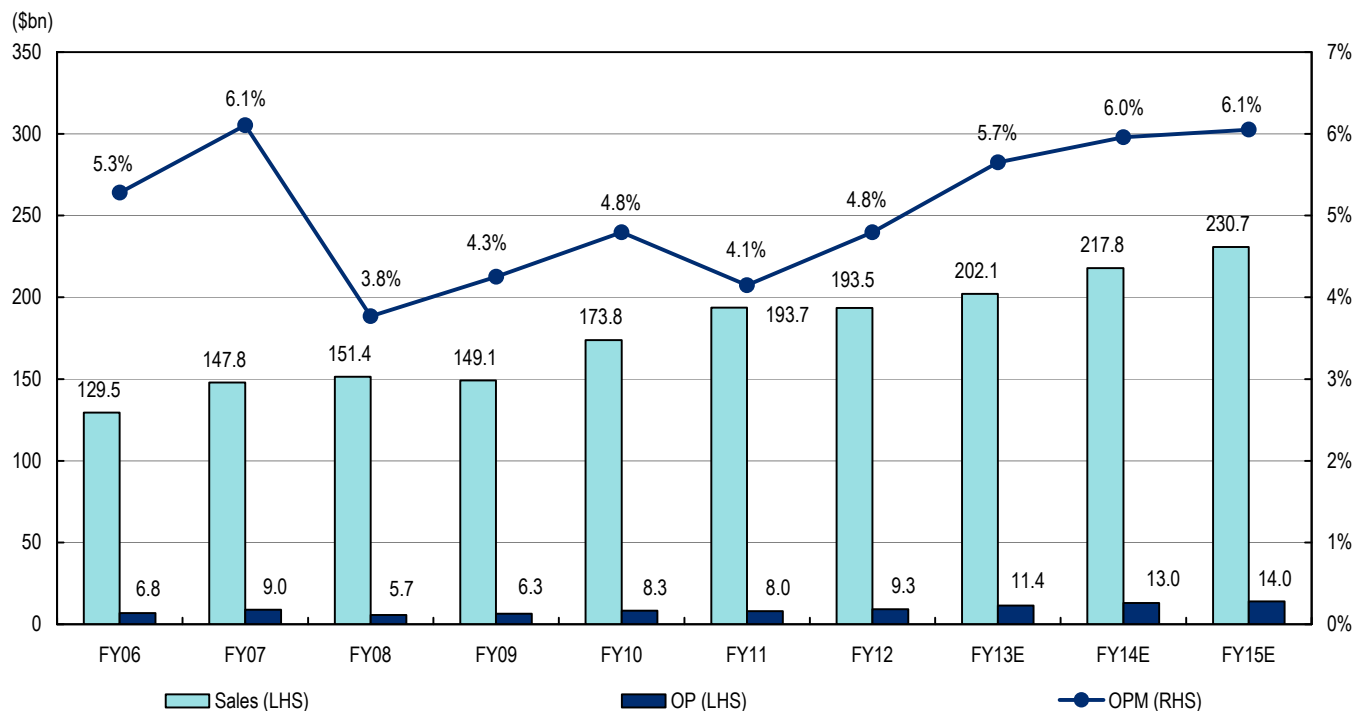
Industry boasts stable margins

We feel the appeal of household appliances as an investment theme lies in prospects for stable earnings expansion. The average operating margin of household appliance makers is around 5%, which does not put them among manufacturing industry subsectors with high margins. That said, margins have been stable, as demand is relatively firm and the market has become fragmented, making it harder for price competition to occur. Indeed, at the height of the global financial crisis between 2008 and 2009, 19 major household appliance makers maintained operating margins of around 4%. Household appliances do not need large-scale capex, so we feel it is fair to call them cash cows.

Stable growth continuing

Also, sales of household appliances are continuing to expand while makers maintain steady margins. We expect aggregate sales of 19 major household appliance makers to grow to c\$230bn in FY15 from \$130bn in FY06, with stable growth continuing. We expect household appliances to be a growth industry both in emerging markets and developed markets, something we delve into in more detail below.

Figure 2. Earnings at 19 major household appliance makers: Stable earnings expansion continuing



Note: Sales, OP and operating margin are aggregates for the following firms: Daikin, Hitachi, Toshiba, Mitsubishi Electric, Panasonic, Sharp, Fujitsu General, Samsung, LG Electronics, Haier, Gree Electric, GD Midea Holding, BSH, Electrolux, Philips, Indesit, Arcelik, Whirlpool, and GE. We use the financials of the appliance division of Daikin (air-conditioning), Hitachi (appliances), Toshiba (home appliances), Mitsubishi Electric (home appliances), Panasonic (appliances), Sharp (health & environmental equipment), Fujitsu General (air conditioners), Samsung, LG Electronics (HA and AE), Philips (consumer lifestyle), Arcelik and GE (home & business solution). We use the financials of old divisions for Panasonic before FY09. We use the operating margin for all of Fujitsu General before FY08. Financials of Samsung are parental before FY08. We use the operating margin for all of Arcelik. For Philips we use FY07 figures for FY06. We use Bloomberg consensus estimates for GD Midea Holding, Gree, Indesit and Whirlpool. These assumptions are applied to all numbers in this report unless otherwise specified.

Source: Company data, Bloomberg, Citi Research.

Stable growth, rising prices, diverse investment opportunities

Appeal of appliance makers lies in 1) stable growth, 2) rising prices, and 3) diversified investment opportunities

The appeal of household appliances is easy to understand if we compare these “white goods” with “digital” consumer electronics. The relative appeal of household appliances lies in 1) resistance to cannibalization and the continued stable volume growth, 2) the difficulty of product commoditization and the tendency of product unit prices to rise, and 3) the absence of any overwhelming champion, which offers diversified investment opportunities.

1) No cannibalization, stable volume growth

Appliance appeal (1): No inter-product cannibalization, stable volume growth continues

We would cite the stable and continuing market growth as the first appeal of household appliances. We forecast the household appliance market, which was worth \$308bn in 2012, will deliver sustained growth of an annualized 6% through 2017. This is because major household appliance product groups have markedly different functionality and are therefore cannibalization is unlikely. We believe market volume will continue to expand, driven mainly by emerging markets. In the digital consumer electronics market, the arrival of smartphones and tablet PCs has brought the issue of digital convergence to a head by offering potential substitutes for conventional PCs, TVs, digital cameras, and game consoles. As a result, we forecast digital consumer electronics market value will peak over 2013-2015 (Figure 4).

2) Resistant to commoditization, ASPs rising

Appliance appeal (2): Resistant to commoditization, unit prices tend to rise

The second appeal of household appliances is their resistance to product commoditization and the tendency of product unit prices to rise. In contrast, digital consumer electronics are easily commoditized and price competition continues to depress unit prices (Figure 5). We believe this is because of designs, which have become standardized for consumer electronics (digital products) but not so for household appliances (analog products).

Digital consumer electronics are standardized, prompting commoditization

PCs and LCD TVs basically have standardized designs and are assembled from common or standardized devices (Intel CPUs, memory, displays, etc.), so they are easy to manufacture. In addition, their functionality is fundamentally the same, making it difficult for companies to differentiate hardware unless they develop their own operating systems or internet service platforms. For these reasons, vulnerability to commoditization and unit price declines is a structural problem for digital consumer electronics.

As household appliances are analog products, know-how is important to differentiation and commoditization is less likely

Household appliances are analog products that combine thermodynamic and fluid mechanics know-how, and their designs have not become standardized. Unlike digital consumer electronics, the performance of household appliances is determined by design intricacies. Even if products are assembled from the same components, makers can still use technical know-how to differentiate performance. And even within product categories where functionality is the same, usage requirements tend to differ by region. This means that markets are in fact fragmented. Moreover, as vacuum cleaner maker Dyson has shown, it is possible to capture consumers via innovative designs and selling a lifestyle image. Household appliances thus have many points of differentiation, and we believe this makes them resistant to commoditization.

3) No dominant player means diverse opportunities

Appliance appeal (3): Diverse investment opportunities

The third appeal of household appliances is the presence of many strong companies—in other words the absence of overwhelming champions—which offers diverse investment opportunities. Digital consumer electronics is an industry that has short product life cycles and large markets for individual products. This tends to split the market into a select few who dominate through superior cost competitiveness and marketing power (e.g., Samsung), and many lower-tier firms. In contrast, household appliances have long life cycles and markets are fragmented by factors like product functionality, regional differences, and lifestyle. This makes it easier for companies to secure profits. We believe market fragmentation and resistance to commoditization helps companies to differentiate and grow by developing innovative products that appeal to consumers.

Japanese companies have lost competitiveness in digital consumer electronics but not in household appliances

We believe the fact that Japanese companies have maintained their competitiveness in household appliances while faltering in the digital consumer electronics highlights the diverse investment opportunities on offer. This in turn reflects the ability to leverage technical expertise, quality, and reliability—all strengths of Japanese companies—in the household appliances space. No household appliance company has the same degree of dominance Samsung does in the smartphone and LCD TV markets. Because the household appliance industry has long life cycles and fragmented markets, it is difficult for a company to expand its business using Samsung's winning formula of massive investment, optimal investment timing, and sales power.

Figure 3. A comparison of “Digital consumer electronics” and household appliance industries

Industry	Digital consumer electronics	Home appliances
Market size (2012)	\$900bn	\$300bn
Leading companies	Apple, HP, Dell, Nokia, Samsung, LG, HTC, Asus, Acer, Lenovo, Sony, Panasonic, Toshiba, Nintendo, etc.	GE, Whirlpool, Electrolux, BSH, Dyson, LG, Samsung, Haier, Gree, Midea, Panasonic, Hitachi, Toshiba, Mitsubishi Elec, Daikin, Sharp, Fujitsu General, etc.
Competitiveness by region	US/European companies are strong and Asian companies are emerging. Japanese companies are a major presence but long-term we expect they will decline	US/European companies are strong and Asian companies are emerging. Japanese companies maintain their competitiveness in high-end markets
Major products	Smartphones, tablets, PCs, TVs, digital camera	Air conditioners, washing machines, refrigerators, vacuum cleaners, microwave ovens
Product design	Standardized	Not standardized
Related materials	Semiconductors, displays, electronic components, HDD, batteries, etc.	Motors, inverters, compressors, etc.
Product cycle	1-5 years	5-10 years
Pricing	Price erosion often occurs	Price are likely to be stable
Academic disciplines	Physical sciences, engineering, IT	Engineering
Technical innovation goals	Improve the specs of user interfaces, CPUs, displays, etc. Produce superior (thinner, smaller) designs	New consumer lifestyles Cool designs / Improved usability Energy saving capability

Source: Citi Research.

Figure 4. Demand forecasts for digital consumer electronics (left) and household appliances (right): We expect digital consumer electronics demand to be hindered by structural factors but household appliance demand to continue to expand

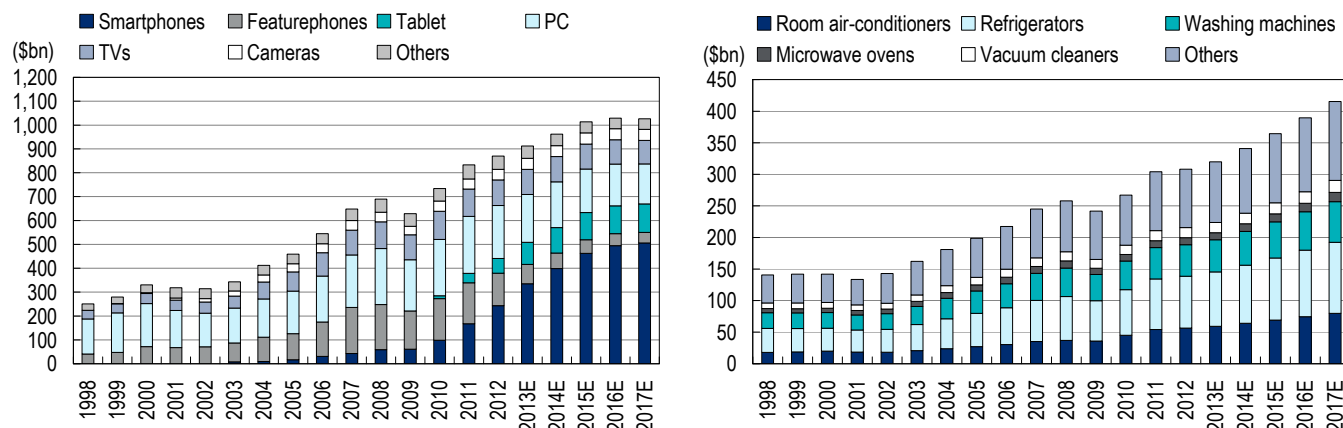
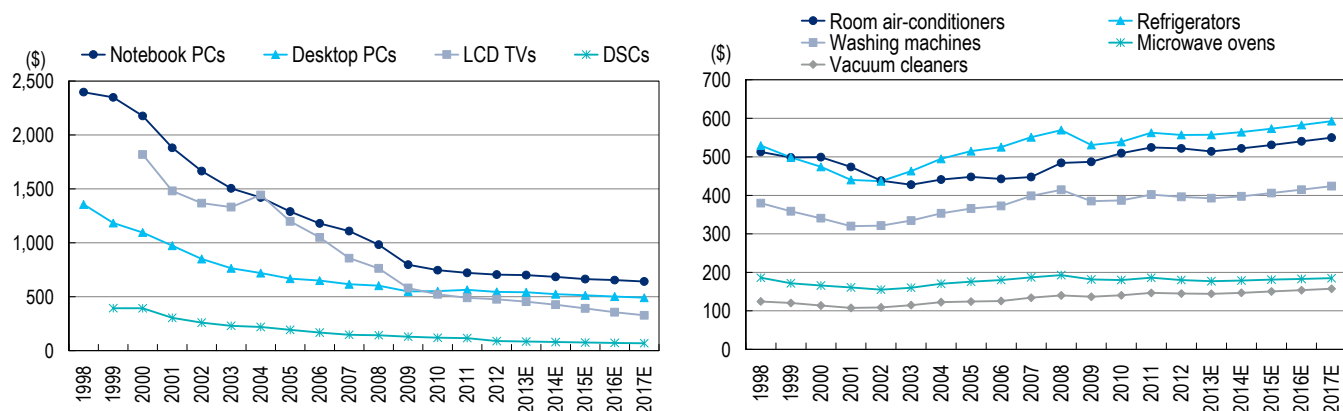


Figure 5. Digital consumer electronics (LHS) and household appliances (RHS): Prices of mainstay products
Prices of digital products continue to fall but prices of household appliances are on an uptrend



Source: IDC, JEITA, JEMA, Display Search, CIPA, Euromonitor, Citi Research.

Household appliance investment strategy

How to pick appliance maker stocks

There is no champion household appliance company in the same category as Apple and Samsung in mobile phones, TSMC in foundry services, or Qualcomm in telecom semiconductors. In addition, there are big differences between company characteristics like regional sales compositions and business models (pure play or division of an integrated electronics company).

For these reasons, when looking for exposure to household appliances, we believe investors should select companies that either:

1. Have a focus on emerging markets with high-growth potential;
2. Have established superior positions in developed markets through technology and brand power; or
3. Are shifting their focus to household appliances through structural reforms or other restructuring measures.

Haier, LG Electronics, and Arcelik, and Fujitsu General fit criterion (1), and Electrolux fits criterion (2). Some companies fit more than one criterion: Daikin is growing in emerging markets and has established a presence in the US through the acquisition of Goodman, satisfying (1) and (2); Panasonic has strong household appliance businesses in Japan and Asia and is implementing structural reforms, satisfying (1), (2) and (3). Please see Figure 6 for regional sales breakdowns and household appliance OP weightings.

EM-related names: Fujitsu General, Haier, LG, Arcelik

We highlight Fujitsu General, Haier, LG Electronics, and Arcelik as household appliance makers that are likely to expand in emerging markets. Among these we have Buy ratings on Fujitsu General and Haier. Citi Research analyst Catherine Chan believes Haier has good long-term growth potential because it is well placed to benefit from market expansion in China (please see her April 19 report [Haier Electronics \(1169.HK\) - A Good Start to FY13](#)). Fujitsu General derives around half of its sales from emerging markets and we believe it is also positioned to benefit from emerging market growth.

We have Neutral ratings on LG Electronics (its smartphone business is struggling) and Arcelik (valuations are demanding). However, LG Electronics has sales channels around the world, and is particularly strong in emerging markets, and Arcelik has a strong household appliance business presence in Turkey. We believe both companies have high growth potential. Chinese household appliance majors Gree and Midea (not rated) could benefit from Chinese market growth.

Superior position in DM: Electrolux

We nominate Electrolux as a company with a superior position in developed markets. Electrolux derives around 50% of sales from Europe and North America and has a strong presence in these markets. Citi Research analyst Natalia Mamaeva upgraded Electrolux to Buy in February because she forecasts 1) it will expand market share in Europe through new products and in North America through sales channel expansion; and 2) it is well placed to benefit from a US market recovery (please see her February 12 report [Electrolux \(ELUXb.ST\) - Time to Buy](#)). We believe Whirlpool (not covered by Citi Research), the largest US household appliance maker, could also benefit from a US market recovery.

Appliances may revive the Japanese electronics industry

Japanese companies meet emerging market, developed market, and structural reform investment criteria

Household appliances fit all three criteria: 1) they are likely to be a pillar of reforms that drive earnings recovery; 2) Japanese companies are internationally competitive and have scope to grow, particularly in Asia; and 3) unit prices have continued to rise, even in a deflationary environment, and demand should benefit from reflationary Abenomics policies. As a result, we believe household appliances could be an investment catalyst for Japanese electronics makers.

Panasonic: Typical example of an integrated electronics firm for which appliances can drive recovery

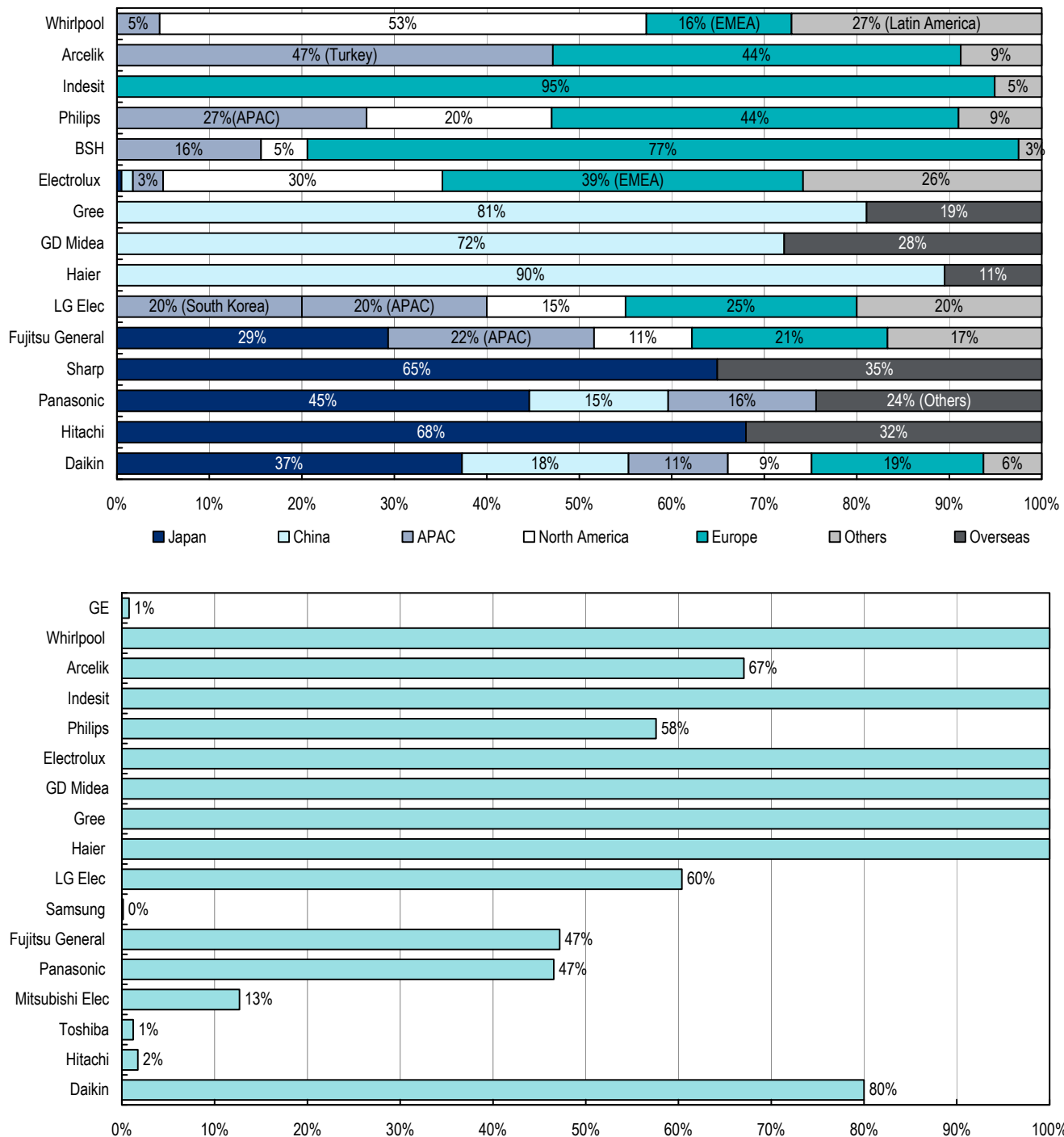
Panasonic is one company for which we think household appliances could help drive a recovery. The firm is implementing structural reforms, centered on headcount reductions, and is focused mainly on reducing losses at struggling businesses like TVs, semiconductors, and consumer market batteries. Once the structural reforms have dealt with the negative legacies, we think market attention will turn to efforts to grow earnings through core businesses. In this context, household appliances offer potential for steady earnings growth given Panasonic's status as one of the leading global manufacturers.

Moreover, although household appliances account for a small proportion of overall earnings, other integrated electronics firms like Sharp, Hitachi, Toshiba, and Mitsubishi Electric are putting their energies into household appliances as part of efforts to improve earnings structures.

Daikin has leveraged M&As to succeed in expanding overseas

Daikin seems to have a promising future in household appliances. Our rating is Neutral due to valuation multiple issues, but the firm is technically strong and has managed to grow via M&A-backed overseas expansion. Another firm with a promising future is Buy-rated Fujitsu General, which has been successfully expanding its air conditioner business overseas.

Figure 6. Regional sales breakdown (top, FY2011) and household appliance business OP weightings (bottom, FY2012) for major household appliance makers



Note: We use the numbers of appliance businesses for Daikin (Air conditioning), Hitachi (Appliance), Toshiba (Home Appliances), Mitsubishi Elec (Home Appliances), Panasonic (Appliance), Sharp (Health & Environmental Equipment), Fujitsu General (Air conditioners), Samsung, LG Elec (HA and AE), Philips (Consumer lifestyle), Arçelik and GE (Home & Business Solution).

Source: Company data, Citi Research.

Figure 7. Earnings at household appliance stocks covered by Citi Research

		Sales	YoY (%)	OP	YoY (%)	OPM (%)	Pretax Profit	YoY (%)	Net Profit	YoY (%)	EPS
Panasonic	3/12 A	7,846,216	-9.7	43,725	-85.7	0.6	-812,844	NM	-772,172	NM	-334.0
	3/13 A	7,303,045	-6.9	160,936	268.1	2.2	-398,386	NM	-754,250	NM	-326.3
	3/14 CE	7,200,000	-1.4	250,000	55.3	3.5			50,000	NM	21.6
	3/14 E	7,104,000	-2.7	272,500	69.3	3.8	154,500	NM	76,600	NM	33.1
	3/15 E	6,930,000	-2.4	302,700	11.1	4.4	204,700	32.5	115,600	50.9	50.0
	3/16 E	6,933,000	0.0	343,400	13.4	5.0	341,400	66.8	205,500	77.8	88.9
Sharp	3/12 A	2,455,850	-18.7	-37,552	NM	-1.5	-238,429	NM	-376,076	NM	-341.8
	3/13 A	2,478,586	0.9	-146,266	NM	-5.9	-466,190	NM	-545,350	NM	-489.8
	3/14 CE	2,700,000	8.9	80,000	NM	3.0			5,000	NM	4.3
	3/14 E	2,671,000	7.8	64,700	NM	2.4	13,700	NM	-3,400	NM	-2.3
	3/15 E	2,588,000	-3.1	67,400	4.2	2.6	36,500	166.4	22,100	NM	12.4
	3/16 E	2,535,000	-2.0	67,000	-0.6	2.6	46,600	27.7	28,700	29.9	16.1
Daikin	3/12 A	1,218,700	5.0	81,192	7.6	6.7	80,566	76.3	41,171	107.2	141.0
	3/13 A	1,290,903	5.9	88,629	9.2	6.9	81,476	1.1	43,584	5.9	149.4
	3/14 CE	1,760,000	36.3	125,000	41.0	7.1			64,000	46.8	220.0
	3/14 E	1,797,250	39.2	135,266	52.6	7.5	130,316	59.9	74,216	70.3	254.8
	3/15 E	1,937,750	7.8	150,100	11.0	7.7	146,800	12.6	84,500	13.9	290.1
	3/16 E	2,080,400	7.4	165,244	10.1	7.9	163,244	11.2	95,244	12.7	327.0
Fujitsu General	3/12 A	203,549	11.8	13,319	20.8	6.5	9,386	25.7	5,175	6.7	47.5
	3/13 A	209,167	2.8	15,120	13.5	7.2	19,560	108.4	13,009	151.4	119.3
	3/14 CE	235,000	12.4	16,000	5.8	6.8			10,000	-23.1	91.7
	3/14 E	235,600	12.6	16,000	5.8	6.8	14,300	-26.9	9,600	-26.2	88.0
	3/15 E	250,600	6.4	18,000	12.5	7.2	16,400	14.7	11,000	14.6	100.9
	3/16 E	260,100	3.8	18,500	2.8	7.1	17,000	3.7	11,400	3.6	104.5
LG Electronics	12/11 A	54,257	-2.7	379	114.6	0.7	-399	NM	-470	NM	-2,870.2
	12/12 A	50,960	-6.1	1,136	199.8	2.2	524	NM	67	NM	407.6
	12/13 E	60,277	18.3	1,472	29.5	2.4	1,589	203.2	1,234	1,750.7	7,543.1
	12/14 E	65,645	8.9	1,642	11.6	2.5	1,843	16.0	1,405	13.8	8,584.4
	12/15 E	70,355	7.2	1,822	11.0	2.6	2,060	11.8	1,531	9.0	9,354.2
Haier	12/11 A	50,090	36.1	1,876	30.8	3.7	1,853	28.3	1,407	44.4	0.5
	12/12 A	55,615	11.0	2,325	23.9	4.2	2,244	21.1	1,695	20.5	0.6
	12/13 E	64,829	16.6	2,967	27.6	4.6	2,928	30.4	2,119	25.0	0.8
	12/14 E	74,150	14.4	3,477	17.2	4.7	3,438	17.4	2,482	17.2	0.9
	12/15 E	85,976	15.9	3,987	14.7	4.6	3,945	14.8	2,848	14.8	1.1
Electrolux	12/11 A	101,598	-4.4	3,017	-44.4	3.0	2,780	-47.6	2,064	-48.4	7.2
	12/12 A	109,994	8.3	4,150	37.6	3.8	3,478	25.1	2,599	25.9	9.1
	12/13 E	111,503	1.4	4,423	6.6	4.0	3,828	10.1	2,871	10.5	10.0
	12/14 E	117,002	4.9	6,263	41.6	5.4	5,727	49.6	4,295	49.6	15.0
	12/15 E	123,433	5.5	7,415	18.4	6.0	7,012	22.5	5,259	22.5	18.4
Philips	12/11 A	22,578	-11.2	-269	NM	-1.2	-493	NM	-1,295	NM	0.7
	12/12 A	24,788	9.8	1,030	NM	4.2	570	NM	226	NM	1.4
	12/13 E	23,807	-4.0	2,073	101.3	8.7	1,733	204.0	1,336	491.2	1.7
	12/14 E	24,695	3.7	2,140	3.2	8.7	1,800	3.9	1,223	-8.5	1.8
	12/15 E	25,618	3.7	2,163	1.1	8.4	1,863	3.5	1,279	4.6	1.9
Arcelik	12/11 A	8,437	21.6	659	16.4	7.8	615	-6.3	507	-2.0	0.7
	12/12 A	10,557	25.1	770	16.9	7.3	629	2.3	525	3.6	0.8
	12/13 E	11,711	10.9	968	25.7	8.3	874	38.9	694	32.3	1.0
	12/14 E	12,946	10.5	1,111	14.7	8.6	1,018	16.4	799	15.0	1.2
	12/15 E	14,094	8.9	1,213	9.2	8.6	1,131	11.1	877	9.7	1.3

Note: Units are ¥mn for Japanese firms, bn KRW for South Korean firms, mn RMB for Chinese firms, mn SEK for Electrolux, mn Euro for Siemens and Philips and mn TL for Arçelik. For EPS, Units are ¥ for Japanese firms, KRW for South Korean firms, RMB for Chinese firms, SEK for Electrolux, Euro for Philips and TL for Arçelik. CE denotes company estimates. Earnings estimates are as of July 9. A: Actuals, CE: Company estimates. E: Our estimates, NM: Not meaningful.

Source: Company data, Citi Research.

Figure 8. Earning contribution of household appliance business covered by Citi Research

		Sales	YoY (%)	OP	YoY (%)	OPM (%)	Appliance sales	Ratio (%)	Appliance OP	Ratio (%)	OPM (%)
Panasonic	3/12 A	7,846,216	-9.7	43,725	-85.7	0.6	1,534,200	19.6	81,500	186.4	5.3
	3/13 A	7,303,045	-6.9	160,936	268.1	2.2	1,554,400	21.3	66,500	41.3	4.3
	3/14 CE	7,200,000	-1.4	250,000	55.3	3.5	1,510,000	21.0	63,000	25.2	4.2
	3/14 E	7,104,000	-2.7	272,500	69.3	3.8	1,619,000	22.8	103,000	37.8	6.4
	3/15 E	6,930,000	-2.4	302,700	11.1	4.4	1,724,000	24.9	115,300	38.1	6.7
	3/16 E	6,933,000	0.0	343,400	13.4	5.0	1,828,000	26.4	119,700	34.9	6.5
Sharp	3/12 A	2,455,850	-18.7	-37,552	NM	-1.5	292,303	11.9	29,460	-78.5	10.1
	3/13 A	2,478,586	0.9	-146,266	NM	-5.9	309,673	12.5	32,200	-22.0	10.4
	3/14 CE	2,700,000	8.9	80,000	NM	3.0	320,000	11.9	20,000	25.0	6.3
	3/14 E	2,671,000	7.8	64,700	NM	2.4	327,000	12.2	31,100	48.1	9.5
	3/15 E	2,588,000	-3.1	67,400	4.2	2.6	335,000	12.9	30,200	44.8	9.0
	3/16 E	2,535,000	-2.0	67,000	-0.6	2.6	344,000	13.6	31,000	46.3	9.0
Daikin	3/12 A	1,218,700	5.0	81,192	7.6	6.7	1,041,386	85.5	60,175	74.1	5.8
	3/13 A	1,290,903	5.9	88,629	9.2	6.9	1,119,972	86.8	70,904	80.0	6.3
	3/14 CE	1,760,000	36.3	125,000	41.0	7.1	1,560,000	88.6	103,000	82.4	6.6
	3/14 E	1,797,250	39.2	135,266	52.6	7.5	1,593,000	88.6	113,766	84.1	7.1
	3/15 E	1,937,750	7.8	150,100	11.0	7.7	1,720,000	88.8	127,100	84.7	7.4
	3/16 E	2,080,400	7.4	165,244	10.1	7.9	1,848,000	88.8	141,244	85.5	7.6
Fujitsu General	3/12 A	203,549	11.8	13,319	20.8	6.5	174,535	85.7	9,586	72.0	5.5
	3/13 A	209,167	2.8	15,120	13.5	7.2	171,566	82.0	7,135	47.2	4.2
	3/14 CE	235,000	12.4	16,000	5.8	6.8	196,300		8,100		
	3/14 E	235,600	12.6	16,000	5.8	6.8	197,000	83.6	8,100	50.6	4.1
	3/15 E	250,600	6.4	18,000	12.5	7.2	210,000	83.8	9,600	53.3	4.6
	3/16 E	260,100	3.8	18,500	2.8	7.1	223,500	85.9	11,100	60.0	5.0
LG Electronics	12/11 A	54,257	-2.7	379	114.6	0.7	15,666	28.9	395	104.2	2.5
	12/12 A	50,960	-6.1	1,140	200.8	2.2	15,570	30.6	685	60.1	4.4
	12/13 E	62,498	22.6	1,401	22.9	2.2	17,068	27.3	658	47.0	3.9
	12/14 E	68,516	9.6	1,562	11.5	2.3	18,906	27.6	754	48.3	4.0
	12/15 E	71,624	4.5	1,735	11.1	2.4	20,229	28.2	827	47.7	4.1
Haier	12/11 A	50,090	36.1	1,876	30.8	3.7	50,090	100.0	1,876	100.0	3.7
	12/12 A	55,615	11.0	2,325	23.9	4.2	55,615	100.0	2,325	100.0	4.2
	12/13 E	64,829	16.6	2,967	27.6	4.6	64,829	100.0	2,967	100.0	4.6
	12/14 E	74,150	14.4	3,477	17.2	4.7	74,150	100.0	3,477	100.0	4.7
	12/15 E	85,976	15.9	3,987	14.7	4.6	85,976	100.0	3,987	100.0	4.6
Electrolux	12/11 A	101,598	-4.4	3,017	-44.4	3.0	101,598	100.0	3,017	100.0	3.0
	12/12 A	109,994	8.3	4,150	37.6	3.8	109,994	100.0	4,150	100.0	3.8
	12/13 E	111,503	1.4	4,423	6.6	4.0	111,503	100.0	4,423	100.0	4.0
	12/14 E	117,002	4.9	6,263	41.6	5.4	117,002	100.0	6,263	100.0	5.4
	12/15 E	123,433	5.5	7,415	18.4	6.0	123,433	100.0	7,415	100.0	6.0
Philips	12/11 A	22,578	-11.2	-269	NM	-1.2	5,822	25.8	392	-145.7	6.7
	12/12 A	24,788	9.8	1,030	NM	4.2	5,953	24.0	593	57.6	10.0
	12/13 E	23,807	-4.0	2,073	101.3	8.7	4,703	19.8	493	23.8	10.5
	12/14 E	24,695	3.7	2,140	3.2	8.7	4,844	19.6	490	22.9	10.1
	12/15 E	25,618	3.7	2,163	1.1	8.4	4,989	19.5	504	23.3	10.1
Arcelik	12/11 A	8,437	21.6	659	16.4	7.8	5,560	65.9			
	12/12 A	10,557	25.1	770	16.9	7.3	7,079	67.1			
	12/13 E	11,711	10.9	968	25.7	8.3					
	12/14 E	12,946	10.5	1,111	14.7	8.6					
	12/15 E	14,094	8.9	1,213	9.2	8.6					

Note: Units are ¥mn for Japanese firms, bn KRW for South Korean firms, mn RMB for Chinese firms, mn SEK for Electrolux, mn Euro for Siemens and Philips and mn TL for Arçelik. For EPS, Units are ¥ for Japanese firms, KRW for South Korean firms, RMB for Chinese firms, SEK for Electrolux, Euro for Philips and TL for Arçelik. CE denotes company estimates. Forecasts are as of July 9, 2013. A: Actuals, CE: Company estimates, E: Our estimates, NM: Not meaningful.

Source: Company data, Citi Research.

Figure 9. Valuations of appliance industry majors

		Rating	Price	Mkt Cap	FY1E=	EPS	PER (x)		PBR (x)		OPM	EV/EBITDA (x)		RoE			
Code	Company					FY1E	FY2E	FY1E	FY2E	FY1E	FY1E	FY2E	FY1E	FY2E	FY1E	FY2E	
Home Appliances				(\$ bn)													
6367.T	Daikin Inds	2	JPY	4,685.00	13.8	3/14	254.8	290.1	18.4	16.1	2.0	7.5%	7.7%	7.8	6.9	11.5%	11.9%
6501.T	Hitachi	1	JPY	666.00	32.5	3/14	49.0	60.3	13.6	11.1	1.3	5.6%	6.4%	5.3	4.9	10.8%	12.0%
6502.T	Toshiba	1	JPY	480.00	20.5	3/14	36.4	42.6	13.2	11.3	1.7	5.4%	5.7%	5.2	4.5	13.6%	13.9%
6503.T	Mitsubishi Elec	2	JPY	1,092.00	23.7	3/14	57.5	73.7	19.0	14.8	1.7	5.7%	6.7%	6.5	5.5	9.2%	11.0%
6752.T	Panasonic	1	JPY	858.00	20.0	3/14	33.1	50.0	25.9	17.2	1.4	3.8%	4.4%	4.8	4.7	5.8%	8.1%
6753.T	Sharp	3	JPY	427.00	5.1	3/14	-2.3	12.4	nm	34.4	2.7	2.4%	2.6%	5.8	5.3	-1.9%	9.0%
6755.T	Fujitsu General	1	JPY	1,071.00	1.2	3/14	88.0	100.9	12.2	10.6	2.1	6.8%	7.2%	6.3	5.4	18.9%	18.4%
005930.KS	Samsung Elec	1	KRW	1,298,000.00	171.5	12/13	217,752.9	242,150.1	6.0	5.4	1.3	17.2%	18.2%	2.5	1.9	24.2%	21.6%
066570.KS	LG Elec	2	KRW	71,000.00	10.4	12/13	5,113.2	7,386.0	13.9	9.6	0.9	2.2%	2.3%	4.2	4.3	6.7%	9.2%
1169.HK	Haier Elec Grp	1	CNY	13.02	4.3	12/13	0.8	0.9	12.9	11.0	3.4	4.6%	4.7%	7.1	5.9	33.4%	30.1%
ELUXb.ST	Electrolux	1	SEK	176.60	8.3	12/13	10.0	15.0	17.6	11.8	3.3	4.0%	5.4%	8.4	6.9	16.3%	27.0%
PHG.AS	Philips	3	EUR	22.73	29.2	12/13	1.7	1.8	13.3	12.6	1.8	8.7%	8.7%	5.6	5.3	12.0%	10.7%
SIEGn.DE	Siemens	1	EUR	80.01	92.8	9/13	6.5	8.3	12.4	9.6	2.2	7.9%	11.6%	8.5	6.0	13.9%	18.9%
ARCLK.IS	Arcelik	2	TRY	13.60	4.8	12/13	1.0	1.2	13.2	11.5	2.2	8.3%	8.6%	8.6	7.8	17.3%	18.1%
GE.N	General Electric	1	USD	23.43	242.3	12/13	1.6	1.8	14.2	13.0	1.8	25.8%	27.2%	4.1	3.6	13.3%	13.3%
JCI.N	Johnson Controls	2	USD	37.15	25.4	9/13	2.6	3.2	14.3	11.6	1.9	5.4%	6.2%	9.4	7.9	13.9%	15.2%

Note: Shares prices and market caps are as of the July 16 close.

Source: Company data, Citi Research.

3. Appliance market outlook

Global overview

Market worth \$308bn in 2012

We estimate the size of the household appliances market by breaking it down into the following product categories: room air conditioners, refrigerators, washing machines, microwave ovens, and vacuum cleaners. In 2012 the global household appliances market was worth \$308bn, and we believe it will grow 6% annually through 2017. To estimate market size, we first estimate household appliances penetration rates, GDP growth, and volume growth potential in light of population growth for each region based on a variety of statistical data. We also factor in a certain level of ASP growth.

Growth in both developed and emerging markets

In 2012 the market was worth \$139bn in developed markets (about 45% of the overall market) and \$169bn in emerging markets. We believe growth in the developed markets will be about 3% annually going forward, compared with growth of 9% in emerging markets. That is, we believe the home appliances market will continue to grow in both the developed and emerging world because 1) there has been progress in household appliances penetration in the emerging world and 2) ASPs are rising.

In developed markets, growth driven by higher product ASP and economic recovery

Household appliance penetration rates have hit about 100% in developed economies, so most demand there is for replacement. However, household appliance ASPs are on the rise, so we think the market will continue to grow in value terms. In addition, in the US market, which had been sluggish due to the global financial crisis, household appliances should benefit from a recovery for the housing market.

Japan a good example of a market where product ASPs continue to rise

One good example of a market where product ASPs continue to rise is Japan. We discuss this further later in this report, but although the household appliance market is flat in volume terms, household appliance ASPs are on an uptrend thanks to expansion in demand for high-end products and product mix improvement via lower energy usage, larger sizes, and increased functionality. We note this is happening despite Japan still being in deflation. With the yen weakening we believe the size of the market will decline significantly in dollar terms in 2013, and will decline slightly in 2014 due to the increase in consumption tax, but we look for moderate growth in the 1%-2% range to continue after 2015. The key is whether Abenomics results in a recovery in domestic demand, something we cannot be sure of at this point.

In the US, appliances should benefit from a housing recovery

In the US, one of the world's largest markets for household appliances, we look for growth to continue because 1) the US housing market seems to be improving (please see the February 7 note [U.S. Construction - Tying Jobs, Vacancies, Loans and Homes in to Non-Resi Upside](#)) and 2) there is a correlation between household appliances and the housing market (please see the February 12 note [Electrolux \(ELUXb.ST\) - Time to Buy](#)). In fact, prior to the global financial crisis in 2002-2006 the US household appliances market saw sustained growth rates in the high single digits to double digits. With benefits from a housing market recovery likely now as well, we think that the market will grow 8% in 2013, and growth in the mid-single digits will continue onward.

European markets to continue correcting

We expect ongoing corrections on European markets due to the impact of the debt crisis. Longer-term, growth can be expected for Eastern European markets, but we expect slowing demand in southern Europe to result in a 4% contraction in 2013 and growth of only around 2% in 2014.

As per-capita GDP rises in emerging markets, we look for appliances penetration and product mix to improve

In emerging markets, we think growth will continue as 1) household appliance penetration increases and 2) ASPs rise. In fact, we find that there is a strong positive correlation between penetration rate and GDP when per-capita GDP is between \$10,000 and c\$20,000. As such, we think household appliance penetration will increase in the many developing economies where GDP growth continues. At the same time, per-capita GDP growth means an expansion for middle-income earners, which in turn drives product mix improvement. As a result, ASPs are rising in many developing economies.

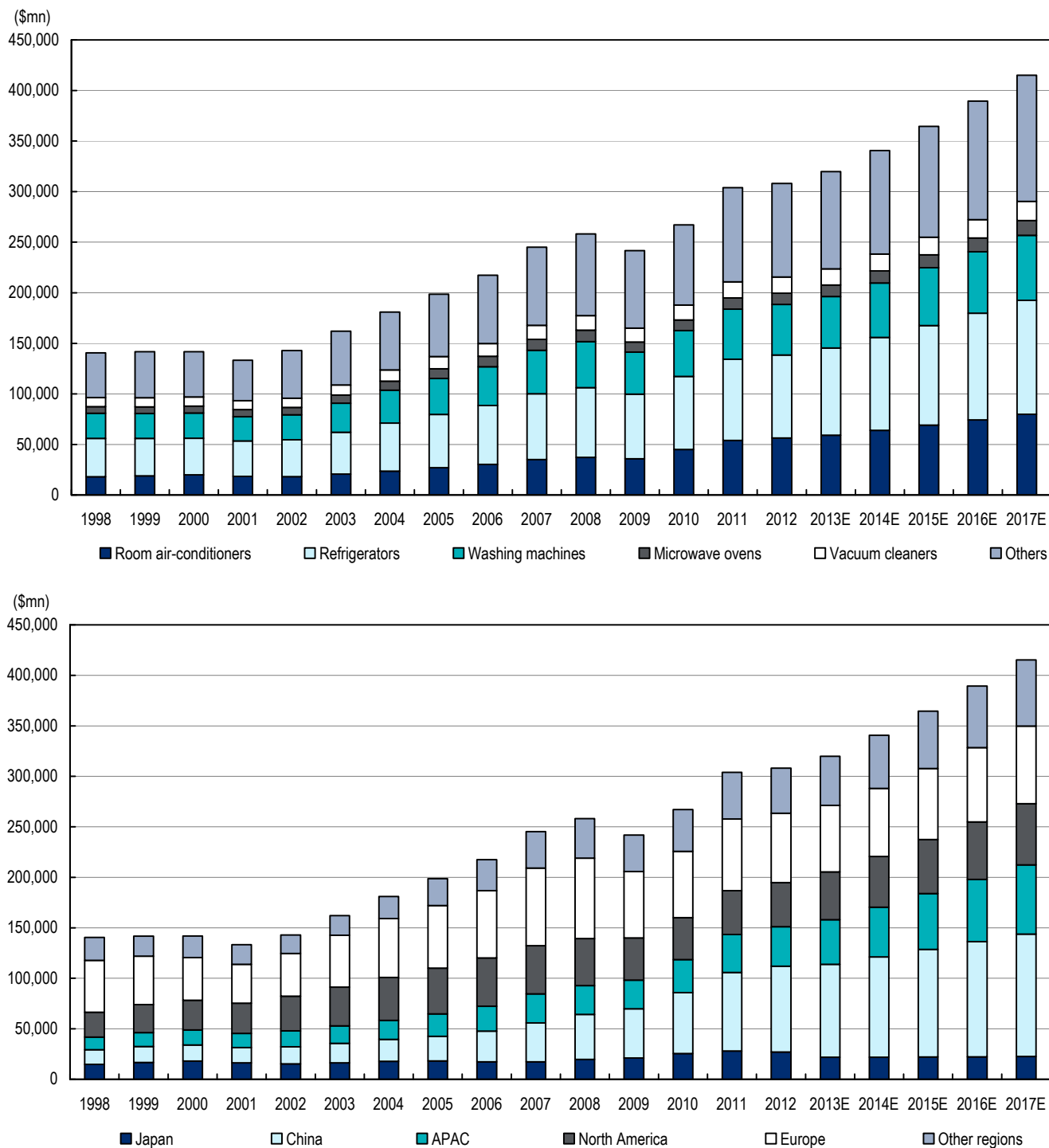
China is one major developing market. We look for growth in the upper single digits to continue on increasing penetration for household appliances in rural areas and ASP gains in urban areas. We also note that Asia (ex-Japan and China) includes a lot of regions where per-capita GDP is below \$5,000 and household appliance penetration has not progressed much. In these areas we could see explosive growth. Accordingly, we think overall market growth will be 10%+. Other developing regions like Eastern Europe, the Middle East, Latin America, and Africa look promising in terms of growth as well.

Markets particularly large for air conditioners, washers, and refrigerators

Breaking the market down by product, we see that markets are larger for high-ASP products: in 2012 the air conditioner market was worth \$56bn, the refrigerator market \$82bn, and the washing machine market \$50bn. At the same time, markets for low-ASP products are smaller: \$11bn for microwave ovens, \$17bn for vacuum cleaners. ASPs for microwave ovens and vacuum cleaners are \$200 or less, while ASPs for air conditioners, washing machines, and refrigerators are \$400 or more. We think this difference is the reason for the gap in market size.

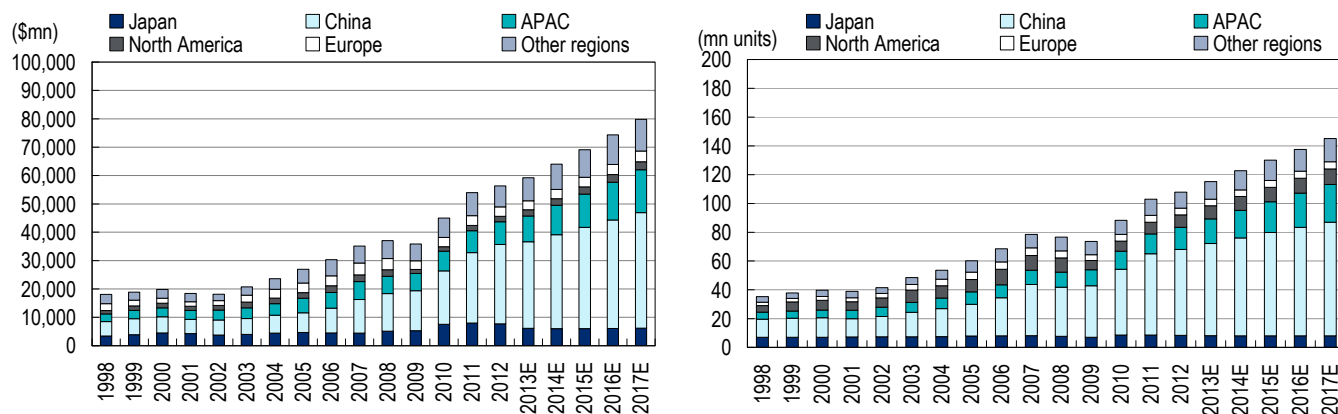
In addition, while emerging markets are driving demand for air conditioners and refrigerators, the main market for washing machines, microwave ovens, and vacuum cleaners is the developed world. Therefore, right now market growth is above-average for air conditioners and refrigerators and below average for washing machines, microwave ovens, and vacuum cleaners.

Figure 10. Market outlook of household appliance market by products (top) and regions (bottom)



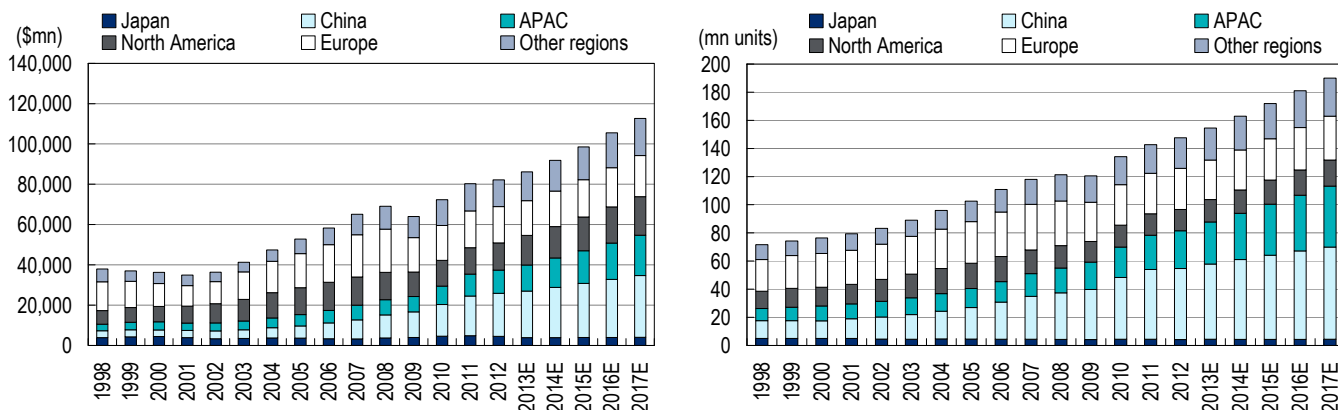
Source: JEMA, Euromonitor, Citi Research.

Figure 11. Outlook for room air conditioner market by value (left) and units (right)



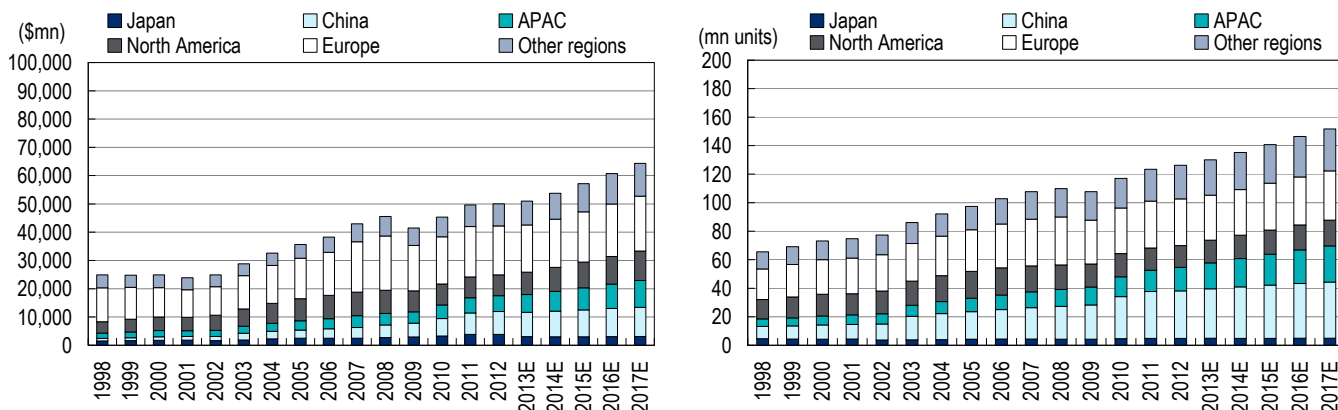
Source: JEMA, Euromonitor, Citi Research.

Figure 12. Outlook for refrigerator market by value (left) and units (right)



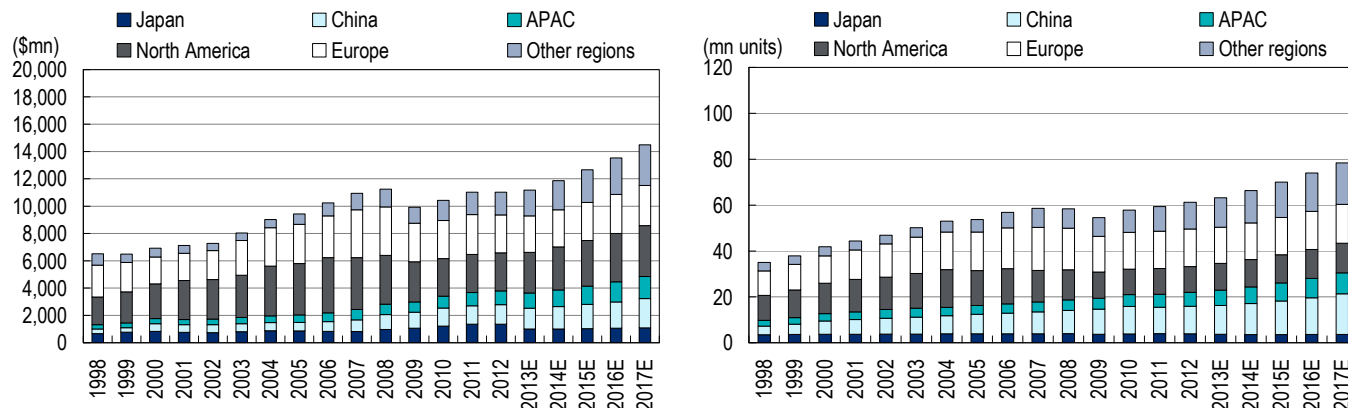
Source: JEMA, Euromonitor, Citi Research.

Figure 13. Outlook for washing machine market by value (left) and units (right)



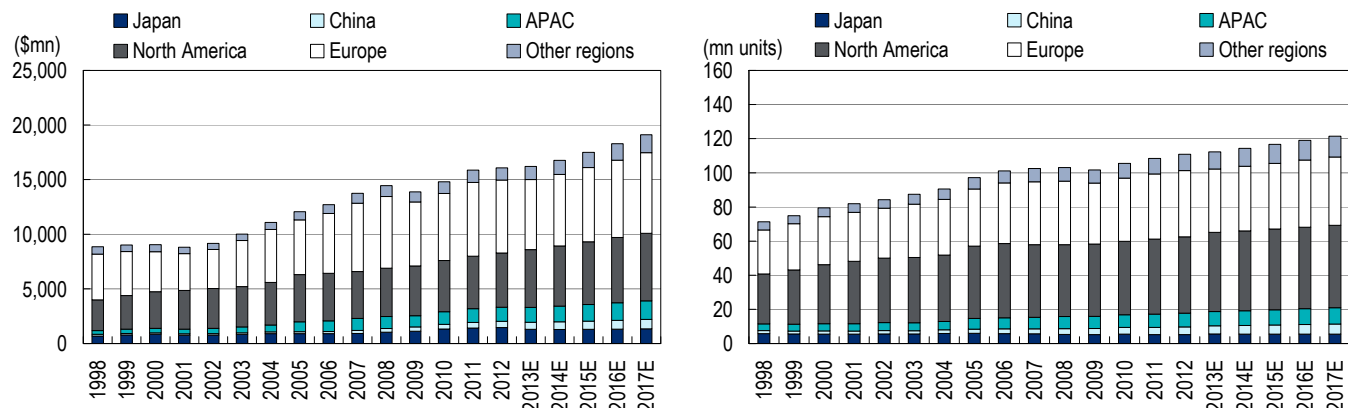
Source: JEMA, Euromonitor, Citi Research.

Figure 14. Outlook for microwave oven market by value (left) and units (right)



Source: JEMA, Euromonitor, Citi Research.

Figure 15. Outlook for vacuum cleaner market by value (left) and units (right)



Source: JEMA, Euromonitor, Citi Research.

Uptake in emerging markets to drive volumes

Appliance diffusion driven by growth in per-capita GDP

In developed markets, the penetration rate for household appliances other than air conditioners is at nearly 100%, while in developing markets household appliances are still in the growth stage. While this differs to some extent depending on the product in question, we note household appliance penetration rises to around 100% when GDP per capita rises above \$10,000-\$20,000, and leading up to this level there is a relatively strong correlation between per-capita GDP and household appliance penetration. Therefore, we think increasing popularity for household appliances in developing markets as per-capita GDP rises will spur expansion for the overall household appliances market.

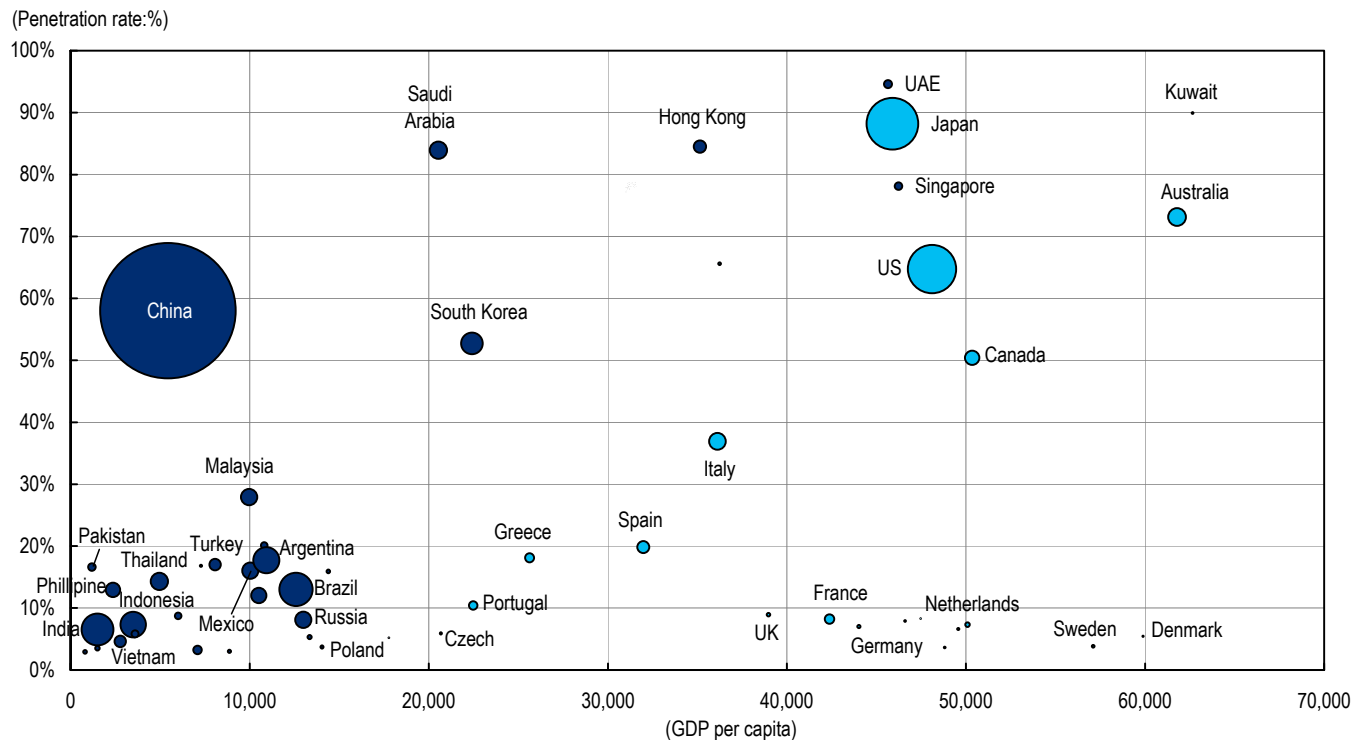
Correlation between per-capita GDP and household appliance diffusion until \$10,000-\$20,000 level is reached

The penetration rate for refrigerators and washing machines tends to hit about 100% when per-capita GDP exceeds \$10,000. In most countries in the developed world penetration is at nearly 100%. Similarly, microwave and vacuum cleaner penetration rises to around 100% when per-capita GDP rises above \$20,000. In much of the developed world penetration for these products is nearly 100%. However, in Italy, the birthplace of the slow-food movement, we note that penetration for microwave ovens remains below 40%. This is evidence that household appliance choices are closely linked to lifestyle.

Air conditioners more popular in warmer regions

Air conditioners are most popular in warmer regions. Regions or countries where air conditioner penetration is 30% or more include East Asia (Japan, South Korea, Hong Kong, Taiwan, China), Asia-Pacific (Singapore, Australia), the Middle East (Saudi Arabia, UAE, Kuwait), North America, and Italy. All of these areas have per-capita GDPs of above \$20,000 (except for China), and summers tend to be very hot. We note in many European nations the air conditioner penetration rate is 20% or less, and we think this is because colder climates render air conditioners unnecessary.

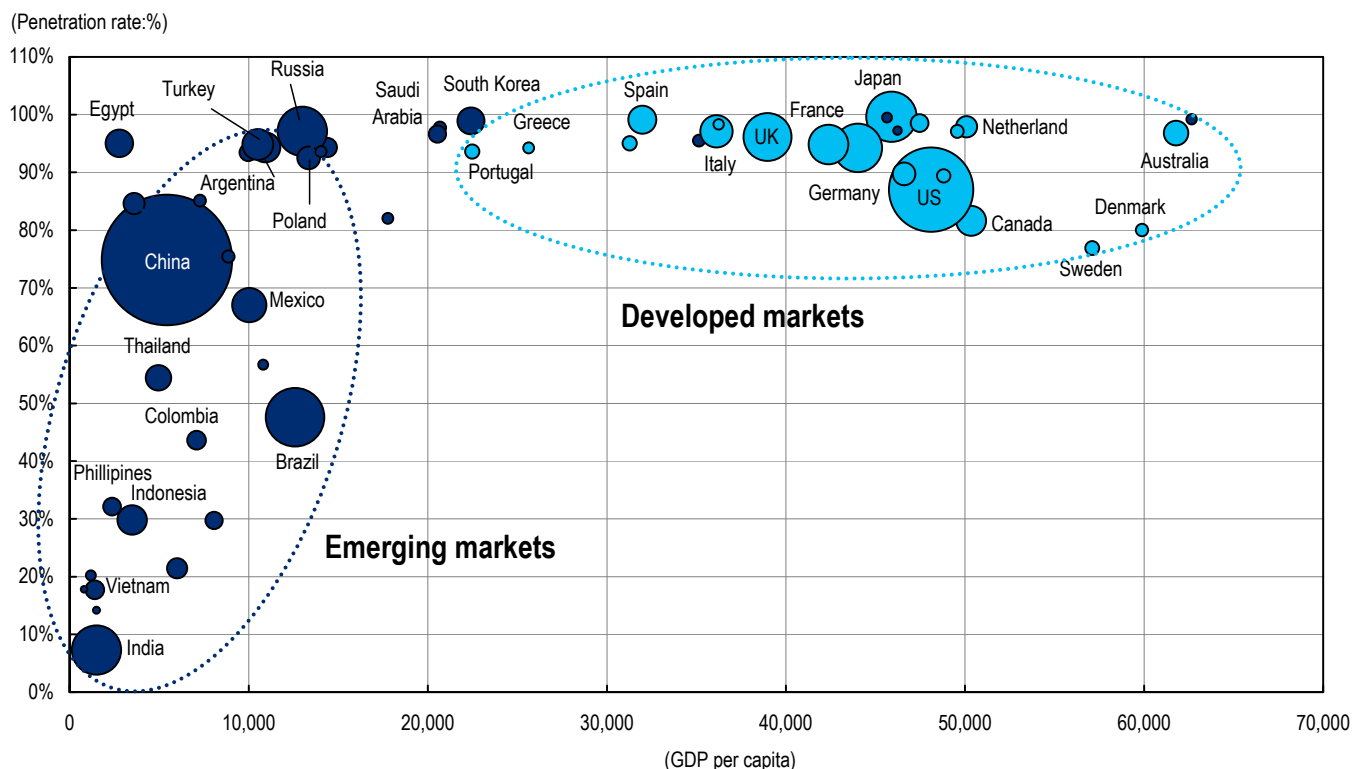
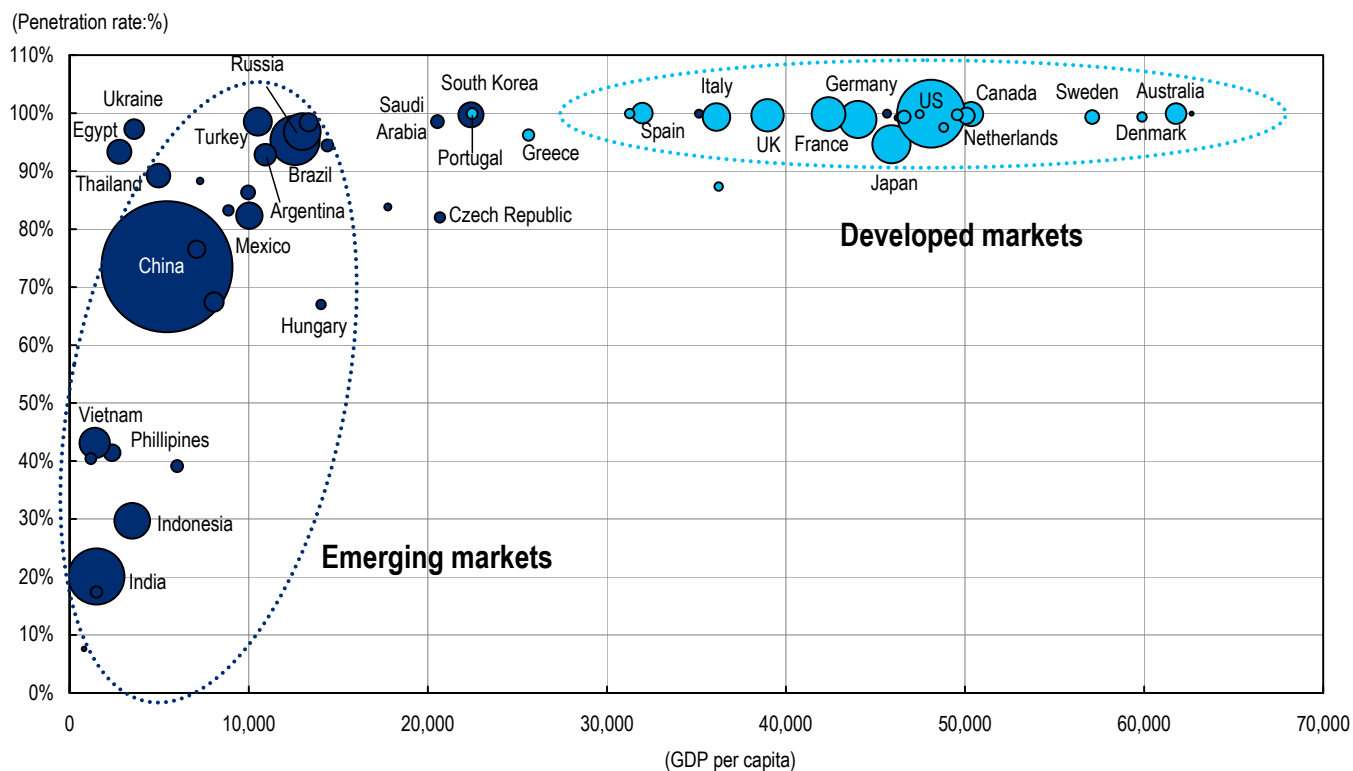
Figure 16. Air conditioner penetration versus per-capita GDP : Penetration has advanced in hotter regions where GDP has grown



Note: Vertical axis is penetration rate, horizontal axis is GDP per capita. Developed economies in light blue, developing economies in dark blue. The size of the circle denotes market size.

Source: JEMA, Euromonitor, World Bank, Citi Research.

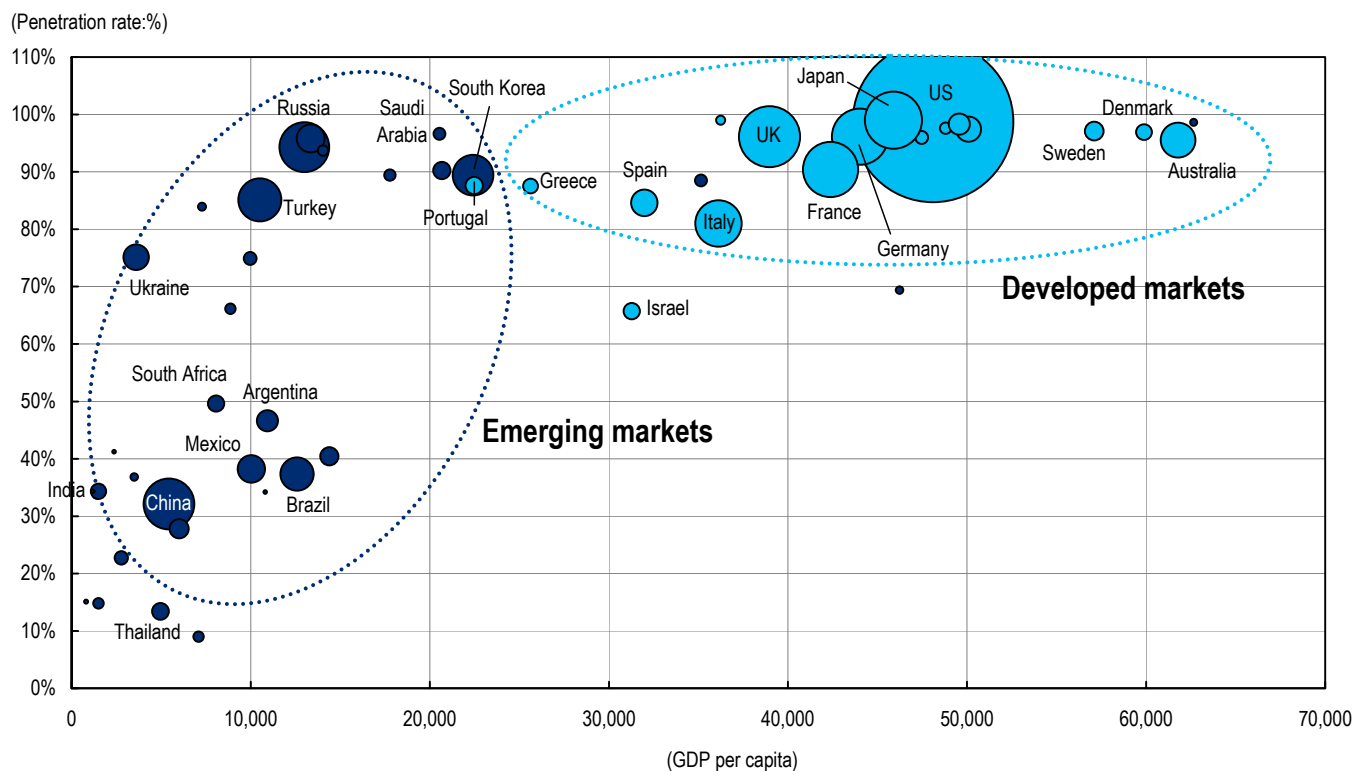
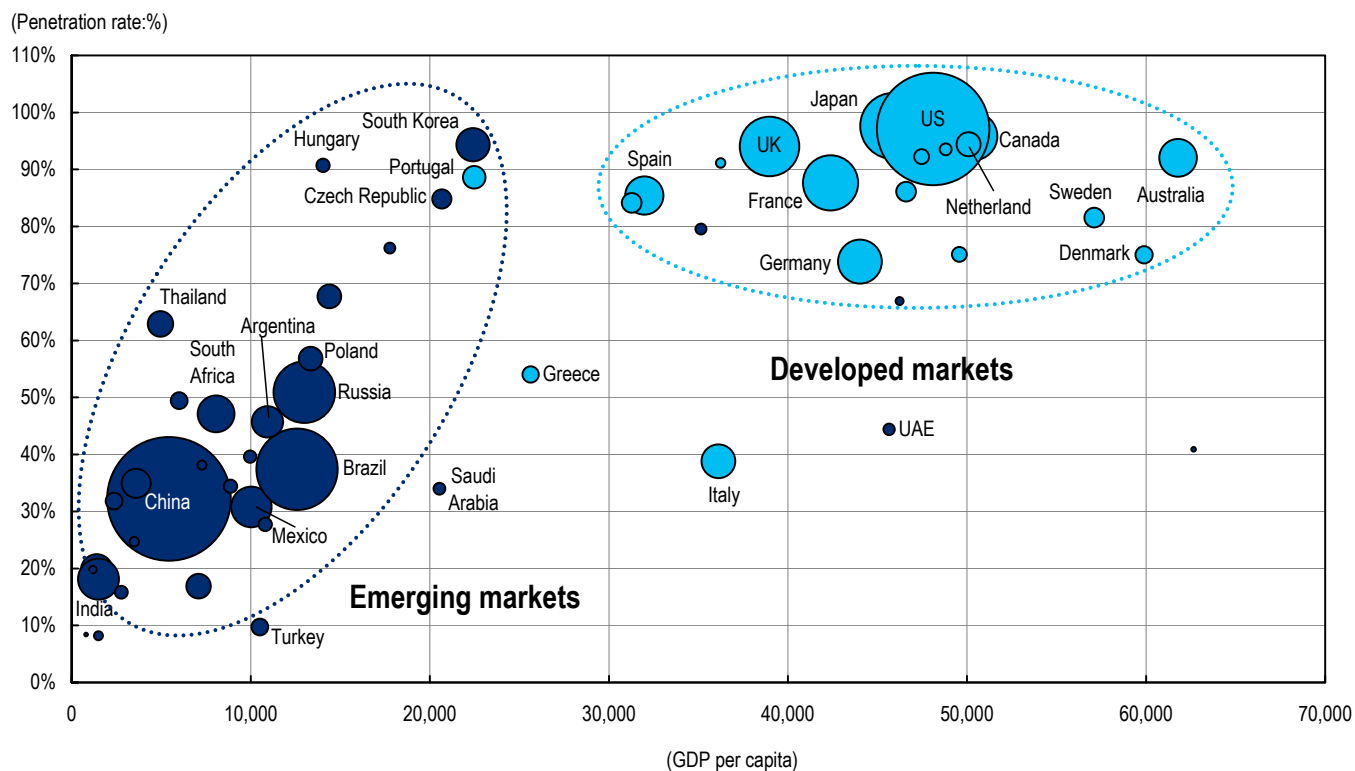
Figure 17. Penetration rates for refrigerators (upper figure) and washing machines (lower figure) versus GDP per capita: Penetration rate increases in proportion to per-capita GDP until \$10,000 level is reached



Note: Vertical axis is penetration rate, horizontal axis is GDP per capita. Developed economies in light blue, developing economies in dark blue. The size of the circle denotes market size.

Source: JEMA, Euromonitor, World Bank, Citi Research.

Figure 18. Penetration rate for microwaves (upper figure) and vacuum cleaners (lower figure) versus per-capita GDP: Penetration rate increases in proportion to per-capita GDP until \$20,000 level is reached



Note: Vertical axis is penetration rate, horizontal axis is GDP per capita. Developed economies in light blue, developing economies in dark blue. The size of the circle denotes market size.

Source: JEMA, Euromonitor, World Bank, Citi Research.

Rising ASPs to drive growth in appliances

Continuing rise in average price for appliances

The household appliances market's current growth drivers are volume expansion in emerging markets, and a rise in average product prices. Figures 19-21 reveals a sustained rise in the average price of core household appliances (refrigerators, washing machines, vacuum cleaners, and microwave ovens) in nearly all regions, including Japan, China, Western nations, and emerging markets.

Household appliances resist commoditization, with product mix improving in both emerging and developed markets

We attribute this continuing rise in the average price of appliances to three factors: 1) in emerging markets, a shift in demand from low-end to mid-range and higher models accompanying market uptake of household appliances, 2) in developed markets, product mix improvement accompanying a shift toward larger, more energy-efficient and more multifunctional models, and as consumers become more discerning, and 3) the resistance of household appliances to commoditization and price competition.

Product mix improving in both EM and DM

Demand growth for mid-range and higher models in emerging markets, owing to middle-class expansion

In China, for example, the market mainstay in the early stages of household appliances uptake at the start of the 2000s was low-end models (in the case of refrigerators, products with one or two doors and a price of around \$200). As per-capita GDP rose with economic expansion, and uptake of household appliances progressed, however, demand expanded for mid-range and higher models among middle-class and wealthier consumers. Again taking refrigerators as an example, large models of 400 liters and higher became popular, principally in the urban sector of China's coastal region.

In developed markets, growth in models appealing to discerning consumers, and product mix improvement owing to shift toward more energy-efficient, larger and multifunctional models

In Japan, meanwhile, uptake of household appliances is complete, but higher demand for high-priced products is driving product mix improvement. As described in more detail below, the average product price has continued to rise despite deflationary conditions. This reflects the growth in high-value added models appealing to discerning consumers, such as high-quality rice cookers and microwave ovens that cook meals in a healthier way. It also reflects higher demand for refrigerator and washing machine models that are larger, more energy-efficient, and offer more functions.

We surmise that 1) rising demand for high value-added products owing to income growth in emerging markets, and 2) product mix improvement in developed markets owing to growth in models appealing to discerning consumers, and a shift to more energy-efficient, larger and more multifunctional models, are trends that are occurring throughout the world, leading to higher average price.

Scope to improve via higher performance and innovation

Household appliances resist commoditization because they are analog

Household appliances are analog products based on thermal and fluid dynamics, and minor differences in design impact performance. As such, the production of household appliances requires design and manufacturing expertise. Regional differences in living habits and climates also produce major divergence in product specifications related to usage methods, design, and durability. This means that the global household appliances market is actually highly fragmented. This factor makes household appliances resistant to commoditization and pure price competition, and we see this as another factor behind the average product price's upward progress.

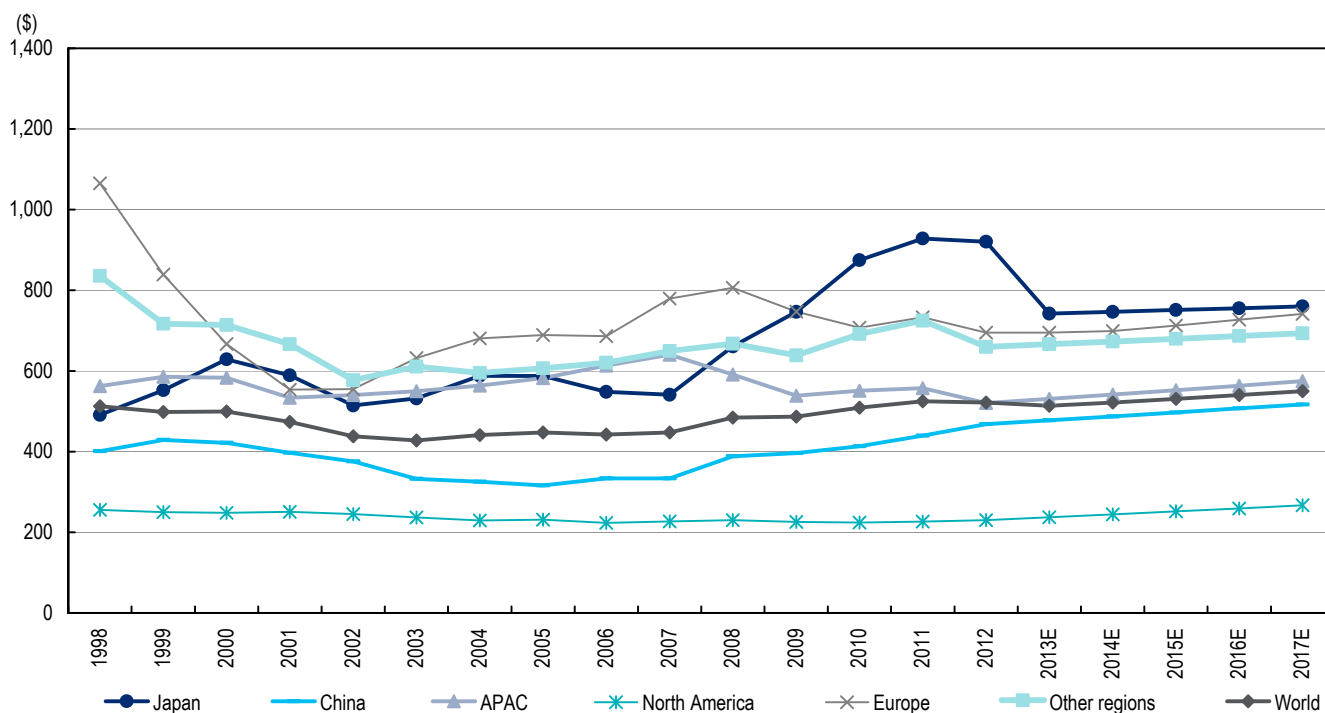
Scope for product improvement in areas like energy efficiency

We expect the average price of household appliances to rise over the long term, since we see scope for improving products such as by raising their energy-efficiency and increasing their size. For example, the shift to inverter adoption and motor revolution control has both greatly contributed to making household appliances more energy-efficient, and helped to drive up product prices. In Japan, inverter adoption has reached around 70% for washing machines, roughly 50% for refrigerators and more or less 100% for air conditioners, but the same weightings in global terms are only slightly over 30% for air conditioners and just under 10% for washing machines and refrigerators, leaving substantial upward scope. If the shift to inverter adoption progresses on a global scale owing to greater awareness of the need to save energy, we would expect this to drive up the average price of household appliances.

Lifestyle-driven innovation could also generate added value

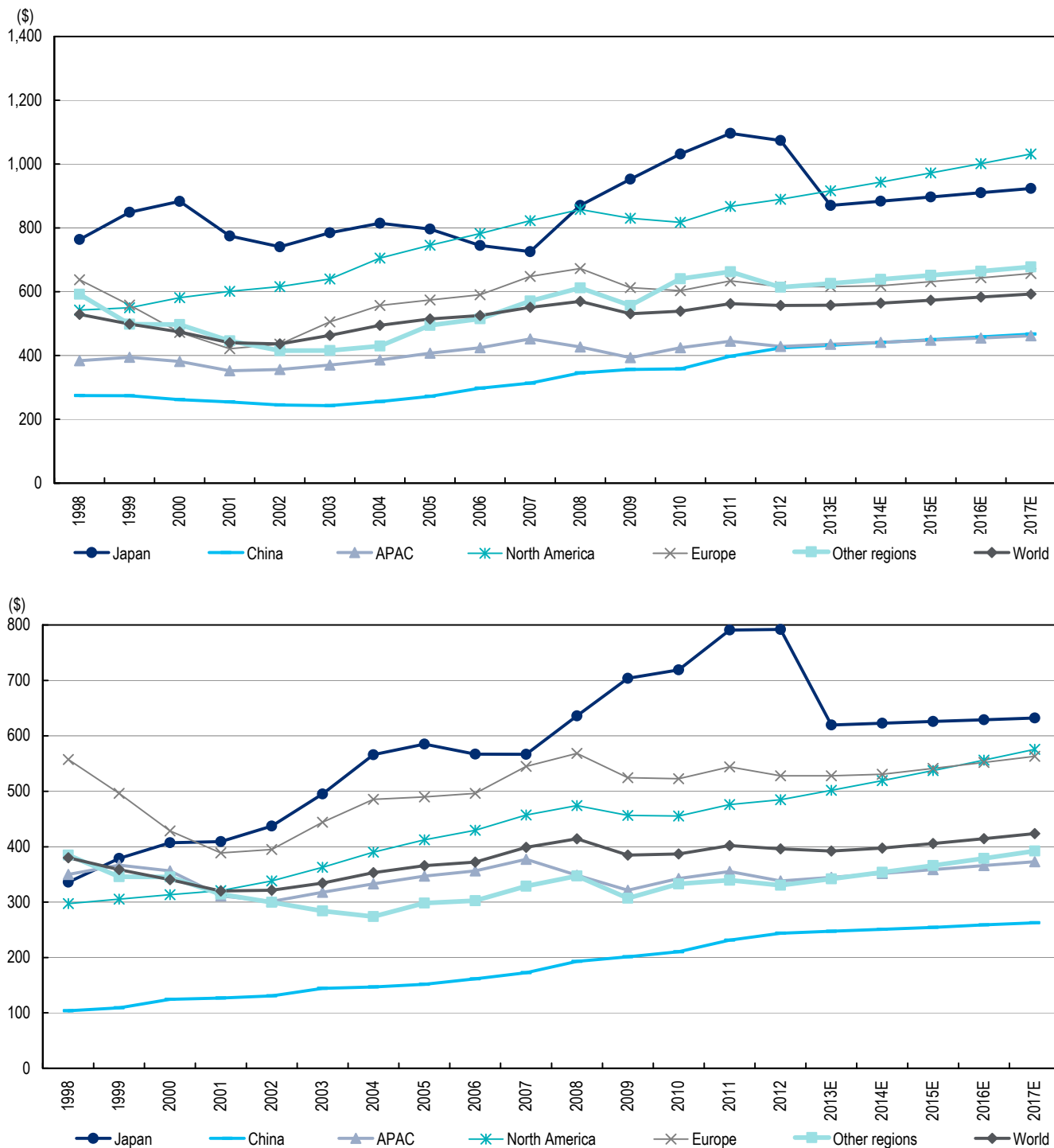
We also see potential for the creation of value-added via innovation in appliances, examples of which include Sharp's Healsio water ovens that cook meals in a healthier way, Panasonic's highly energy-efficient Econavi appliances, and Dyson's vacuum cleaners and bladeless fans that appeal to consumers via appealing designs. As the global economy matures over the ultra-long term, we think this kind of lifestyle-driven innovation could lead to a rise in the average product price of mainstay household appliances.

Figure 19. Growth trend in average price of household appliances in all regions (room air conditioners)



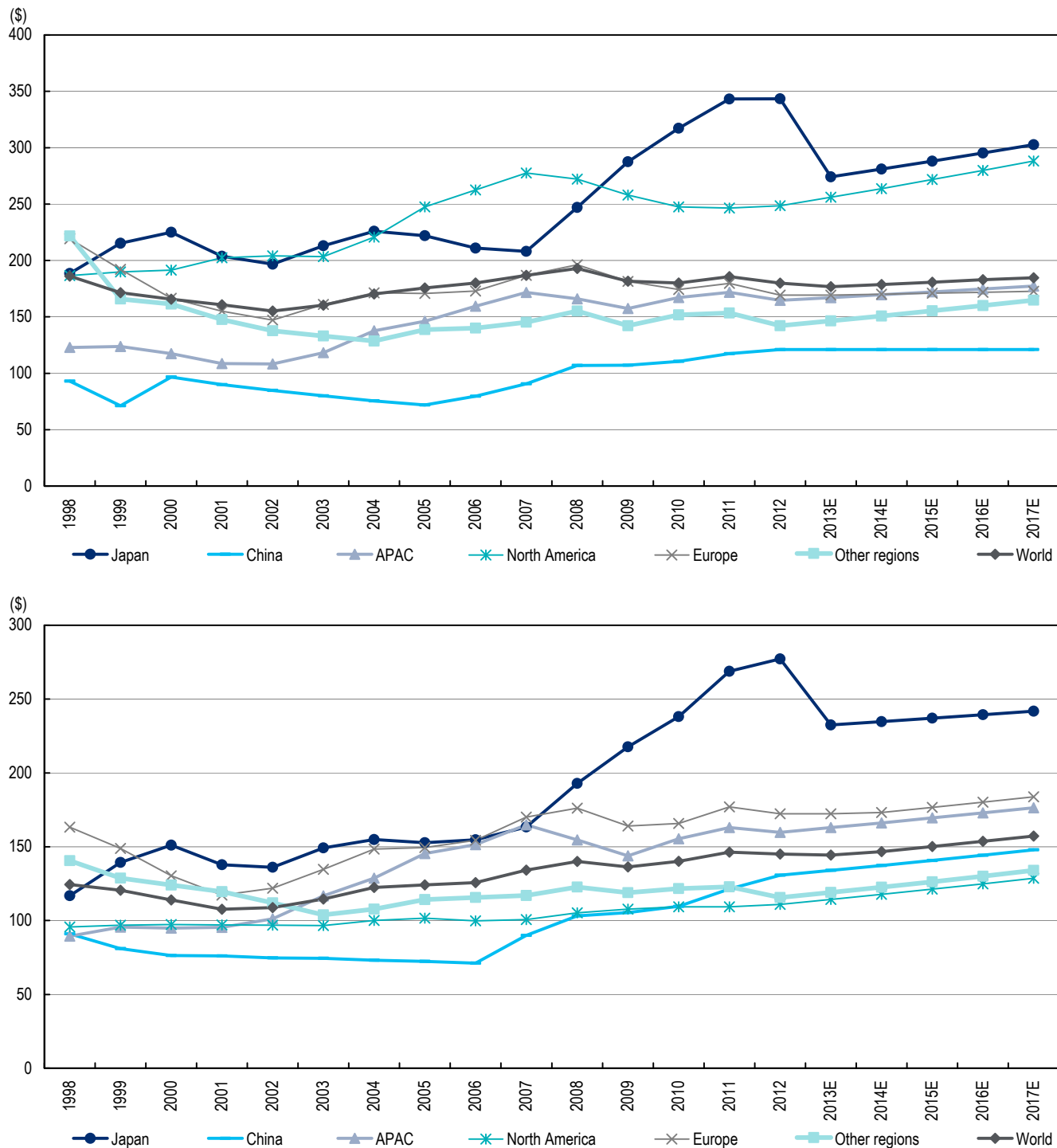
Source: JEMA, Euromonitor, Citi Research.

Figure 20. Growth trend in average price of household appliances in all regions (Top: refrigerators, bottom : washing machines)



Source: JEMA, Euromonitor, Citi Research.

Figure 21. Growth trend in average price of household appliances in all regions (Top: microwave ovens, bottom : vacuum cleaners)



Source: JEMA, Euromonitor, Citi Research.

Must-have appliances first, then nice-to-have

Refrigerators, washing machines, and vacuum cleaners grow popular first, followed by microwaves and air conditioners

The process of penetration for household appliances differs by product. In general, refrigerators, washing machines, and vacuum cleaners become popular first, followed by microwave ovens and air conditioners. In Japan, refrigerators, washing machines, and vacuum cleaners were more or less universal in the 1970s, when per-capita GDP was \$5,000 or so, and it took more time for microwave ovens and air conditioners to become commonplace. Globally speaking penetration for refrigerators, washing machines, and vacuum cleaners tends to hit about 100% when per-capita GDP rises above \$10,000, but the same is not true for microwave ovens and air conditioners.

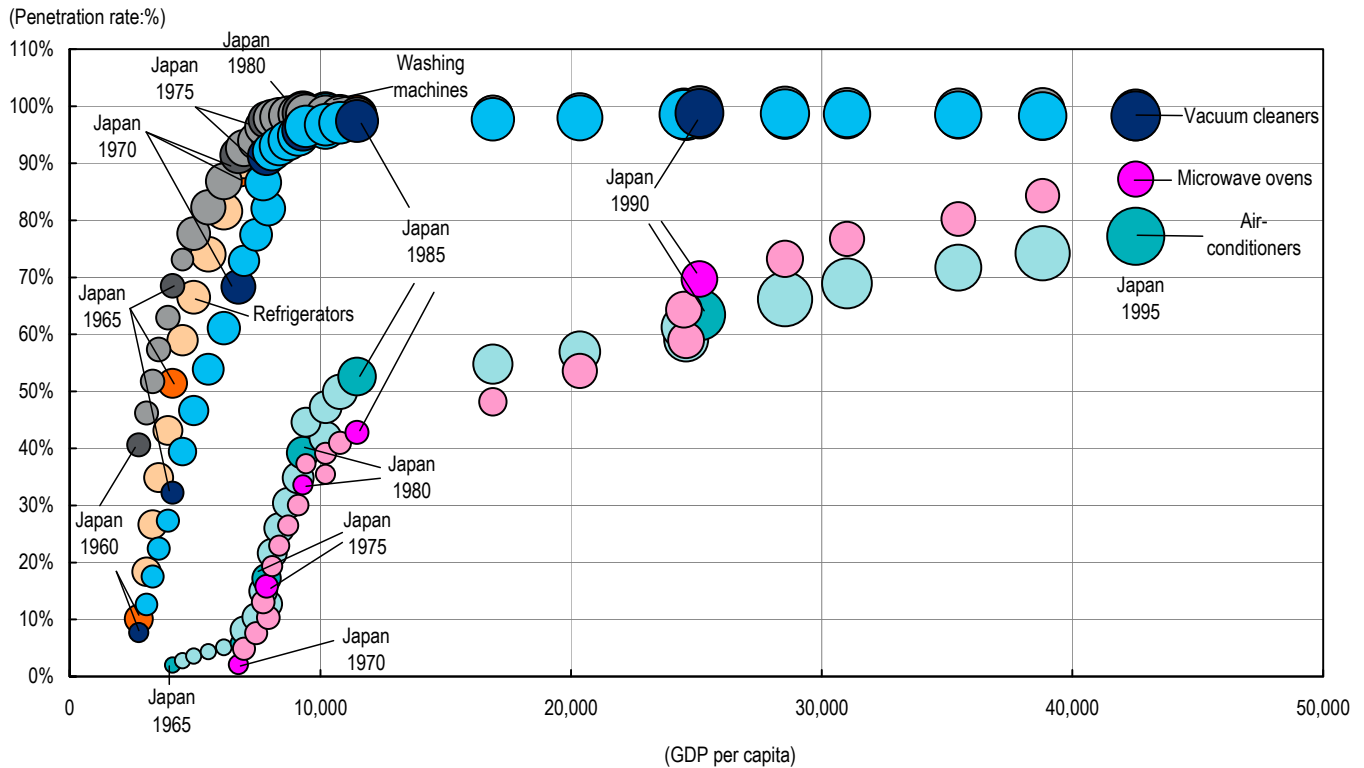
Refrigerators and washing machines are essentials, but microwaves are not

One reason for the difference in penetration is that refrigerators and washing machines are necessary for a comfortable lifestyle, while microwave ovens and air conditioners are not. Refrigerators preserve food and washing machines significantly reduced the labor burden, making them indispensable, which is why in our view penetration moved rapidly. However, microwave ovens and air conditioners make life more comfortable if one has them, but they do not have any use outside of making life more comfortable, so penetration has been slower than that for refrigerators and laundry machines. Vacuum cleaners are not necessarily essential for cleaning, so we note with interest that penetration moved somewhat more slowly here than for refrigerators and washing machines.

Penetration for more discretionary items follows

Even more discretionary items like dishwashers and air purifiers tend to become more popular after a society has matured further. According to Cabinet Office data, the penetration rate for dishwashers in Japan was 31% as of end-March 2013, with the air purifier penetration rate at 44%. That is, penetration rates are far lower than those for refrigerators and washing machines. These products have even less utility in areas other than making life more comfortable than air conditioners and microwaves, which is why we think penetration has been relatively slow.

Figure 22. In Japan refrigerators, washing machines, and vacuum cleaners got popular first, followed by microwave ovens and air conditioners

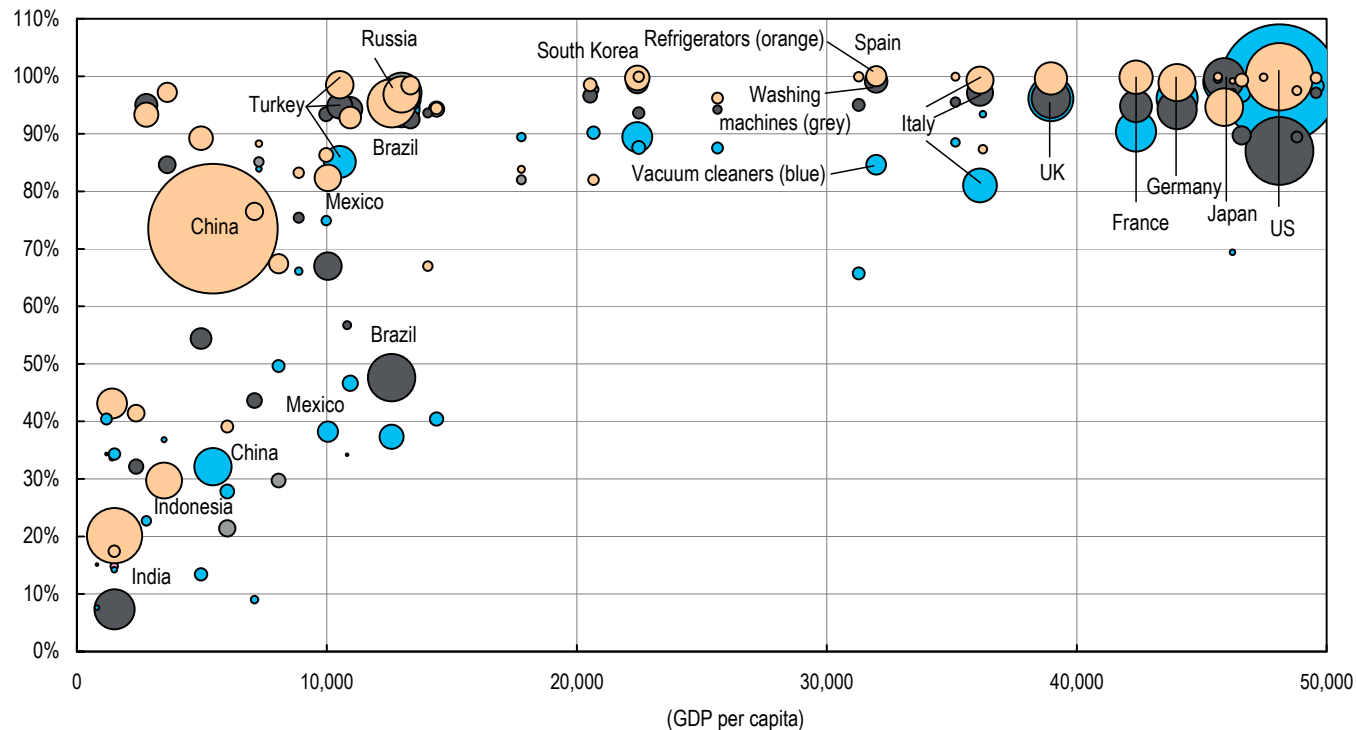


Note: Vertical axis is penetration rate, horizontal axis is GDP per capita. Developed economies in light blue, developing economies in dark blue. The size of the circle denotes market size.

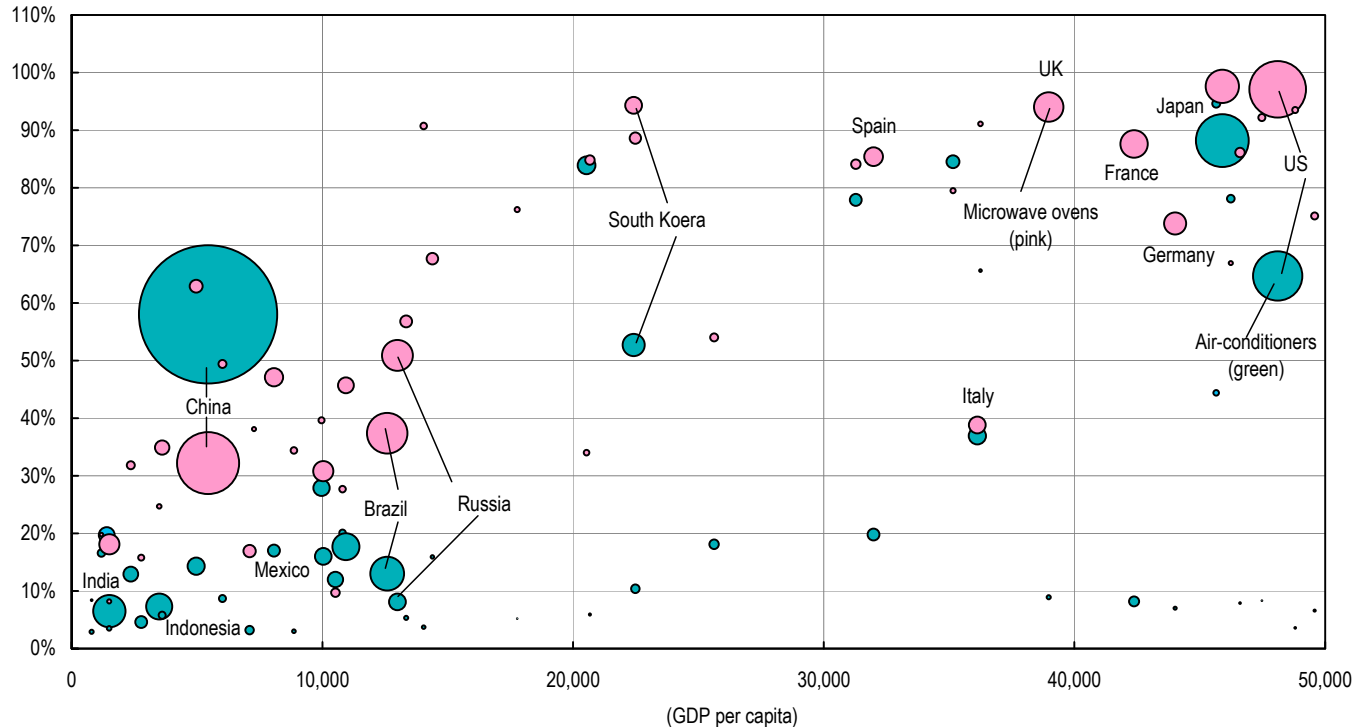
Source: JEMA, Euromonitor, World Bank, Citi Research.

Figure 23. Internationally, refrigerators, washers, and vacuum cleaners got popular first as GDP rose, followed by microwaves and air conditioners

(Penetration rate: %)



(Penetration rate: %)



Note: Vertical axis is penetration rate, horizontal axis is GDP per capita. Developed economies in light blue, developing economies in dark blue. The size of the circle denotes market size.

Source: JEMA, Euromonitor, World Bank, Citi Research.

What regions look promising?

Opportunities in emerging markets

Taking into consideration household appliance diffusion rates, per-capita GDP, population size, and population growth rates, we think that household appliances will grow in popularity in China, India, Pakistan, and Southeast Asia (Indonesia, the Philippines, Vietnam, Thailand, etc.), and Central and South America (Mexico, Brazil, etc.) These countries/regions have more than 50mn people, high population growth rates, and per-capita GDP in a range of \$1,000-\$10,000 as well as impressive economic growth rates, so we are confident that they will see greater uptake in household appliances (Figure 24).

Africa may be promising over the very long term

Going further afield, we think the countries of Africa may be promising over an ultra-long timeframe into the 2020s and beyond. Africa has a large population of just over 1bn and according to UN estimates it is growing 2% annually. The average African per-capita GDP is just under \$2,000, and is expected to grow by an annual 5% or so. Even in major countries such as Kenya and Nigeria, penetration rates for essential household appliances is below 20%, so we think the market has substantial growth potential.

Emerging markets are like Japan in its high-growth period

Emerging markets today akin to Japan in the 1960s and 1970s

We think that the story of the spread of household appliances in Japan is instructive in the analysis of how household appliances spread in emerging markets. Japan in the 1960s and 1970s was an emergent state continuing to grow at a pace on par with contemporary emerging markets and at the time experiencing the rapid spread of household appliances. Indeed, looking at GDP levels the situation in which emerging markets find themselves is in our view akin to Japan in the 1960s and 1970s and we expect household appliances to spread as GDP grows even in emerging markets.

Appliances spread swiftly in Japan as the economy grew

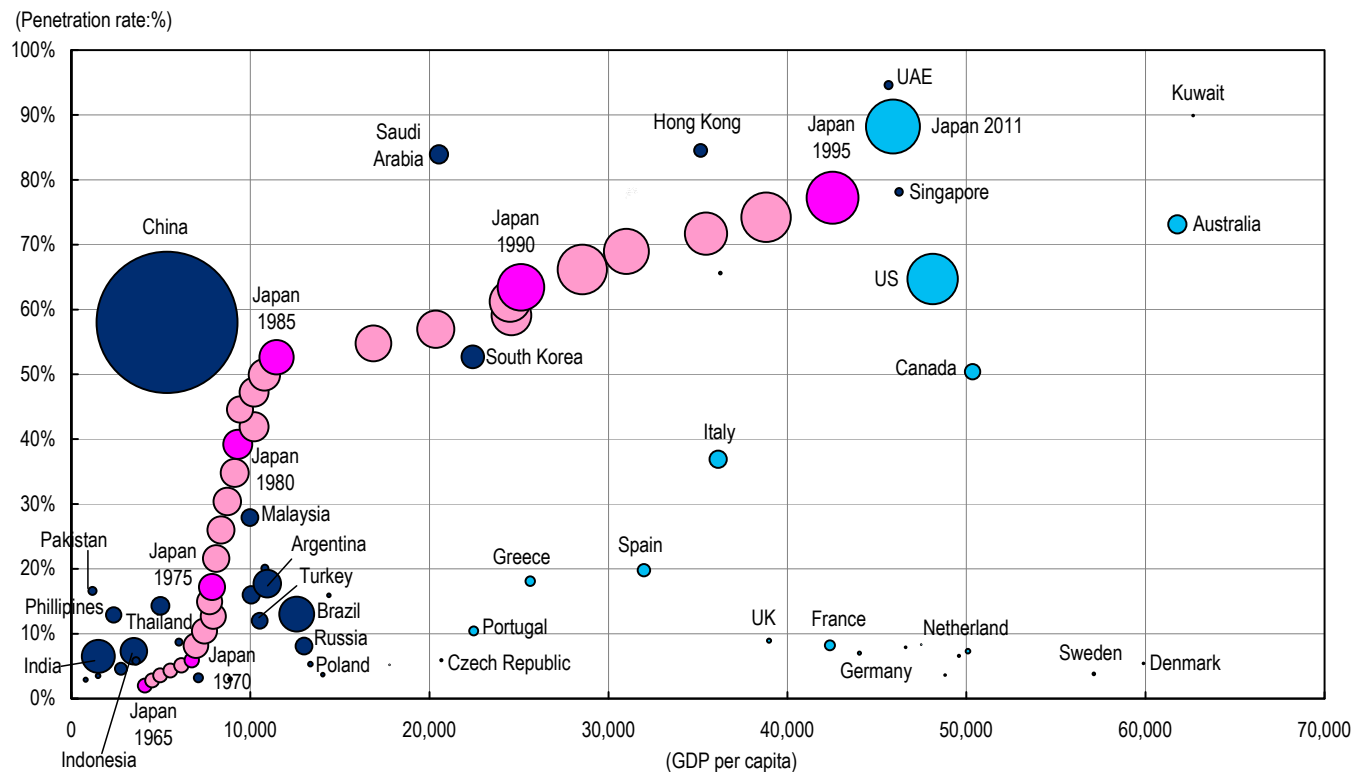
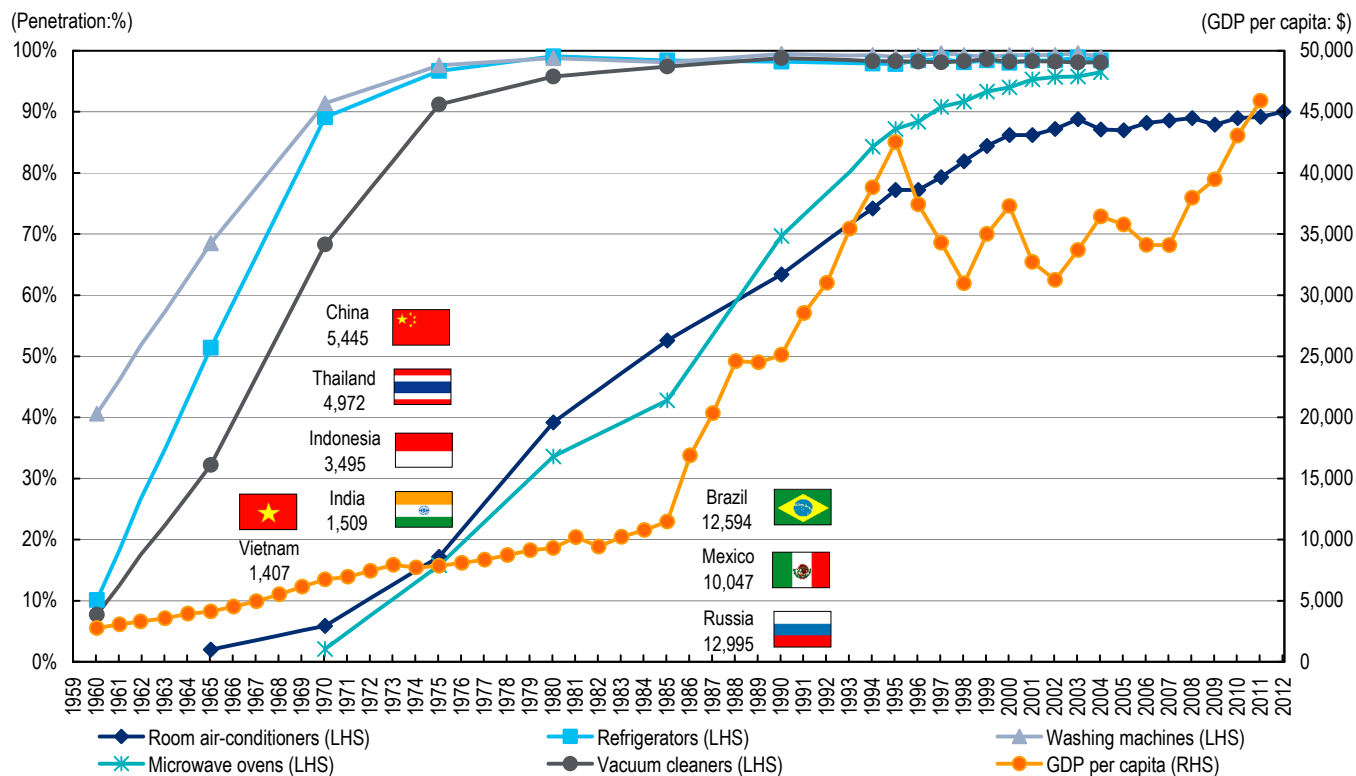
At the start of the 1960s, Japan had only just begun its high growth phase and had a per-capita GDP of under \$3,000. At the time, household appliances were not widespread, with penetration rates of 10% for refrigerators, 40% for washing machines, and 8% for vacuum cleaners, with air conditioners and microwave ovens virtually not present in homes at all. At the start of the 1970s, Japan's high-growth spurt meant that per-capita GDP had risen to just over \$6,000. Household appliance penetration rates stood at 6% for air conditioners, 89% for refrigerators, 91% for washing machines, 68% for vacuum cleaners, and 2% for microwave ovens. At the start of the 1980s, per-capita GDP was close to \$10,000 and the diffusion rates had risen to an almost complete 99% for refrigerators, 99% for washing machines, and 96% for vacuum cleaners, with 39% of households having air conditioners and 34% microwave ovens, big advances in diffusion rates a decade earlier.

Figure 24. Major earnings markets where we expect household appliances to spread: Many regions have vast populations and low household appliance uptake rates

Region	Country	Population (mn)	GDP (\$)	Air conditioners	Refrigerators	Washing machines	Microwave ovens	Vacuum cleaners
Asia	China	1,344.1	5,445	58.0%	73.5%	74.8%	32.2%	32.1%
Asia	India	1,241.5	1,509	6.5%	20.1%	7.3%	18.1%	34.3%
Asia	Indonesia	242.3	3,495	7.3%	29.7%	29.8%	24.7%	36.8%
Latin America	Brazil	196.7	12,594	13.0%	95.3%	47.6%	37.4%	37.3%
Asia	Pakistan	176.7	1,189	16.6%	40.4%	20.2%	19.8%	34.3%
Africa	Nigeria	162.5	1,502	3.5%	17.4%	14.2%	8.2%	14.8%
Eastern Europe	Russia	143.0	12,995	8.1%	96.8%	97.1%	50.9%	94.3%
Latin America	Mexico	114.8	10,047	16.0%	82.3%	67.0%	30.8%	38.2%
Asia	The Philippines	94.9	2,370	12.9%	41.4%	32.1%	31.8%	41.2%
Asia	Vietnam	87.8	1,407	6.0%	43.1%	17.7%	19.7%	33.7%
Africa	Egypt	82.5	2,781	4.6%	93.3%	95.0%	15.8%	22.7%
Middle East	Iran	74.8	NA	12.4%	93.6%	45.7%	18.8%	57.6%
Eastern Europe	Turkey	73.6	10,524	12.0%	98.5%	94.8%	9.7%	85.1%
Asia	Thailand	69.5	4,972	14.3%	89.2%	54.4%	62.9%	13.4%
Africa	South Africa	50.6	8,070	17.0%	67.4%	29.7%	47.1%	49.6%
Asia	Japan (1960)	94.3	2,700	NA	10.1%	40.6%	NA	7.7%
Asia	Japan (1970)	104.7	6,700	5.9%	89.1%	91.4%	2.1%	68.3%
Asia	Japan (1980)	117.1	9,308	39.2%	99.1%	98.8%	33.6%	95.8%

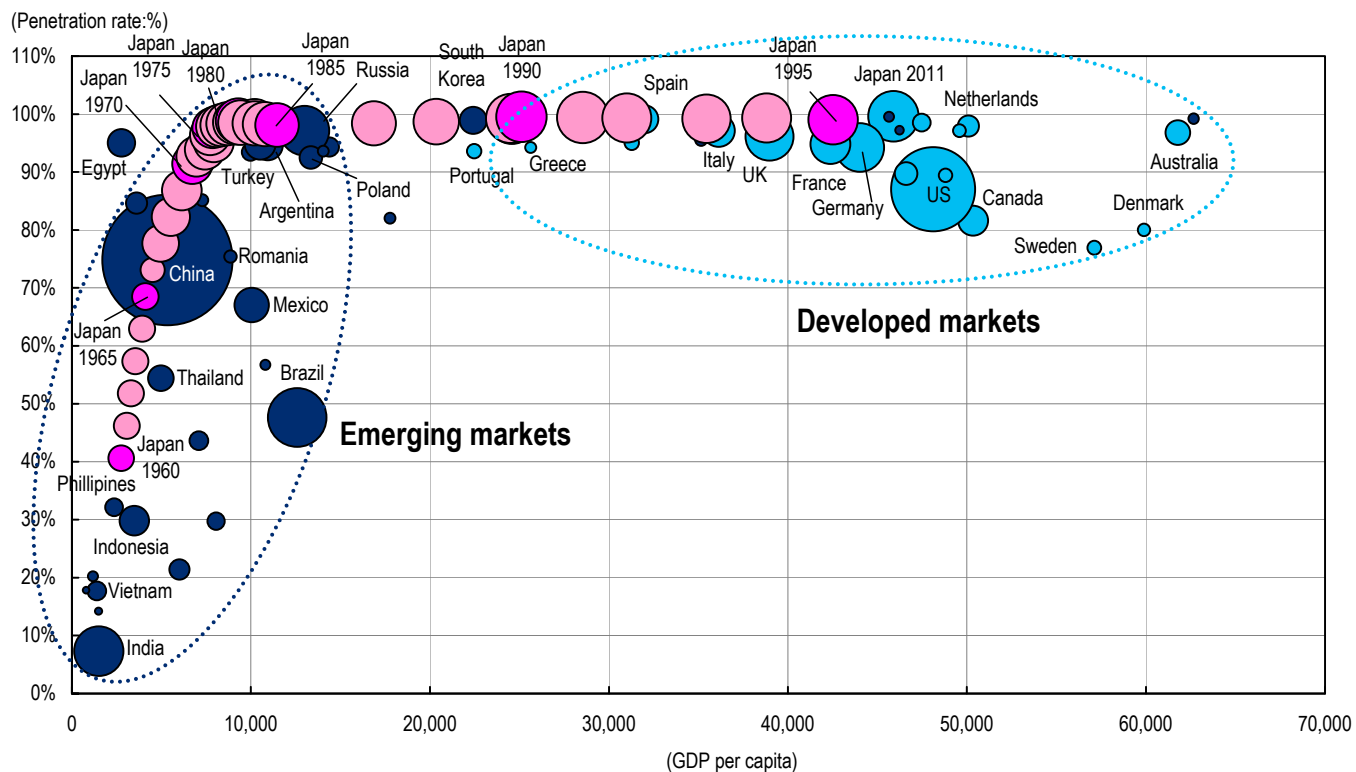
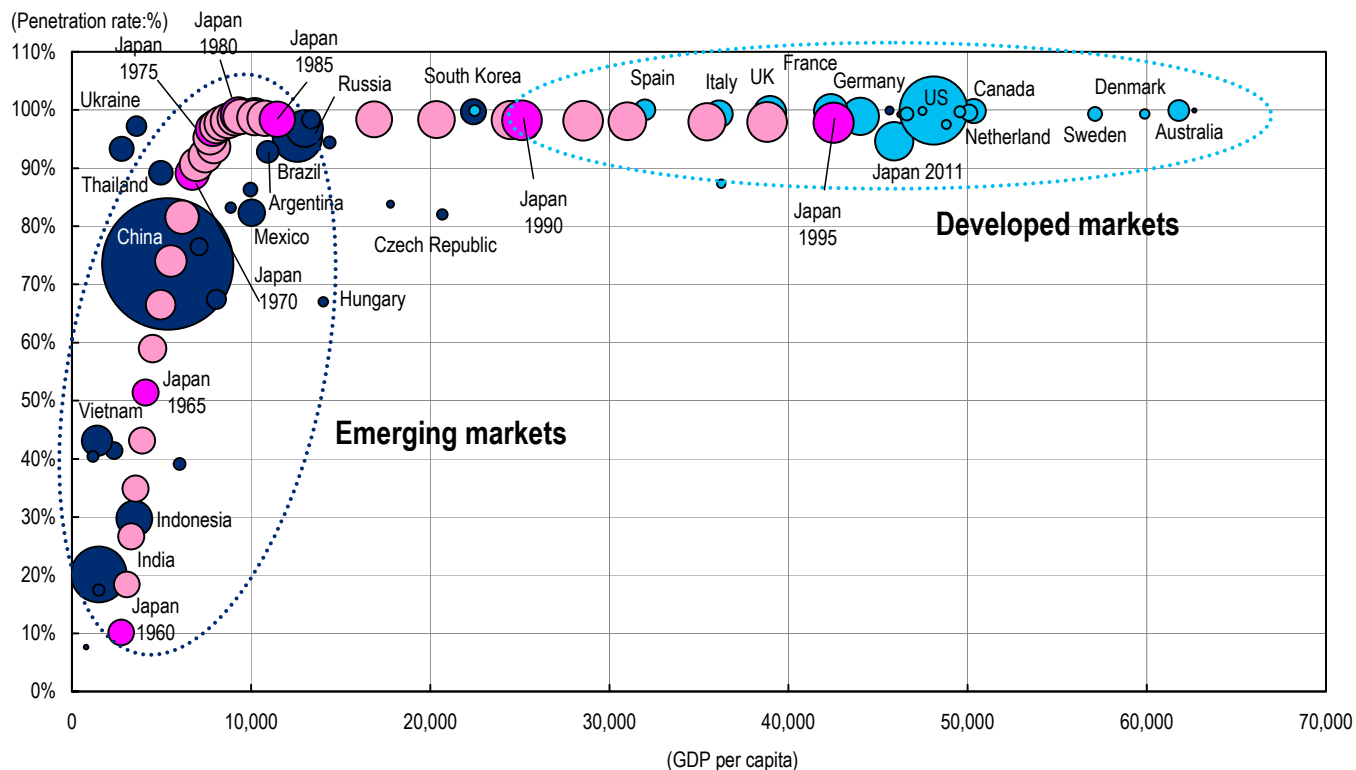
Source: Angus Maddison's website, World Bank, Euromonitor, Cabinet Office, Citi Research.

Figure 25. Japan GDP and household appliance diffusion rates (top) air conditioner diffusion rates and per-capita GDP (bottom)



Note: Japan's historical data shown in pink, developed markets shown in light blue, emerging markets shown in dark blue. Size of circles indicates relative market size.
Source: Angus Maddison's website, JEMA, Euromonitor, World Bank, Cabinet Office, Citi Research.

Figure 26. Refrigerators (top) and washing machines (bottom): Penetration rates and per-capita GDP

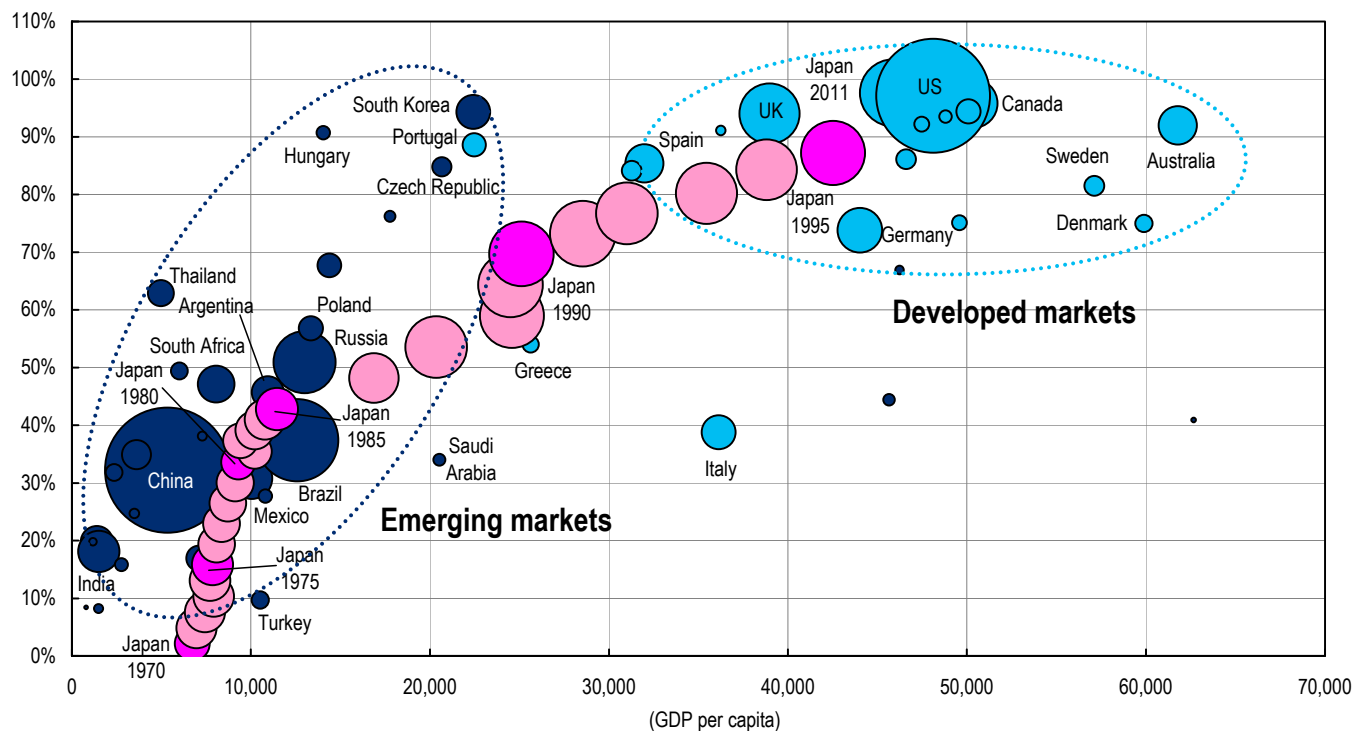


Note: Vertical axis shows penetration rates, horizontal axis GDP per capita. Japan's historical data shown in pink, developed markets shown in light blue, emerging markets shown in dark blue. Size of circles indicates relative market size.

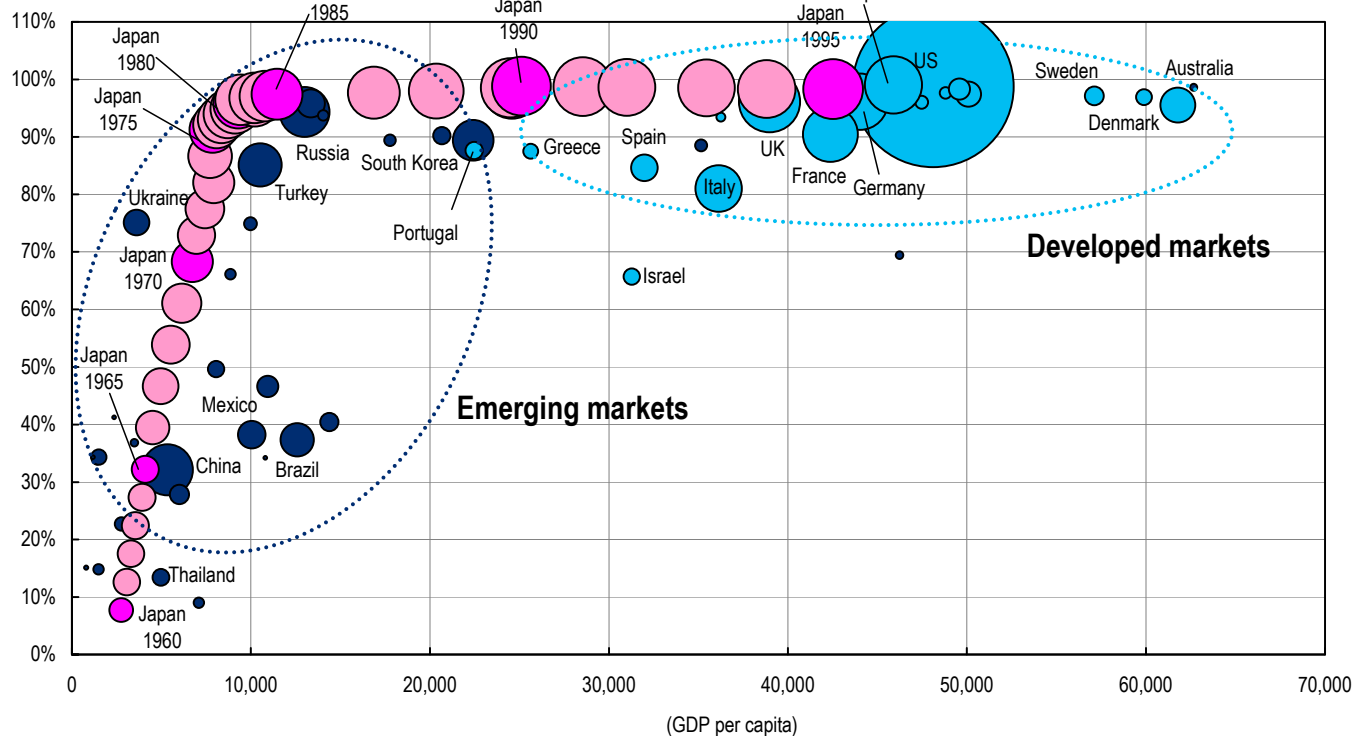
Source: Angus Maddison's website, JEMA, Euromonitor, World Bank, Cabinet Office, Citi Research.

Figure 27. Microwave ovens (top) and vacuum cleaners (bottom): Penetration rates and per-capita GDP

(Penetration rate:%)



(Penetration rate:%)



Note: Vertical axis shows penetration rates, horizontal axis GDP per capita. Japan's historical data shown in pink, developed markets shown in light blue, emerging markets shown in dark blue. Size of circles indicates relative market size.

Source: Angus Maddison's website, JEMA, Euromonitor, World Bank, Cabinet Office, Citi Research.

4. Household appliance industry overview

Overview of global majors

Large household appliance makers in many regions

Unlike the smartphone market, where Apple and Samsung are the dominant players, there are no clear leaders in the household appliance market. Rather, there are many companies that have sales of around \$10bn. Big names include Daikin, Hitachi, Toshiba, Mitsubishi Electric, Panasonic, Fujitsu General (Japan); LG Electronics and Samsung Electronics (Korea); Haier, Gree, Midea, (China); BSH Electrolux, Philips, Indesit, Arcelik (Europe); and Whirlpool and General Electric (US). The reasons there are so many companies are that the Japanese, Chinese, European, and US markets are all large and the types of products demanded in each market differ because of brand awareness and lifestyle factors.

Japanese companies have a strong presence in the appliance market

Unlike the smartphone market, Japanese companies have a strong presence in the household appliance market. Panasonic and Daikin are world class in terms of size and profitability. In 2012, accepting dollar-based figures were inflated by a strong yen (¥80/\$), Panasonic was the No. 2 household appliance maker in the world in terms of sales.

Samsung Electronics not a strong competitor in appliances

LG Electronics has a strong presence in household appliances but Samsung Electronics is not the highly competitive company it is in the smartphone market. In contrast, Japanese electronics makers are struggling in the smartphone market but are competitive in household appliances. As we discuss in more detail below, as an analog type product, household appliance markets tend to be fragmented by region, lifestyles, and product categories, and this creates differences compared with smartphones.

Profitability not tied to scale in the household appliances industry

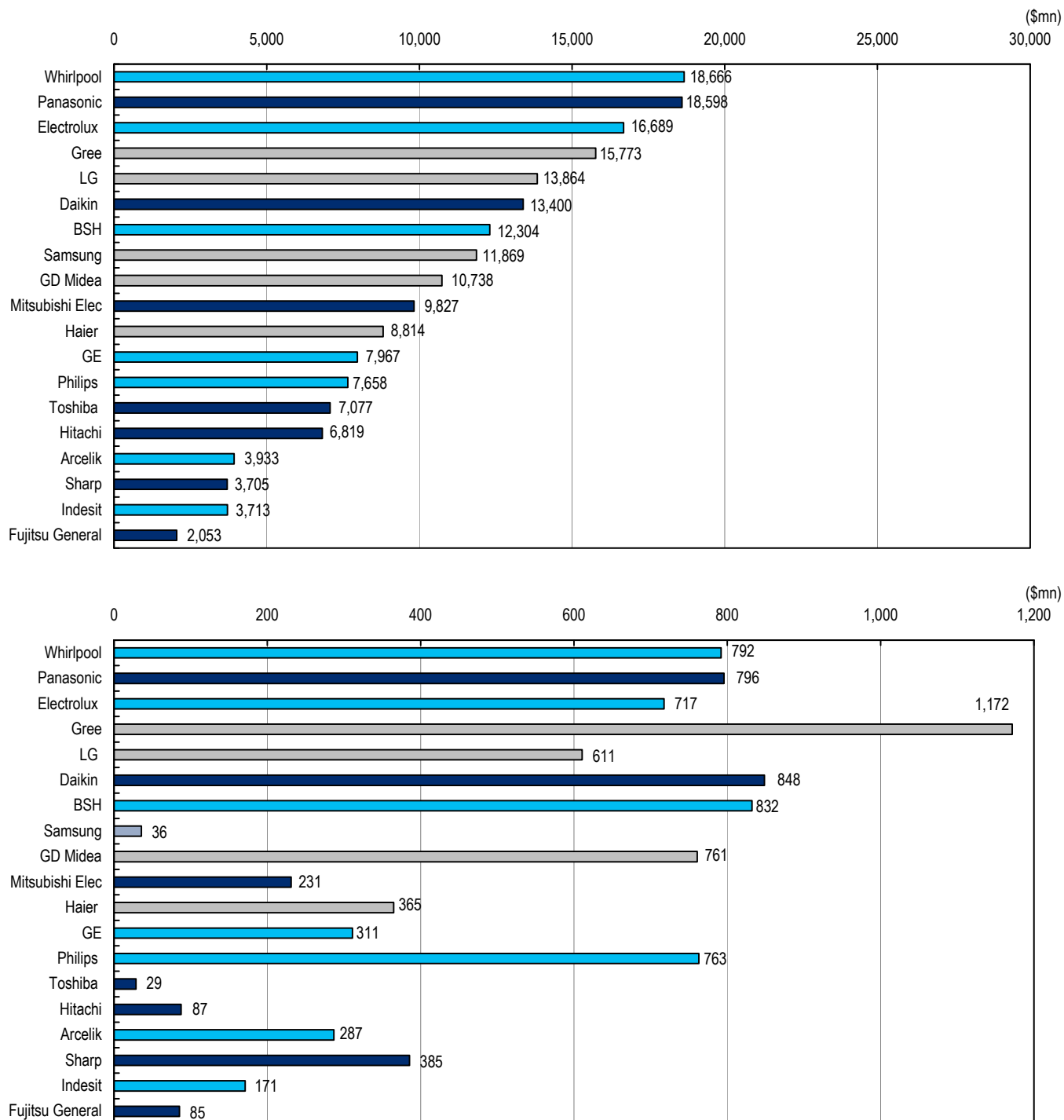
A low correlation between business scale and profitability is a feature of the household appliances industry. The overall industry OP margin is around 5%. Depending on the product, it is possible for mid-tier and smaller firms to secure impressive margins: Sharp has a margin of 10% and Dyson (UK), which only has sales of \$1.7bn, has a margin of 29%. We believe this is because it is possible to add value by differentiating products through design, performance, and lifestyle-enhancing features.

Figure 28. Major household appliance manufacturers: Sales, OP, and operating margin (FY2012 actual, \$mn) and market cap (\$mn)

	Country	Company	Sales	OP	OP Margin	Market Cap	Products
1	US	Whirlpool	18,666	792	4.2%	9,138	Washing machines, refrigerators, microwaves, etc.
2	Japan	Panasonic	18,598	796	4.3%	18,615	ACs, washers, refrigerators, cleaners, microwaves, components, etc.
3	Sweden	Electrolux	16,689	717	4.3%	7,570	Washing machines, refrigerators, microwaves, cleaners, mixers, etc.
4	China	Gree	15,773	1,172	7.1%	12,302	Air conditioners
5	Korea	LG	13,864	611	4.4%	10,376	ACs, washers, refrigerators, cleaners, microwaves, components, etc.
6	Japan	Daikin	13,400	848	6.3%	11,870	Air conditioners
7	Germany	BSH	12,304	832	6.8%	Unlisted	Washing machines, refrigerators, microwaves, cleaners, etc.
8	Korea	Samsung	11,869	36	0.3%	171,529	Washing machines, refrigerators, microwaves, cleaners, etc.
9	China	GD Midea	10,738	761	10.0%	6,698	Air conditioners, washing machines, refrigerators, cleaners, microwaves
10	Japan	Mitsubishi Elec	9,827	231	2.3%	20,344	Air conditioners, refrigerators, cleaners, microwaves, etc.
11	China	Haier	8,814	365	4.1%	3,944	ACs, washers, refrigerators, vacuum cleaners, microwaves
12	US	GE	7,967	311	3.9%	241,132	Washing machines, refrigerators, microwaves, vacuum cleaners, etc.
13	Netherlands	Philips	7,658	763	10.0%	26,959	Shavers, cooking devices, cosmetic related products
14	Japan	Toshiba	7,077	29	0.4%	20,710	Air Conditioners, washing machines, refrigerators, cleaners, microwaves
15	Japan	Hitachi	6,819	87	1.3%	31,531	Air Conditioners, washing machines, refrigerators, cleaners, microwaves
16	Turkey	Arcelik	3,933	287	7.3%	4,755	Washing machines, refrigerators, microwaves, cleaners, etc.
17	Japan	Sharp	3,705	385	10.4%	4,399	Air conditioners, washing machines, refrigerators, cleaners, microwaves
18	Italy	Indesit	3,713	171	4.6%	854	Washing machines, refrigerators, microwaves, cleaners, etc.
19	Japan	Fujitsu General	2,053	85	4.2%	1,069	Air conditioners

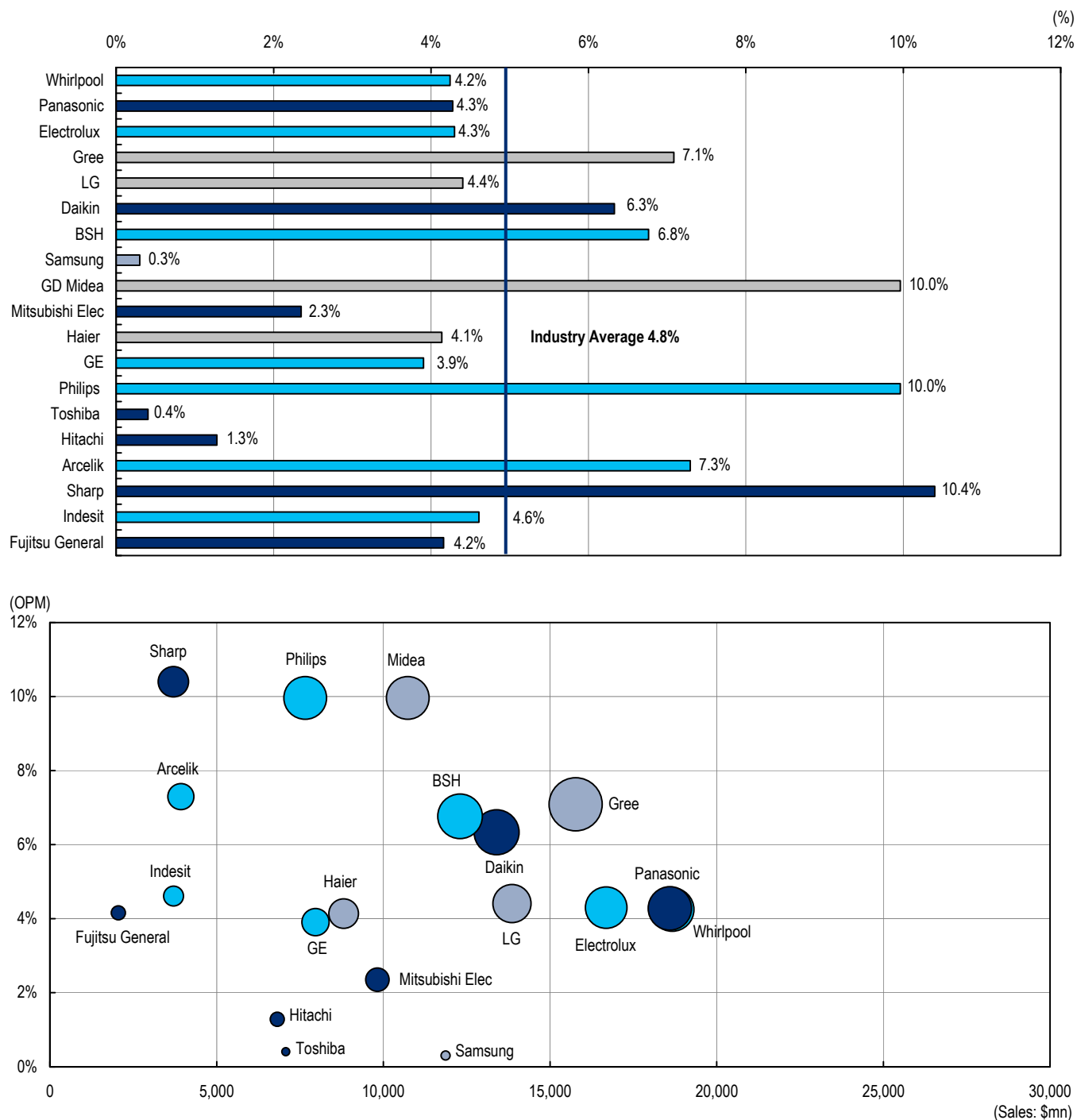
Note: Market caps as of June 27. We use the numbers for household appliance businesses at Daikin (Air conditioning), Hitachi (Appliance), Toshiba (Home Appliances), Mitsubishi Elec (Home Appliances), Panasonic (Appliance), Sharp (Health & Environmental Equipment), Fujitsu General (Air conditioners), Samsung, LG Elec (HA and AE), Philips (Consumer lifestyle), Arçelik and GE (Home & Business Solution). We calculate OP for the household appliance business at Arçelik using the overall company operating margin. For BSH we use FY11 actuals.
Source: Company data, Citi Research.

Figure 29. FY2012 sales (top) and OP (bottom) of major household appliance manufacturers



Note: Japanese companies in navy blue, Asian companies in grey, European and US companies in light blue. Household appliance business results used for the following companies: Daikin (air conditions), Hitachi (appliances), Toshiba (home appliances), Mitsubishi Electric (home appliances), Panasonic (appliances), Sharp (health and environmental products), Fujitsu General (air conditioners), Samsung Electronics, LG Electronics (HA & AE), Philips (consumer lifestyle), Arçelik, GE (home & business solutions). Arçelik's household appliance business OP figures are estimates based on the companywide OP margin. For BSH, FY2011 figures are used for FY2012. Source: Company data, Citi Research.

Figure 30. FY2012 OP margin (Top) and Sales vs. OP margin distribution (Bottom) at household appliances manufacturers: Business size and profitability not necessarily related



Note: Japanese companies in navy blue, Asian companies in grey, European and US companies in light blue. Household appliance business results used for the following companies: Daikin (air conditions), Hitachi (appliances), Toshiba (home appliances), Mitsubishi Electric (home appliances), Panasonic (appliances), Sharp (health and environmental products), Fujitsu General (air conditioners), Samsung Electronics, LG Electronics (HA & AE), Philips (consumer lifestyle), Arcelik, GE (home & business solutions). Arcelik's household appliance business OP figures are estimates based on the companywide OP margin. For BSH, FY2011 figures are used for FY2012. Source: Company data, Citi Research.

Global ranking in appliances changing

Global rankings being re-written

Figures 31 and 32 show a global ranking of household appliance manufacturers by sales in FY2007 and the ranking forecast for FY2015. Panasonic and Daikin, LG Electronics, and Haier, Gree, and Midea are much higher in the rankings in 2015.

US and European makers featured prominently in FY2007

US and European manufacturers like Whirlpool, Electrolux, and BSH, dominated the rankings in FY2007. This reflected the buoyancy of their home markets before house prices started to decline and the GFC erupted in earnest. Subsequently, growing demand in China and other emerging markets supported the rise of Asian household appliance makers. While the figures show results for Samsung Electronics on a parent-company basis, the company's household appliance business has clearly continued to struggle since 2007, when it recorded a loss.

Japanese and Chinese companies higher in the rankings in FY2012

Panasonic and Daikin, and Haier, Gree, and Midea had climbed sharply up the rankings by FY2012. We believe this is because Japanese and Chinese companies benefited most from the burgeoning Asian market, centering on China and Southeast Asia. Chinese companies have jumped conspicuously against a backdrop of rapid home market expansion driven by government measures to accelerate appliance uptake. European and US companies have descended because of weak demand in home markets caused by the financial crisis.

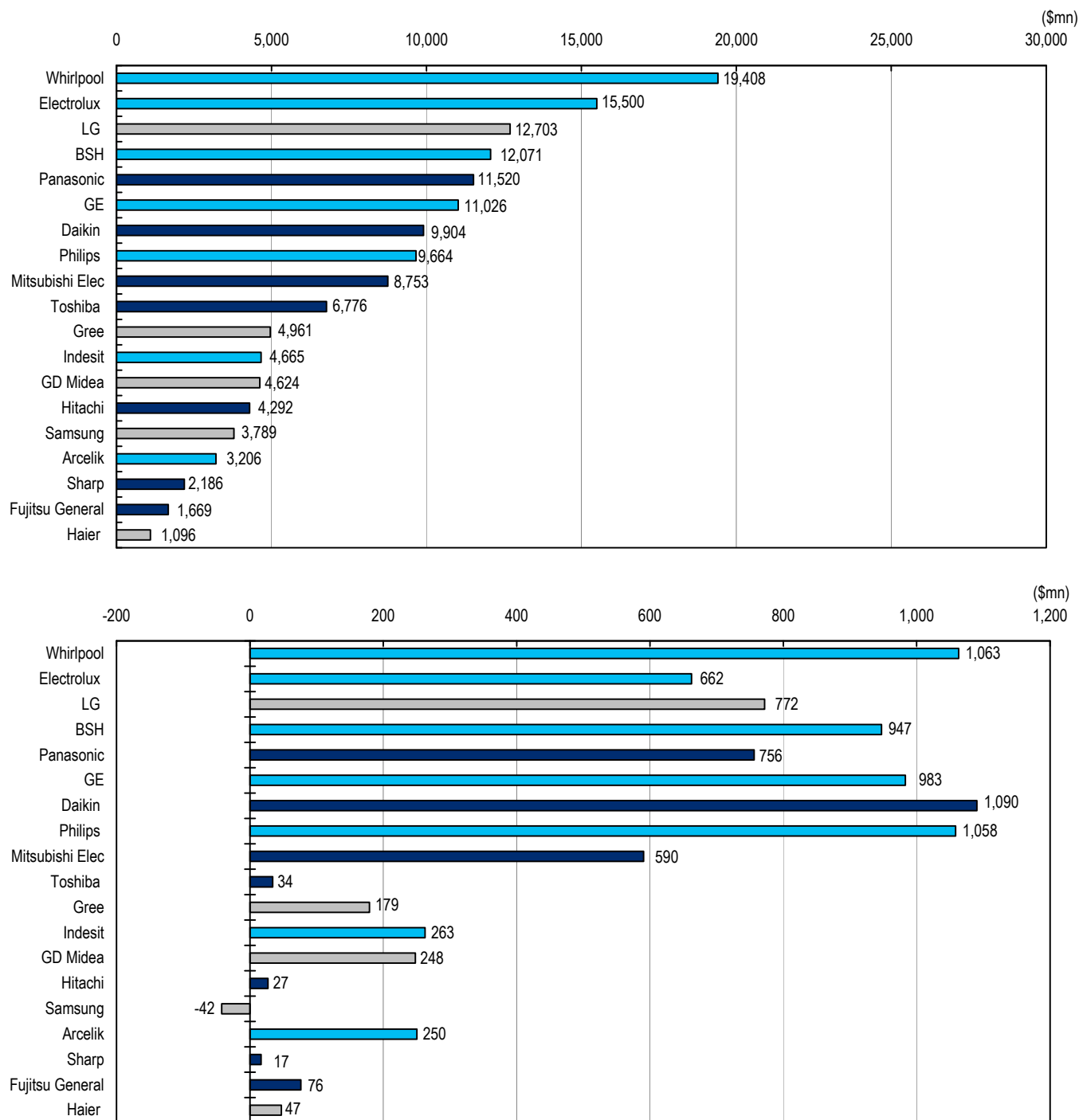
A strong yen and acquisitions contributed to advances by Japanese companies

We believe reasons behind the improvement in the rankings of Japanese companies include 1) a strong yen (around ¥80/\$ in FY2012), 2) industry realignment, which saw Daikin acquire OYL in 2006 and Panasonic acquire Sanyo in 2009; and 3) the boost to Japanese demand provided by the introduction of an eco-points system in 2009.

Firms with high exposure to emerging markets, US poised for gains

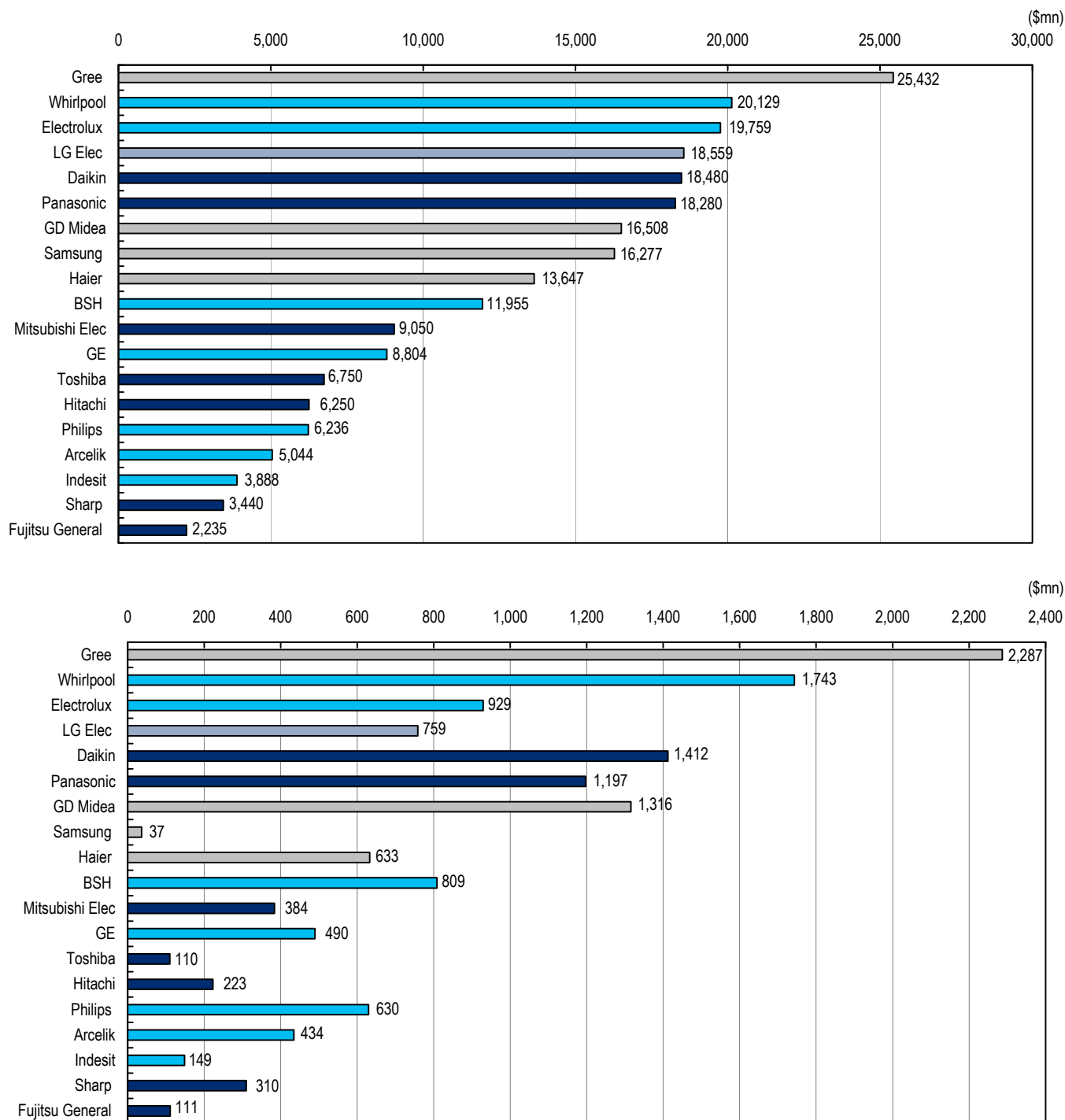
For FY2015, firms with high exposure to emerging markets and the US are poised to take the lead. Examples include Gree, Whirlpool, Electrolux, LG Electronics, Panasonic, and Midea. This is because these markets are the main drivers of demand for household appliances. We use Bloomberg consensus estimates for non-rated companies Gree, Midea, and Whirlpool (we note that the consensus expects sharp earnings growth at all three). Yen depreciation means that although Japanese firms' dollar-based sales are forecast to shrink, we expect majors like Daikin and Panasonic to expand their yen-based earnings.

Figure 31. FY2007 sales (top) and OP (bottom) of major household appliances manufacturers; US and European companies had a strong presence before the GFC



Note: Japanese companies in navy blue, Asian companies in grey, European and US companies in light blue. Household appliances business results used for the following companies: Daikin (air conditions), Hitachi (appliances), Toshiba (home appliances), Mitsubishi Electric (home appliances), Panasonic (appliances), Sharp (health and environmental products), Fujitsu General (air conditioners), Samsung Electronics, LG Electronics (HA & AE), Philips (consumer lifestyle), Arçelik, GE (home & business solutions). Samsung Electronics figures are based on parent results. Arçelik's household appliances business OP figures are estimates based on the companywide OP margin. Source: Company data, Citi Research.

Figure 32. FY2015E sales (top) and OP (bottom) of major household appliances manufacturers. Companies with a high exposure to emerging markets fill the top positions



Note: Japanese companies in navy blue, Asian companies in grey, European and US companies in light blue. Household appliances business results used for the following companies: Daikin (air conditions), Hitachi (appliances), Toshiba (home appliances), Mitsubishi Electric (home appliances), Panasonic (appliances), Sharp (health and environmental products), Fujitsu General (air conditioners), Samsung Electronics, LG Electronics (HA & AE), Philips (consumer lifestyle), Arçelik, GE (home & business solutions). Arçelik's household appliances business OP figures are estimates based on the companywide OP margin. We use Bloomberg Consensus numbers for Gree, Midea, Indesit, and Whirlpool as they are not covered by Citi Research.

Source: Company data, Citi Research.

Sales and market share by region

Local companies are strong

Most household appliance manufacturers derive the majority of their sales in their home markets and local companies have the highest market shares in each region (Figures 33-34). These characteristics reflect sales channel and brand awareness problems as well as lifestyles differences between regions. The oligopolization of smartphones and TVs stands in clear contrast to household appliances. Some household appliance manufacturers, however, have captured overseas market share through aggressive expansion.

Panasonic, Daikin, Fujitsu General, Electrolux, and Philips have expanded aggressively overseas

Panasonic, Daikin, Fujitsu General, Electrolux, and Philips derive more than 50% of their sales from overseas markets. The acquisition of local companies, the development of products tailored to local lifestyles, and investment in overseas factories have underpinned their success overseas.

LG and Samsung derive the majority of appliance sales from overseas

Samsung Electronics and LG Electronics do not disclose regional sales breakdowns for their household appliance businesses. However, as their home market of South Korea is small compared with Japan, Europe, the US, and emerging markets, and both companies have established global operations for mainstay businesses, including household appliances, we believe overseas markets account for the majority of their household appliance sales. Particularly noteworthy is that LG Electronics has secured market share in the Americas, APAC, and the Middle East and Africa (but not Japan and Europe).

Appliance businesses of Hitachi, Sharp, Midea, Gree, Haier, BSH, Indesit, and Arcelik are centered on their home markets

Hitachi, Sharp, Midea, Gree, BSH, Indesit, Arcelik, and Haier derive more than 60% of household appliance sales from their home markets (FY2011, which includes Europe for Arcelik). Weak demand in Europe has weighed on the earnings of BSH, Indesit, and others, but Chinese makers have benefited from robust home market growth while Sharp's earnings expanded on the hit air purifier and high-end microwave products in Japan.

Competition in key regional markets

Japan

The Japanese market is highly competitive due to demanding customer requirements for quality and brands. Japanese firms like Panasonic, Sharp, Toshiba, and Hitachi command over 70% of the market. However, overseas manufacturers like Haier (which acquired Sanyo's household appliances business), Electrolux, and Dyson are showing more interest in the high added-value Japanese market.

China

Cost-competitive Chinese firms with strong production and sales capabilities dominate this market, which mainly consists of low-end products. This used to be a very competitive market, but the tough competition has weeded out weaker players in recent years, leaving firms like Haier, Gree, Midea, and Galanz with high market shares. Overseas firms like Panasonic and LG have small shares in volume terms, but are expanding their business mainly at the higher end of the market (high value-added products).

APAC

Many Japanese, Chinese, South Korean and Western firms are focusing on this market, which includes regions which promise market growth. The market is currently dominated by cost-competitive Chinese firms and Korean firms, who are working to embed their operations locally. Japanese firms have been mainly expanding business at the higher end of the market, but are now looking to fully enter the market by localizing their household appliances businesses. In markets like India, major local manufacturers hold a certain level of market share.

EMEA

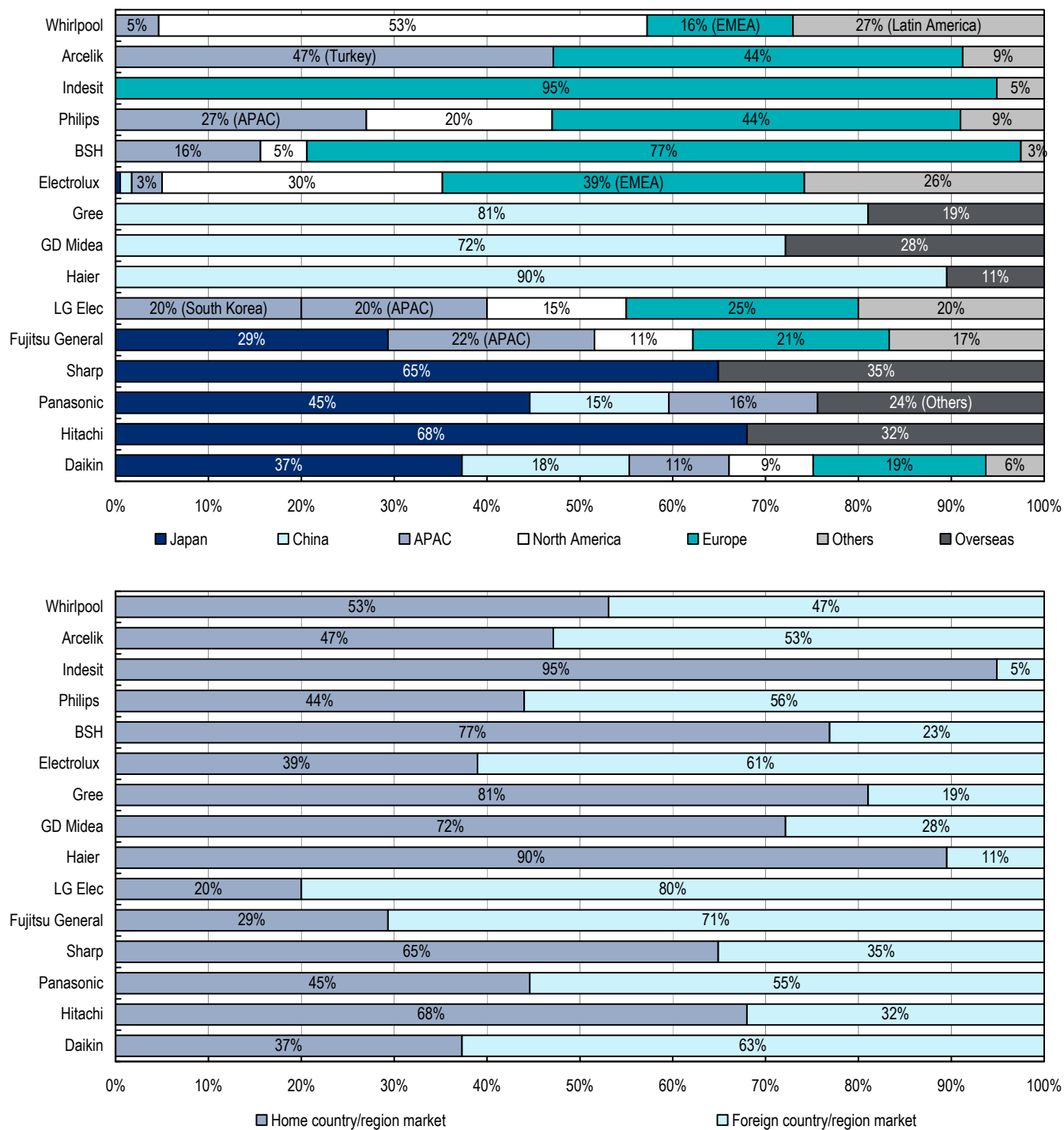
Local European firms have a high share of the European market due to consumers' demanding requirements for quality and brands. However, South Korean firms have

gained some market share thanks to sales expansion supported by their sales know-how and business localization. Japanese firms like Panasonic have started to focus on Europe as a high added-value market. There are no such standout markets in the Middle East and Africa, but there is still interest from many Japanese, Korean, and European firms due to expectation for future market expansion.

Americas

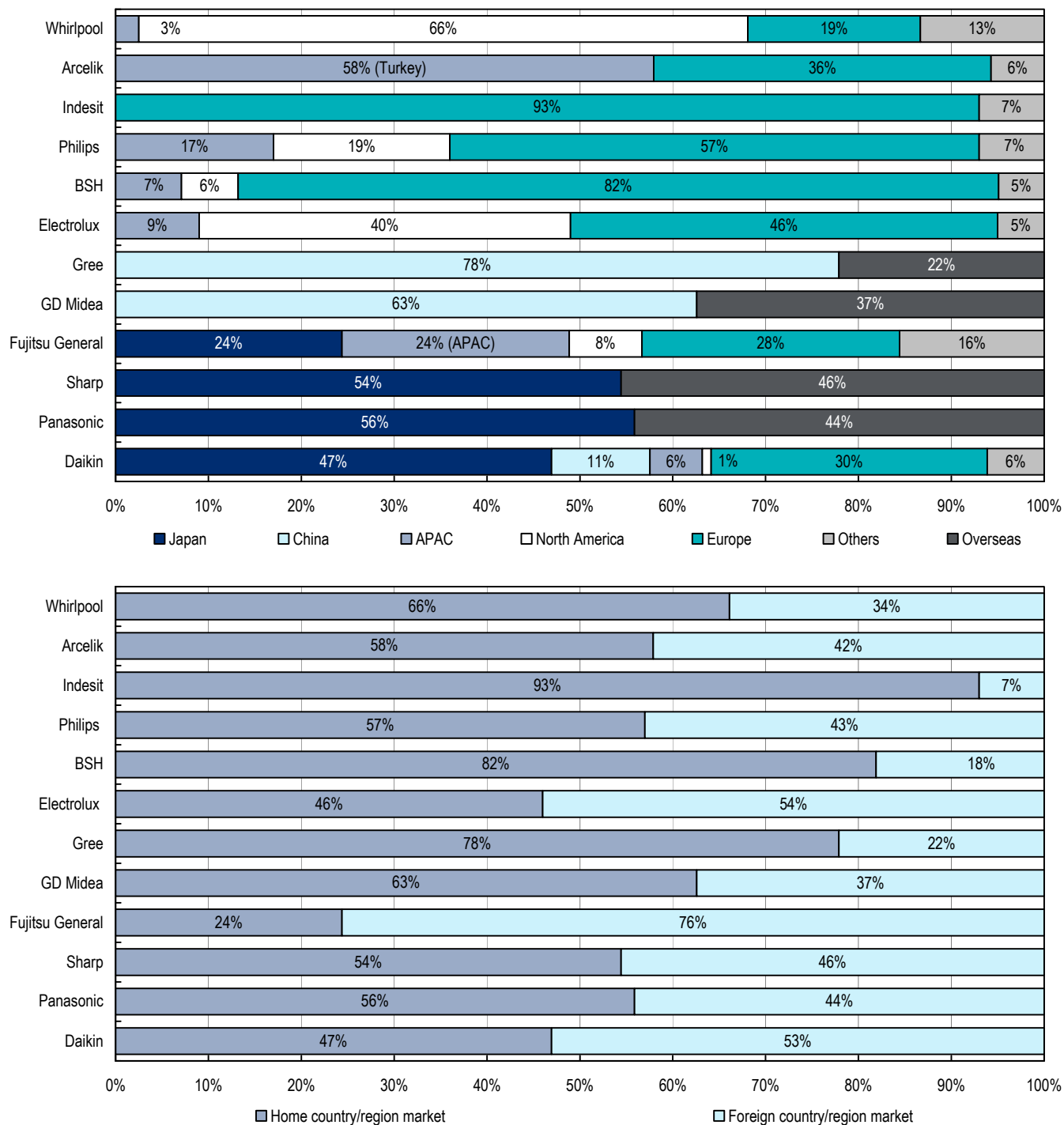
European and American firms like Whirlpool, GE, and Electrolux account for a large proportion of the North American market, but South Korean and Chinese players are growing sales, mainly at the low end of the market. A number of Japanese, Chinese, South Korean and Western firms are focusing on Latin America on expectations for market growth. European and American firms currently dominate the market thanks to their extensive sales networks, but South Korean firms are growing sales thanks to localization. Japanese firms aim to do the same as they look to fully enter the market. In Mexico, local major Mabe has secured a certain level of market share.

Figure 33. Sales by region at major household appliance makers (top) and percentage of sales generated in the home market (bottom) (FY2011 actual)



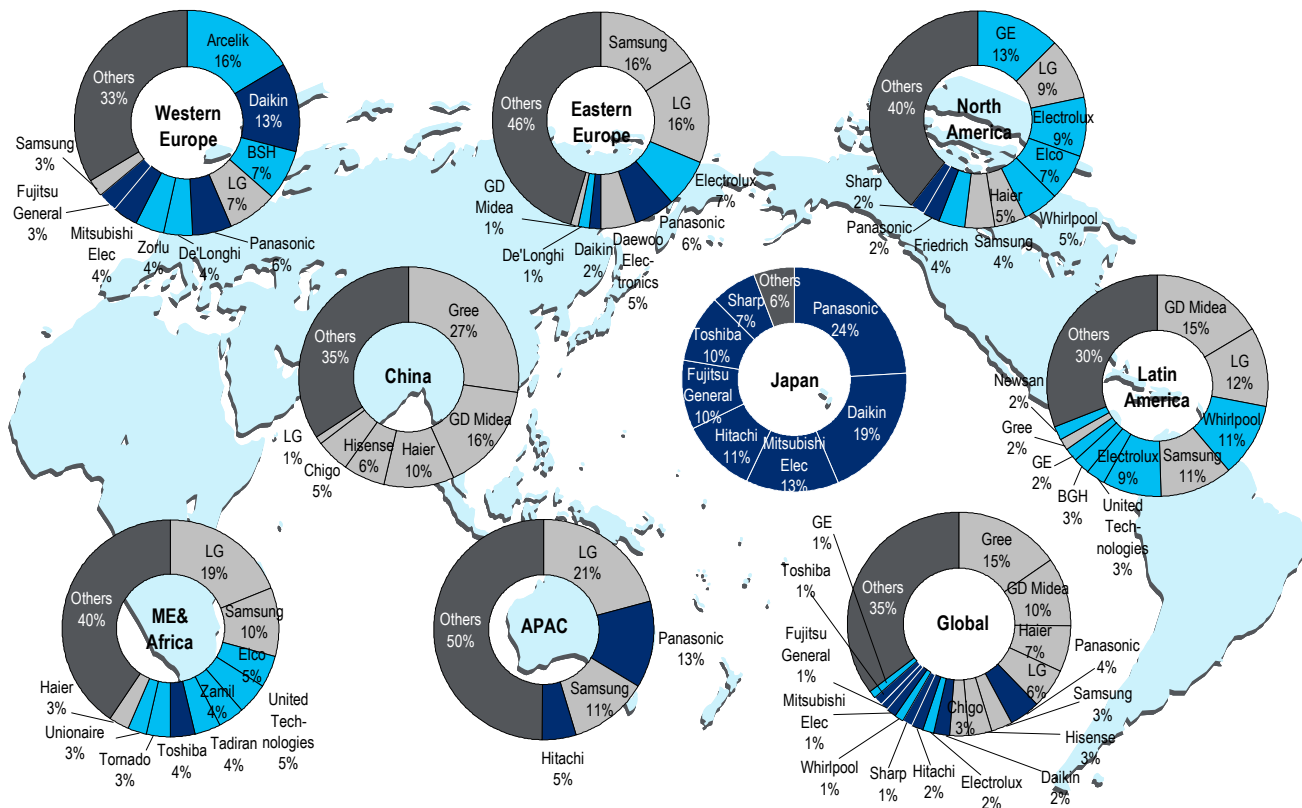
Note: For the following companies we use earnings from household appliance segments: Daikin (air conditioners), Hitachi (appliances), Panasonic (appliances), Sharp (health and environmental equipment), Fujitsu General (air conditioners), and Philips (consumer lifestyle).
Source: Company data, Citi Research.

Figure 34. Sales by region at major household appliance makers (top) and percentage of sales generated in the home market (bottom) (FY2006 actual)



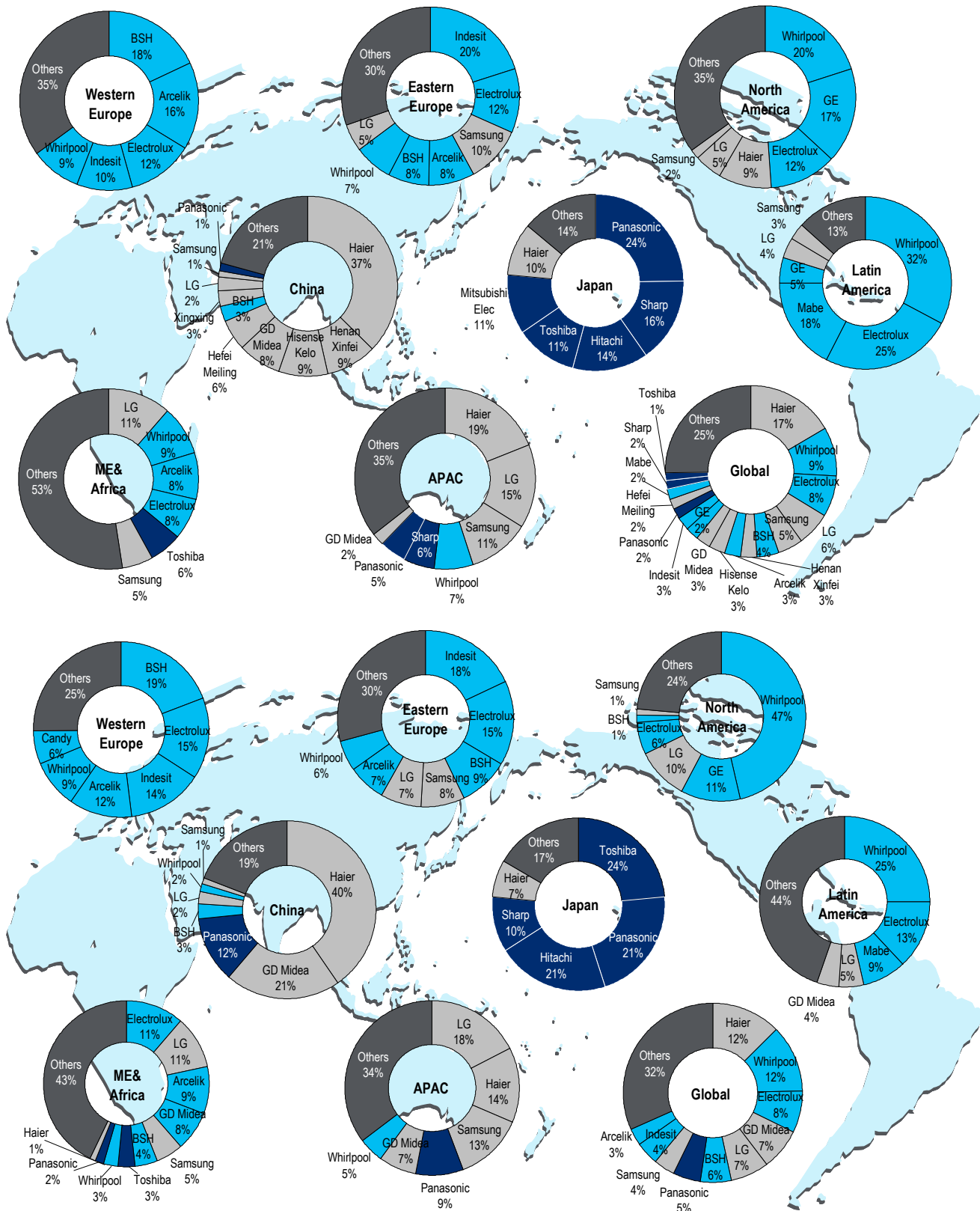
Note: For the following companies we use earnings from household appliance segments: Daikin (air conditioners), Hitachi (appliances), Panasonic (appliances), Sharp (health and environmental equipment), Fujitsu General (air conditioners), and Philips (consumer lifestyle). We use FY07 for Philips' FY06 results.
Source: Company data, Citi Research.

Figure 35. Regional market shares in room air conditioners



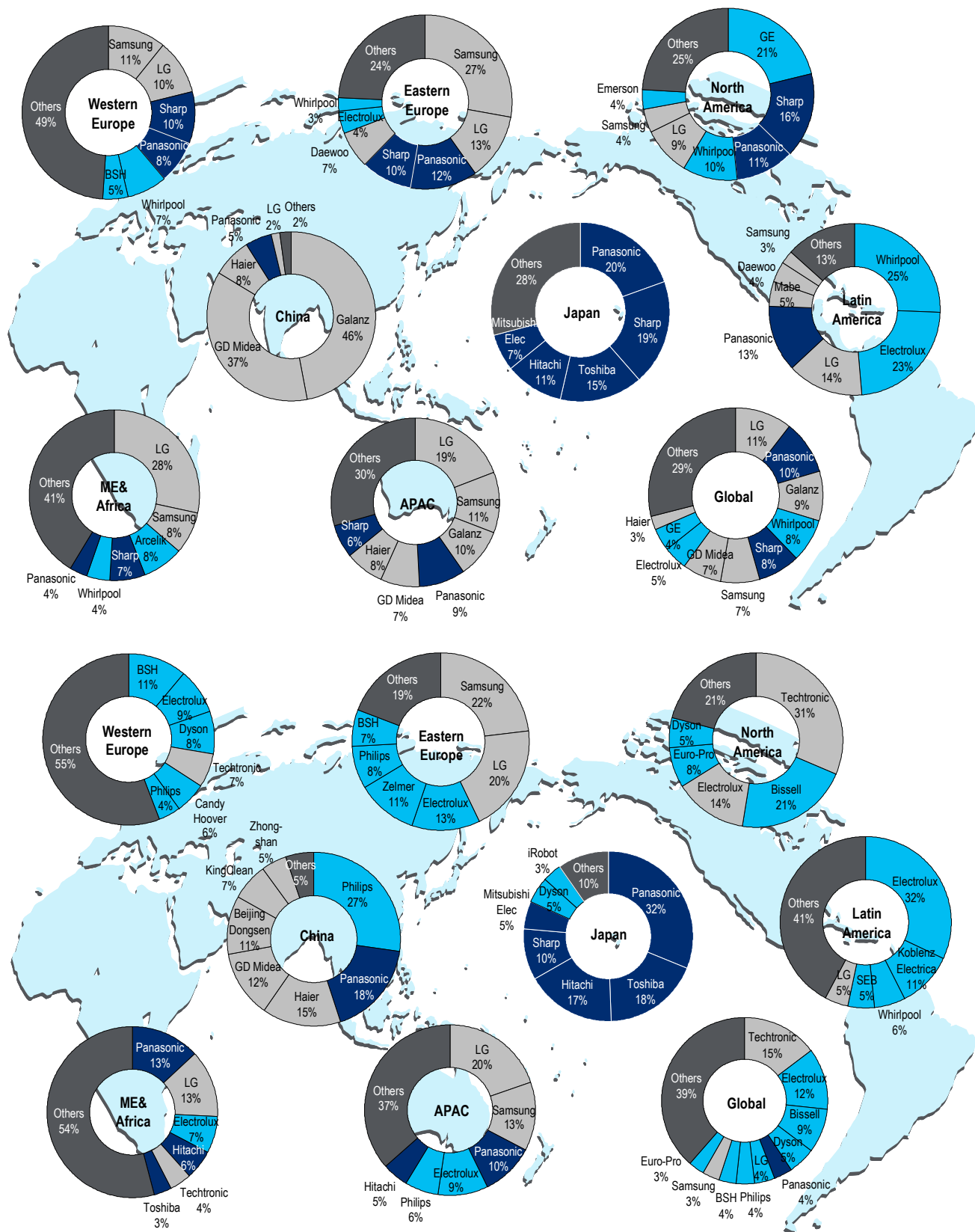
Source: Euromonitor, Citi Research.

Figure 36. Regional market shares in household appliances (volume basis, FY2012, Top is refrigerators, Bottom is washing machines)



Source: Euromonitor, Citi Research.

Figure 37. Regional market shares in household appliances (volume basis, FY2012, Top is microwave ovens, Bottom is vacuum cleaner)



Source: Euromonitor, Citi Research.

Why are Japanese firms highly competitive?

We believe Japanese firms are competitive in household appliances because they are analog

Our research into the global market suggests that Japanese makers are maintaining their international competitiveness and margins in household appliances. We attribute this maintenance of household appliance competitiveness by Japanese firms to household appliances being analog products, which makes them an arena in which Japanese makers can easily leverage their expertise in terms of quality control, technology, design, and manufacturing.

Same reasons for Japanese competitiveness in autos and machinery

The manufacturing sectors in which Japanese makers have maintained strong competitiveness include automobiles, machinery and certain electronic devices (such as passive components and connectors). We identify the common characteristics of these sectors as a lack of standardization progress in manufacturing technology, and a need for fine adjustment between various basic technologies to achieve high quality and performance. Such arenas are often called 'optimization sectors,' and Japanese companies tend to perform strongly in them. We attribute this tendency to the teamwork of Japanese people and to stable organizational structures based on long-term employment that lead to the accumulation of design and manufacturing expertise in terms of component adjustment and quality improvement, which we see as factors conducive to building up a competitive advantage.

Comparison with black goods sheds light on competitiveness in household appliances

Household appliances are another leading example of an 'optimization sector,' where there is a lack of standardization progress in manufacturing technology, and a need for fine adjustment between various basic technologies. We thus see household appliances as an arena conducive to Japanese makers achieving competitiveness, in a similar way to automobiles and machinery. We think that an examination of the factors behind Japanese makers losing their competitiveness in black goods makes it easier to understand how they have maintained strong competitiveness in household appliances

Digitalization of black goods hurt Japanese firms

Black goods were originally analog products, so design and manufacturing expertise were important

Black goods are now digitalized, but they were once analog products. For example, mainstay products in the past were cathode-ray tube (CRT) TVs, and personal stereos (Walkmans). CRT manufacturing required high precision, and personal stereos used motors to drive tapes and spin CDs. Japanese makers are skilled in the adjustment of mechanical components, the technology to ensure consistent product quality, and the improvement of production lines. They also have accumulated expertise in design and manufacturing. In the analog age, this design and manufacturing expertise meant that Japanese makers were able to achieve product differentiation and add value at the manufacturing stage, leading to the establishment of strong international competitiveness.

Digitalization reduced the importance of design and manufacturing expertise

As digitalization advanced from the late 1990s, however, digital circuits on semiconductors became the core element of electronic equipment. For example, CRT TVs gave way to LCD TVs using TFT (a form of semiconductor) LCD panels, while personal stereos playing cassette tapes and CDs were replaced by iPods using semiconductor memory. Digitalization resulted in less use of mechanical components and standardization of product design, which meant that highly precise adjustment was no longer necessary, so the manufacturing of uniform products became easy. These shifts reduced the importance of the design and manufacturing expertise on which the competitive advantage of Japanese makers was based.

Shift to low-margin, high-turnover business model alongside commoditization

As manufacturing expertise became less important it became more difficult to achieve product differentiation in electronic hardware (commoditization), while the creation of value-added when manufacturing electronic equipment also became harder. These developments shortened the product cycle of black goods, drove down their average price, and imposed a low-margin, high-turnover business model on the sector. Competitive advantage in black goods consequently became influenced by the timing and scale of capital investment, sales capabilities and the speed of management decision making.

Skillful response to digitalization by Samsung and Apple

One of the companies that responded most skillfully to these structural changes in the black goods sector is Samsung Electronics. Against a backdrop of shortening of the black goods product cycle and expansion of the market scale for a single product, Samsung made rapid progress by accelerating its product development via the use of 3D computer-aided design (CAD) and reverse engineering in its manufacturing processes, and by adopting a bold investment strategy and building an extensive sales network under an organizational structure based on top-down decision making. Another company that responded very astutely to digitalization is Apple, which achieved high product competitiveness by fusing hardware with the internet and software, as digitalization increased the importance of networks.

Japanese makers lost competitiveness as digitalization left them behind

With the decline in importance of the Japanese makers' forte, design and manufacturing expertise, they lost out to Samsung in terms of management decision-making speed and sales capacity. Neither were they able to fully change direction toward the fusion with networks adopted by Apple, with the result that their international competitiveness weakened. Commoditization of black goods, yen appreciation and cannibalization by smartphones then added to their problems, and their earnings deteriorated substantially.

Design and manufacturing are key in an analog world

Household appliances are fundamentally an analog domain

Household appliances, however, are a fundamentally analog domain where digitalization is unlikely to make progress, in contrast with black goods where the focus is on processing of video and audio data, and communications signals. This is because the cooling, heating, mixing, rinsing and blowing functions of household appliances are based on the nonlinear technologies of mechatronics and thermal and fluid dynamics, which are difficult to express with digital technologies. Household appliances also require excellence in engineering technology, to enable them to withstand physical shocks and component wearing.

Appliances appear low-tech but are actually high-tech

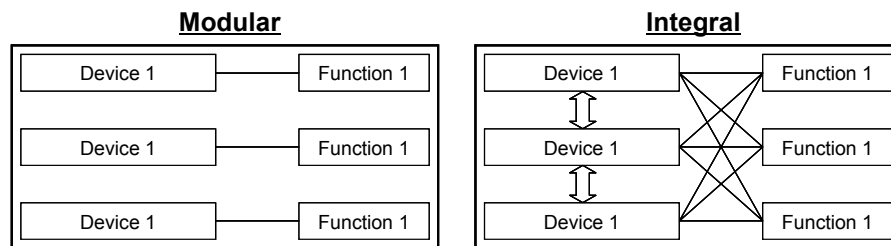
The analog world of household appliances appears on the surface to be low-tech but it actually demands advanced technology. The improvement of performance in household appliances requires core components such as inverters, motors and compressors to be made smaller and more efficient, and their microcontrollers to be made more effective. Each product model also requires the optimal combination and configuration of components. These challenges involve a complex mix of fluid and thermal dynamics, and finding the best solution requires many experiments and trials. This means that companies with accumulated expertise in design and manufacturing are more likely to establish a competitive advantage, and we thus see household appliances as an arena conducive to competitiveness at Japanese makers.

Product cycle and business scale well-suited to Japanese makers' organizational structure

Black goods have a short product cycle and a large market scale for a single product, creating business advantages for companies capable of rapid top-down decision making (a leading example of which is Samsung Electronics). Household appliances have a long product cycle, in contrast, which means that rapid decision making is not necessarily advantageous. The segmentalization of product

specifications also means that product planning and development can be achieved by a team of a few people in the case of minor products and several dozen people in the case of major products. Individual team members are consequently required to come up with good ideas and use a process of trial and error. We thus think household appliances are well-suited to the organizational structure of Japanese makers, where ordinary employees have substantial authority and decision-making happens in a dispersed way.

Figure 38. Modular (assembly-type) and integral (optimization-type) product structures



Source: Citi Research.

Figure 39. Comparison of modular and integral (optimization-type) products

Architecture	Modular (Assembly)	Integral (Optimization)
Example of product	Electronic device (PC, TV, handset, etc)	Home appliance, Automobile, Machinery, etc
Digital or analog?	Digital	Analog
Product design	Standardized	Not Standardized
Manufacturing process	Standardized	Not Standardized
Device function	1 device contribute 1 function	Device function interact each other
Industry structure	Horizontal	Vertical
Competitiveness of Japan	Not strong	Strong
What decides competitiveness?	Timing and size of capex Rapid decision making	Design and manufacturing expertise Lifestyle-driven innovation

Source: Citi Research.

How does Dyson achieve high margins?

Dyson's operating margin is high at around 30%

Dyson, a maker principally of vacuum cleaners and fans, has a distinctive presence in the household appliances industry. Dyson's products stand out for their design and performance, but we think Dyson is even more notable for its high profitability, with OP in 2011 of £306mn (c\$450mn) on sales of £1.056bn (\$1.5bn) at an operating margin of around 30% according to media reports (it is an unlisted company).

Specialization in high-end models

We see two reasons for Dyson's high operating margin: 1) its specialization in high-end models and 2) the way it determines product prices. In the household appliances market margins are substantial on high value-added, high-end models, and meager on low-end models. However, most leading makers of household appliances cover all areas from low-end to high-end models, with the result that they only achieve an overall operating margin in the region of 5%. We think that Dyson is able to achieve such high profitability because it specializes in high-end models for developed markets.

An innovative pricing model

Manufacturers of household appliances and other products usually decide their product prices based on market prices and demand trends, and then plan

production volume, manufacturing costs, product specifications on so on with the aim of making a profit at this price level. In contrast, Dyson decides its product prices by adding a margin on top of its manufacturing costs, and other costs incurred from the likes of sales promotion and R&D. This method means that it stays out of price competition, and sells products in high price-bands where it can secure a substantial profit, namely around \$700 for vacuum cleaners and approximately \$300 for fans.

Development of innovative products based on unique technology

Dyson is able to persuade consumers to pay high prices for its products owing to their high performance and appealing design, as we see it. We think that an important factor is its success in developing innovative products using unique basic technology that has been cultivated in-house. The cyclone-type vacuum cleaner shown in Figure 40, for example, uses unique cyclone technology to separate dirt from air by centrifugal force, and thereby avoids loss of suction due to clogging of bags or filters.

The bladeless Air Multiplier fan also shown in Figure 40, meanwhile, is notable for its appealing design, its high performance, and for producing a smooth airflow. According to Dyson, it did not originally set out to develop a bladeless fan. Instead, it discovered a fluid dynamics phenomenon whereby a channeled airflow draws in surrounding air, thereby creating a stronger airflow. The final product design then stemmed from the development of this unique technology.

Making the most of the household appliances market's advantages

Dyson achieves high margins based on unique technology. We see this as a good example of leveraging the special characteristics of the household appliances market, which provides opportunities to second-tier and smaller companies with good ideas and innovative technology. Dyson has succeeded in developing innovative products using its own technology that have become very popular with consumers, and we see similarities between it and Apple with its launching in recent years of the revolutionary iPhone and iPad.

Figure 40. Dyson's core products: cyclone-type vacuum cleaner (left) and bladeless fans (right)



Source: Company data.

5. Appliances to help Japanese tech recover

Growth and profitability for Japanese makers in appliances

Earnings deterioration at Japanese electrical equipment makers driven by black goods and electronic devices

In recent years Japan's electrical equipment sector has seen numerous cases of corporate earnings deterioration against a backdrop of markets maturing and competition heating up, principally in the black goods arenas of flat-screen TVs and mobile phones, and in electronic devices in the form of LCDs and semiconductors. Panasonic and Sharp reported large losses in 2011–2012 due to their earnings deteriorating in AV equipment and other black goods, and in display business (Figure 41).

Growth and profitability for Japanese makers in household appliances

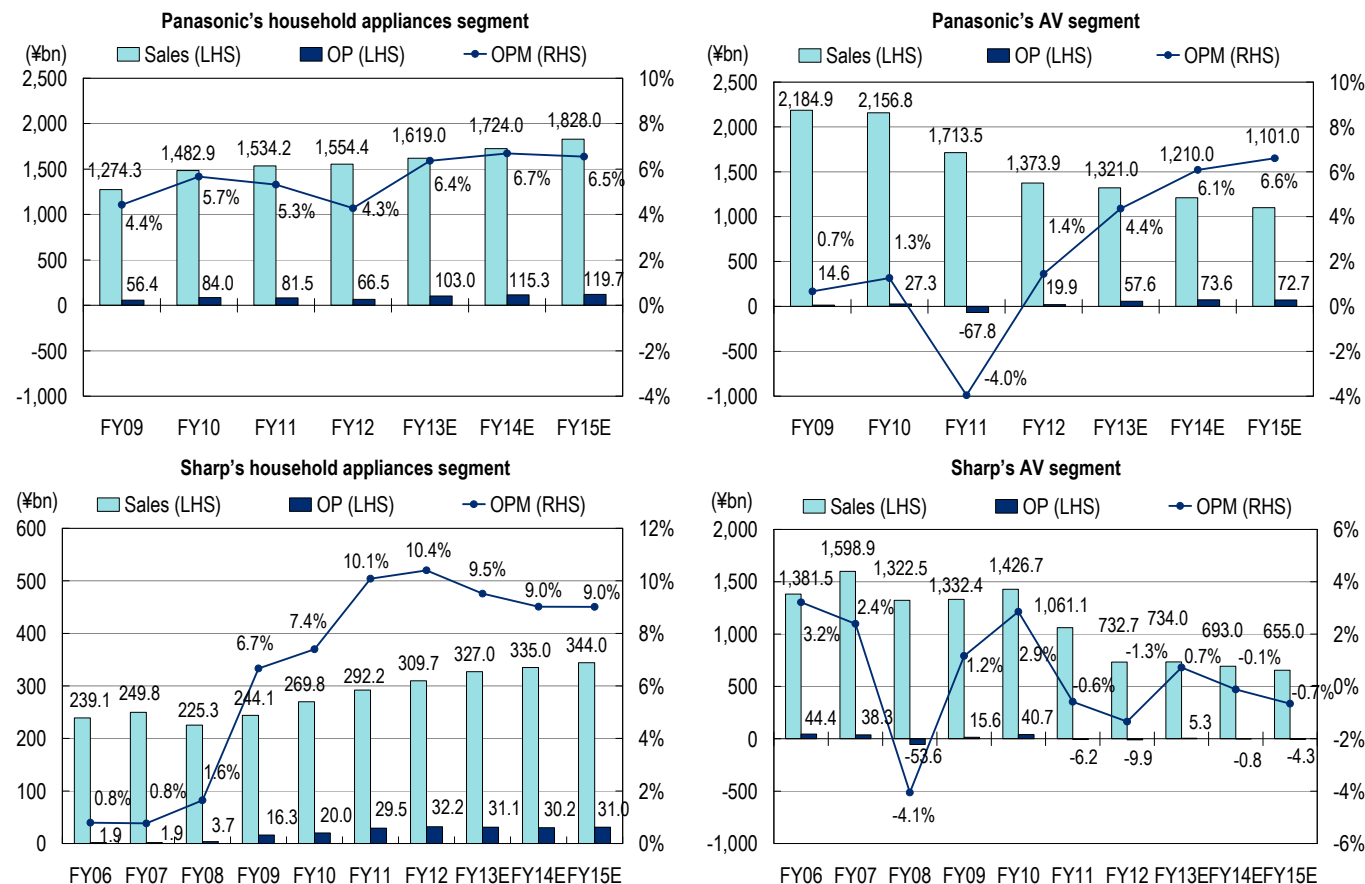
On the other hand, many Japanese makers of electrical equipment are achieving profitability and growth in household appliances. At the same time as Panasonic and Sharp were reporting substantial losses related to AV equipment and displays, they were achieving steady sales expansion and stable operating margins in household appliances. We see Japanese makers of electrical equipment as holding up well in the household appliances arena, including in terms of earnings.

Japanese makers doing well in appliances owing to 1) appliances being analog, 2) rising domestic average prices, and 3) overseas business development

We identify the following three reasons for Japanese makers holding up well in household appliances:

1. As described earlier, the household appliances arena is conducive to Japanese makers leveraging their quality control and technological prowess, and their design and manufacturing expertise.
2. They have profitable business structures in the domestic household appliances market, owing mainly to its stable scale and ASP growth even amid deflation resulting from sustained product-mix improvement.
3. They are successfully tapping external demand principally in emerging economies via aggressive development of overseas operations.

Figure 41. Marked decline in black goods at Japanese makers, but achievement of growth and profitability in household appliances



Source: Company data, Citi Research.

Growing importance of appliances in Japan

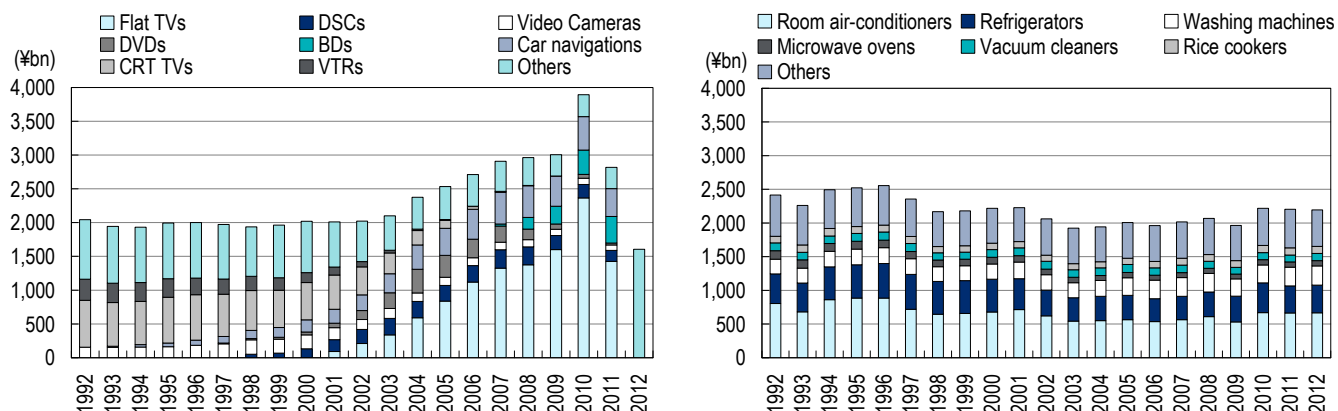
Household appliances market's stability contrasts with peak for black goods

We see the stability of the domestic market as a highly significant factor for Japanese makers of household appliances. The black goods market (principally flat-screen TVs, DVD equipment and digital cameras) expanded to approximately ¥4trn in 2010 as the "eco-points" system accelerated demand, and then declined to around ¥1.6trn due to a sharp drop in demand for flat-screen TVs. This, we believe, was a direct cause of the dramatic worsening of earnings at Japanese makers of electrical equipment in 2011–2012. In contrast, although household appliances are a mature market, they have a stable market scale of approximately ¥2trn, mainly via replacement demand.

Another important factor is average price growth even amid deflation

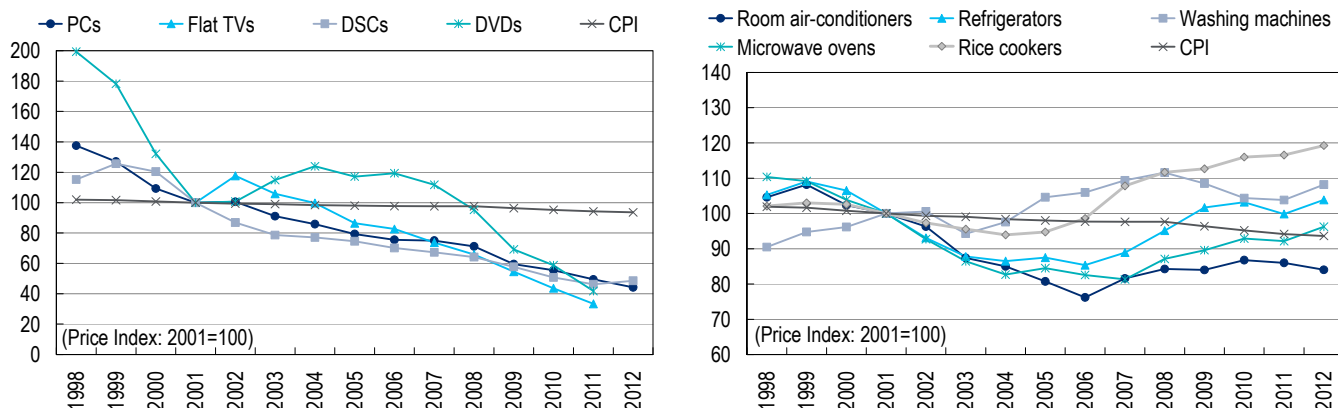
We see another important factor as the rise in the average price of household appliances even amid deflationary conditions. The black goods market in the form of flat-screen TVs, PCs and digital cameras is susceptible to price competition, and a structural price decline has occurred in Japan. Although the average price of household appliances consistently declined until the early 2000s, since around the mid-2000s their average price has tended to rise despite the deflationary conditions. This average price decline is liable to lead to margin improvement even when market scale stays unchanged, and we see this as a factor behind Japanese makers maintaining their margins in household appliances.

Figure 42. Domestic shipment value of consumer electronics products: structural market contraction in black goods (left), contrasting with continuing stability in household appliances (right)



Source: JEITA, JEMA, Citi Research.

Figure 43. Average price of consumer electronics products: continued decline in black goods (left), but growth trend in household appliances (right) even amid deflation



Source: JEITA, JEMA, CIPA, Citi Research.

What is buoying appliance prices?

Rising weighting of high value-added products

Why has the average price of household appliances risen in Japan despite deflation? We attribute this to two factors: 1) Japanese makers launching high value-added products in response to consumers becoming more discerning as the Japanese economy matured, and 2) a rising weighting of high-end goods accompanying a shift in existing products toward larger, more energy-efficient and more multifunctional models.

Healsio series: Good example of products appealing to discerning consumers

We see the Healsio water ovens launched by Sharp in 2004 as a good example of household appliances appealing to discerning consumers. Unlike conventional microwave ovens, Healsio water ovens use superheated steam to cook food. This cooking method has the advantage of reducing the fat and salt content of food while retaining vitamins, and Healsio water ovens have proved very popular with health-

conscious consumers. We see this as an example of household appliances developed in response to the needs of discerning consumers.

**Panasonic's high-end rice cookers
another example of products for
discriminating consumers**

In 2013 Panasonic launched the SR-SPX high-end rice cooker series with prices exceeding ¥100,000. This is another good example of a product aimed at discriminating consumers. The SR-SPX series cooks by modulating pressure in a high-temperature high-pressure environment, enabling anyone to make delicious rice. In fact, the rice is said to taste as good as that made the traditional way in Japan. The SR-SPX is an extremely high-tech product line, combining materials technology (the cauldron is made of multiple layers of metal and ceramics with a fluorine coating) with know-how in thermodynamics and fluid dynamics (a six-stage all-surface induction heating technique that cooks from all directions, high-speed alternate convection technique that ensures effective thermal convection, variable pressure technology from Sanyo). Japan is fertile ground for developing this kind of product, and we note that rice cookers have seen ASP rise more than any other class of household appliances.

**Product shift toward larger and higher-
end models**

In the arena of conventional refrigerators and washing machines, the average product price has risen amid a shift toward larger, more energy-efficient and more multifunctional models (Figures 45-47). In the case of refrigerators, for example, the weighting is rising for large models with a capacity of at least 400 liters, which have a high ASP. Within washing machines the weighting is similarly rising for models that can both wash and dry clothes, and large models that can handle large loads. In microwave ovens the average price is growing alongside a rising weighting of models that also combine conventional oven functions.

**Japanese makers have deliberately
introduced high value-added products**

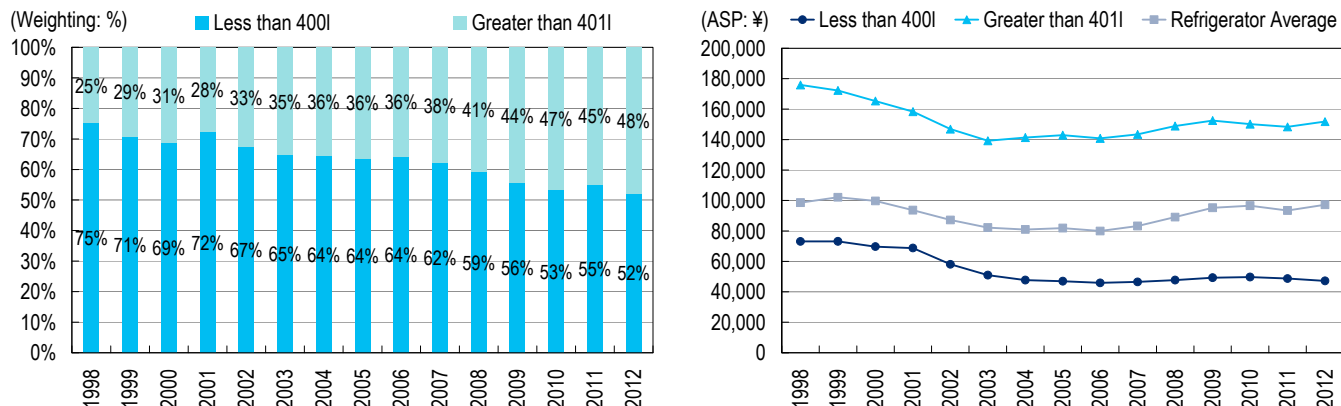
We think it is important to note that Japanese firms have created a market by deliberately introducing high value-added products. As earnings at many operations deteriorated alongside a decline in the average price caused by commoditization, we think that their successful strategic shift toward higher value-added in household appliances is of great significance.

Figure 44. Example of products appealing to discerning consumers: Sharp's Healsio water oven (Left) and Panasonic's rice cooker (Right)



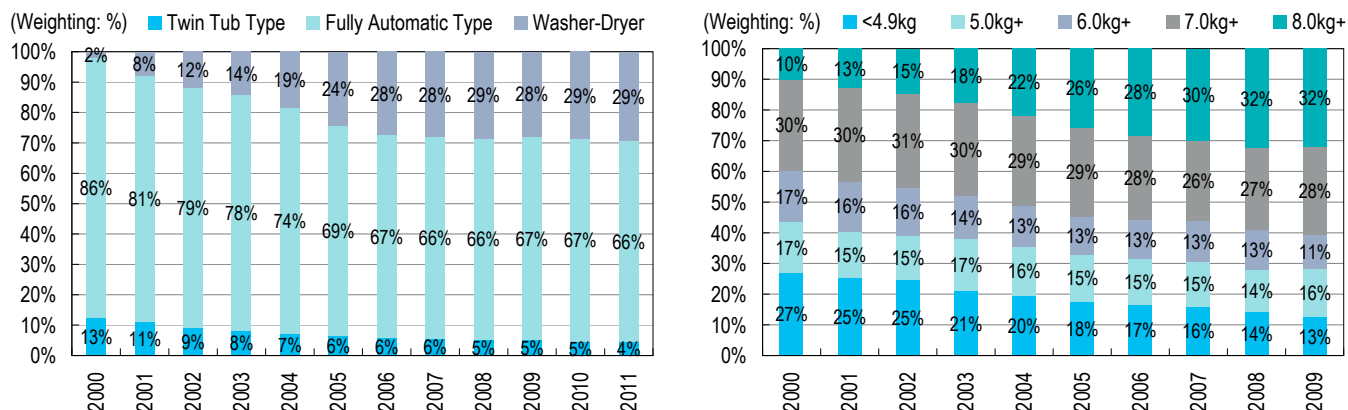
Source: Company data.

Figure 45. Refrigerator volume breakdown by size (left), and average shipment price by size (right)



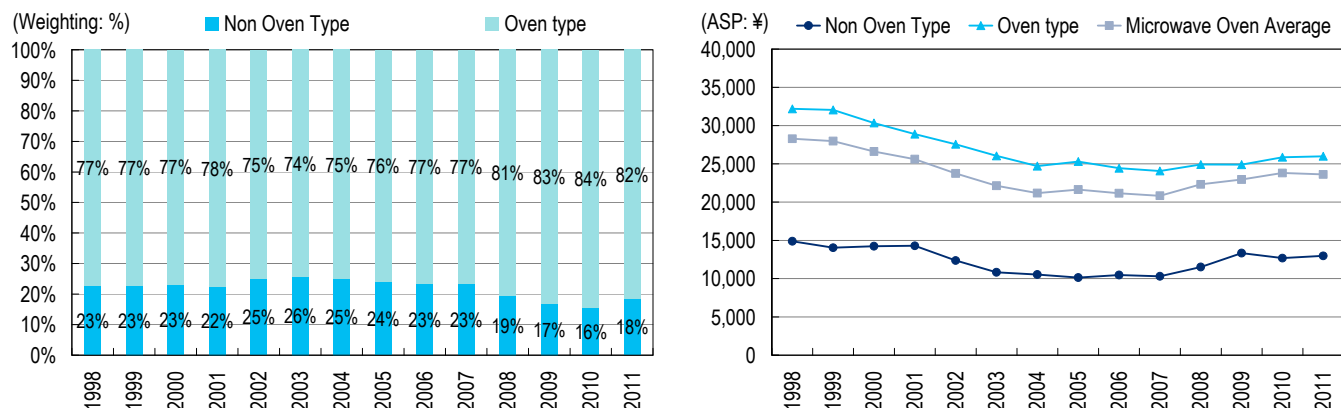
Source: JEMA, Citi Research.

Figure 46. Washing machine volume breakdown by type (left), and volume breakdown by size (right)



Source: JEMA, Citi Research.

Figure 47. Microwave oven volume breakdown by type (left), and average shipment price by type (right)



Source: JEMA, Citi Research.

Tapping overseas demand is key

Japanese firms succeed in overseas expansion focused on high end of market

Japanese firms have had some success overseas, especially in China and other parts of Asia, by launching high-quality advanced household appliances. As we showed earlier in this report, over half of sales at Japanese firms like Panasonic, Daikin, and Fujitsu General come from overseas markets and such firms' sales on overseas markets are comparable to those of foreign firms in absolute terms.

Capturing mid-tier and lower demand, expanding regional coverage are key issues

In contrast, Japanese firms have not aggressively entered the mid-tier and low-end markets that account for the majority of market volume, so their shares of overall market volume have remained low. They have also made relatively slow headway into markets in Europe and the US and in Central and South America. Accordingly, we think it will be necessary to 1) secure mid-tier and low-end demand in emerging markets, and 2) tap into overseas demand by expanding regional coverage.

Targeting volume zones in emerging markets will set stage to reap benefits of future increase in added value

In household appliances markets, margins tend to be narrow on low-end entry-level models and wider on high-end models. This means manufacturers tend to benefit as markets grow and the proportion of high added-value goods increases. As we noted in Chapter 2, we expect the household appliances sales mix in emerging markets to improve thanks to sales growth for mid-tier products. Accordingly, it is increasingly important for manufacturers to target the high-volume middle tier and low end of the market.

Expanding product lineup through localization is key

The keys to tapping into emerging market demand are securing sales channels and increasing product lineups through localization. Variety in lifestyles means that consumers in different regions have different requirements for household appliances. Consumers in emerging countries want products matched to their lifestyle and the level of the country's economic development. Some South Korean and Western firms have managed to tap into demand in emerging countries. We think they owe this success to the launch of products which meet local needs, supported by localization and joint ventures with/acquisitions of local companies.

Japanese firms working on localization in emerging markets

Japanese firms are aiming to expand sales in India, Southeast Asia, Eastern Europe, and Central and South America by launching household appliances produced using localized specs, development, and production. The Japanese manufacturers are playing catch-up with South Korean and Western firms in some of these markets, but their track record in tapping into high-end demand in China and elsewhere in Asia suggests that they should be able to gain some market share. Figure 48 summarizes Japanese firms' overseas expansion efforts.

M&A in European/US markets?

Consumers in European and US markets are very demanding regarding product specs and brands, and local firms dominate the market. Even South Korean firms with a track record of localization-driven overseas expansion have not gained much of a foothold in these markets. Accordingly, we think M&A activity is the key to securing the sales channels and brands that will give access to European and US markets. Daikin is a good example of a firm which has succeeded by this route; its overseas expansion was boosted substantially by its acquisitions of OYL and Goodman.

Figure 48. Summary of overseas expansion by Japanese home appliance majors

Company	Summary of overseas expansion efforts
Panasonic	Previously focused on China, but has added sites in India, Vietnam, and Brazil. Working to develop markets in emerging nations by enhancing local development, production, and sales. Aims to develop European markets for beauty products and built-in appliances. Also focused on Russia and Africa as key markets. Aims to lift overseas sales ratio to 60% in 2015 (currently at 50% level).
Sharp	Plans to enhance home appliance business in Southeast Asia, especially Indonesia where it is already highly competitive. Will establish a new plant in Indonesia in 2013, which, together with the Thai plant, is intended to drive expansion of the household appliances business. Also aims to enhance sales in Middle East and Africa.
Hitachi	Already highly competitive in air conditioning in China and Europe, now plans to bolster home appliance business in Southeast Asia by pursuing localization. Aims to boost overseas sales ratio to 50% (currently at 30% level).
Toshiba	In addition to boosting production capacity in previous main focus areas of China and Thailand, aims to open markets in Southeast Asia and Middle East by pursuing localization, including a new plant in Indonesia. Aims to boost overseas sales ratio to 50% (currently at 30% level).
Mitsubishi Electric	Already highly competitive in air conditioning in China and Europe, now plans to focus on Turkey, Russia, and other markets in Eastern Europe and Southeast Asia. Will also bolster sales of household appliances, mainly high-end models, in Indonesia and elsewhere.
Daikin	Has one of the more aggressive approaches to overseas expansion through M&As. Has aggressively expanded overseas through the 2006 acquisition of OYL and 2009 JV with Gree Electric Appliances. Overseas sales ratio rose to 63% in FY3/13. Sales to US should grow following 2012 acquisition of Goodman; overseas sales ratio forecast to grow to 76% in FY3/16.
Fujitsu General	71% of FY3/13 air conditioner sales came from overseas markets. Highly competitive in markets like Europe, Middle East, and Oceania, which demand high quality and performance. A key issue is opening markets in China and APAC; aims to grow business by localization and securing new sales channels. Has major production facilities in China and Thailand.

Source: Company data, Citi Research.

Expanding earnings post-restructuring

We focus on efforts to expand earnings through appliances following restructuring

Japanese makers of electrical equipment are currently engaged in restructuring their operations. They are at the stage of focusing on reducing the losses in unprofitable operations, principally TVs, semiconductors and displays, but they will need to take steps to drive up earnings from their core operations after once the structural reforms have dealt with the negative legacies. We see multiple areas in which Japanese makers should concentrate their resources (including medical equipment, infrastructure-related business, and network-related business). Based on our foregoing observations, however, we see household appliances as particularly promising because of the growth prospects in both developed and emerging markets, and because they are an arena in which Japanese companies should be able to exploit their inherent strengths.

We see prospects for revival at Panasonic via household appliances

We think that Panasonic is one Japanese maker with good prospects for earnings expansion driven by household appliances (Figure 49). We see Panasonic as one of the leading global makers of household appliances based on our international comparison analysis in Chapter 4, and it has consistently achieved stable earnings growth in this arena. Panasonic's household appliances segment also covers a wide range of products from the conventional in the form of air conditioners, refrigerators and washing machines, to new products in the form of home bakeries and beauty appliances. Furthermore, its core products include B2B equipment and devices. We project stable growth to continue against a backdrop of technological prowess and an extensive product lineup.

We also see many options for achieving growth

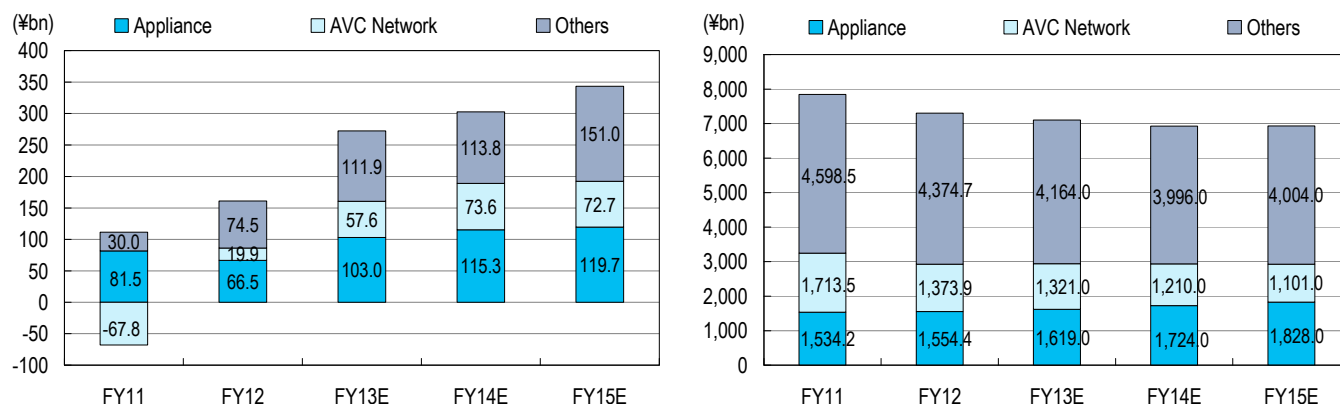
We think that not only do Japanese household appliances makers wield strong competitiveness, but that they also have many options for taking action to achieve growth. Most Japanese makers mainly operate in Japan and Asia, but we see substantial scope for expansion in emerging economies in Central and South America, the Middle East and Africa. We also see large potential for expansion of sales networks in Europe, where we project uptake of energy-efficient appliances and strong demand from discerning consumers, in a similar way to Japan. M&A activity in the household appliances arena has been limited thus far with the exception of Daikin, but we see a need for securing of sales routes and accelerating of business growth via M&A. We also think that makers will need to develop

solutions-based operations such as by combining household appliances with storage batteries and infrastructure, and by strengthening their after-sales services, separately from their conventional business model of simply selling products.

Household appliances as flagship products of Japanese electrical equipment makers

Hitherto, black goods in the form of flat-screen TVs and mobile phones, and electronic devices in the form of LCDs and semiconductors, were generally considered to be the flagship businesses of Japanese makers of electrical equipment, while household appliances were considered rather uninteresting. Nevertheless, we think that Japanese makers are globally competitive in household appliances precisely because they have been able to accumulate design and manufacturing expertise, tap into domestic and overseas demand, and create a profitable business structure despite deflationary conditions by driving up average prices. We focus on the possibility of household appliances becoming viewed as the flagship business of Japanese electric equipment makers, in a reversal of the previous situation.

Figure 49. Panasonic: OP and sales by segment. Prospects for earnings expansion in household appliances as Panasonic's core business following restructuring (Left: OP, Right: Sales)



Source: Company data, Citi Research.

6. Company overviews

Daikin (6367)

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Aiming to be the leading HVAC global manufacturer

- **Overview of business** — In FY3/13 the air conditioner division comprised 87% of total sales and 80% of OP, with an operating margin of 6.3%. Daikin's other main division is its chemical business which includes refrigerants, fluorochemicals, coatings and semiconductor etching agents. In Japan Daikin says it has the leading share (45%) of commercial air conditioners ahead of Mitsubishi Electric, while in the room air conditioner market it ranks #2 behind Panasonic with a share of 20%. In China the company claims to have a 45% share of the commercial market (excl Applied systems) and its main competitors include Gree, Midea, Haier and Hisense. The big change for the air conditioner business was the 2012 acquisition of Goodman Global (US) for \$3.7bn (incl debt).
- **Geographic exposure and growth rates** — In FY3/13 a breakdown of air conditioner sales showed that Japan was its largest market accounting for 37% of sales, with YoY sales growth of +6%. Daikin says its operating margin in Japan was around 4%, making up close to 20% of divisional OP. China made up 19% of air conditioner sales and, making no adjustment for the change in the FY-end, these sales were up by 11% in yen terms. With an operating margin of 17% China comprised 50% of total air conditioner profits in FY3/13. Other key markets include Europe (16% of sales and 19% of OP) and Asia ex-China (12% and 4%). Daikin's main air conditioner plants are located in Japan, China, Thailand, Czech Republic, Belgium, and the US.
- **Business strategy** — Daikin's Fusion 15 strategic plan (ending FY3/16) targets ¥2trn in sales, an operating margin of 10% and a 10% share of the global market for HVAC and refrigeration. There is a clear focus on growth in emerging markets (India, Brazil, Russia/CIS, Turkey, the Middle East and Indonesia), while also developing a solutions business for customers in developed markets including China. Daikin also wants to increase its presence in the heating and filter markets. M&A is a key part of their strategy and in 2011 it purchased Airfel (Turkey) and Goodman in 2012. With sales of \$2.0bn in CY12 and double-digit margins we see the Goodman deal as a potential game changer. Backed by its 192 nationwide dealers, Goodman has a 30% plus share of the US market for room air conditioners in the so-called volume zone. Over the next three years Daikin forecasts synergies of ¥24bn (70% sales-related).
- **FY13 Outlook** — FY3/14 guidance assumes that air conditioner sales in China grow 14% YoY in RMB which at ¥15.3/RMB translate into growth of +30%. The recent spike in short-term rates is a worry but Daikin says that business in China in the first two months of FY3/14 is running in line with budget. In Japan full year sales are projected to increase by 5% YoY but in April-May industrywide room air conditioner shipments are down 10% YoY with a 5% decline in commercial air conditioners. Goodman will be consolidated from Q1 and this should more than treble Daikin's US sales.
- **Investment opinion** — Given the goodwill (\$2.2bn) and increase in debt (\$1.5bn + ¥120.0bn) associated with the Goodman acquisition, we use an EV/EBITDA approach to set our ¥5,000 target price for Daikin. In FY3/14 we estimate that total amortization of goodwill and other intangibles will be ¥88/share. Despite its global credentials and coherent strategy, within the Japanese machinery sector, we rate the shares a Neutral as valuations are not especially attractive, OP is heavily dependent on China, and the balance sheet is relatively weak. Even so we agree there is ample room for growth.

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Hitachi (6501)

Ample air conditioner sales channels

- **Overview of business** — Household appliances form part of the digital media & consumer products segment and have a consolidated sales weighting of 6.3%. The operating margin has typically been around 1%-3%, coming in at 1.3% in FY3/13. Hitachi has been beset by one-off factors over the last three years that have lost it profit, including the eastern Japan earthquake, the Thai floods, and an Indian plant fire.
- **Geographic exposure and growth rates** — Air conditioners account for approximately half of Hitachi's household appliance business, and the business structure places both commercial and residential air conditioners at its core. FY3/13 household appliance sales amounted to ¥569.9bn, with air conditioners accounting for 51% and other household appliances 49%. Other household appliances include refrigerators, lighting equipment, and washing machines. The overseas sales ratio is 32%, so Japan is at the heart of operations. Overseas, the air conditioner weighting is high, at some two-thirds of sales.
- **Business strategy** — Hitachi aims for growth by investing intensively overseas. The basic philosophy is "local production, local consumption". For example, it has set up a sales company in Dubai and is beefing up its sales networks in emerging markets. It built factories for air conditioners in 2012 in both India and Brazil. Away from air conditioners, it aims to grow sales in LED lighting and solar systems. Hitachi's competitiveness in household appliances stems from group synergies. It already sells air conditioner products to its plant and building divisions. We think it has lots of opportunities to sell air conditioners as part of its infrastructure businesses and that this is where its strengths lie.
- **Investment opinion** — We rate the shares of Hitachi Buy, with a ¥930 target price. We think company earnings will see a V-shaped recovery on 1) structural reform for unprofitable businesses and 2) fixed cost cuts. Moving forward, we think streamlining via the Smart Transformation Project will drive profit growth medium term. We position Hitachi as a core stockholding for the longer run. The current management team has built a track record of delivering on a degree of restructuring to date. Moving forward, too, we envisage management continuing to drive transformative restructuring, including the consolidation of business units, absorption/merger of subsidiaries, the making of subsidiaries wholly owned (or selling them off). We expect the business structure to grow more muscular and Hitachi to maintain an earnings uptrend. We feel Hitachi entry into a profit growth phase on this restructuring has been underestimated by the market and that the shares are undervalued.

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Panasonic (6752)

Japan's largest household appliances business

- **Overview of business** — The core constituents of Panasonic's household appliances business are air conditioners, refrigerators, and washing machines. At the same time, its strengths and points of differentiation are in kitchen appliances and smaller products like hair dryers. Including the previously acquired Sanyo, Panasonic Electric Works, and the eco solutions business, Panasonic also deals in vacuum cleaners, fans, air purifiers, and lighting, not to mention toilets and other bathroom products, intercoms, and residential electrical equipment (outlet and switch panels, wiring, breakers). The Panasonic group also deals in digital home appliances like TVs, construction materials and interior decorating, and housing construction. The Panasonic Group can build a house one can live in right away.
- **Geographic exposure and growth rates** — Panasonic's market share is 9% for consumer air conditioners, 6% for washing machines, 4% for refrigerators, 4% for large commercial air conditioners, 14% for the cold chain (low-temperature display cases used in stores), and 11% for compressors used in air conditioners. It is in the top tier in each product area, and it is also at a high level globally in terms of comprehensive strength (all major products together). In our view Panasonic's main advantage is this comprehensive strength. It has a long track record in technology and production and is particularly strong in high-end products. Purchasing power for the main customer demographic in developing markets is gradually rising, and the markets Panasonic can cover are expanding globally.
- **Business strategy** — Over the last two years Panasonic has made a solid start toward overseas expansion: it has quickly gotten its overseas strategy up and running, it has established production sites in China, and it is building plants in India, Vietnam, and Brazil. It also places significant strategic importance on expanding the B2B business and looks for growth in commercial air conditioners, the cold chain, and fuel cells. Moreover, Panasonic is focused on components and modules used in household appliances like compressors and motors.
- **FY13 Outlook** — Sales (consolidated producer/retailer base) in Panasonic's home appliances business came to ¥1.46trn in FY3/13, with OP at ¥58.5bn (4.0% operating margin). This is seen as a key business that will drive group growth going forward. Combined with the eco solutions division, which handles lighting among other products, sales were ¥3.13trn (consolidated producer/retailer base), or 33% of total consolidated sales (before eliminations). In FY3/14 sales will be ¥1,619bn and OP will be ¥103bn (operating margin of 6.4%). Sales in the segment come to 22.8% of consolidated sales.
- **Investment opinion** — We rate the shares of Panasonic Buy, with a ¥930 target price. We expect earnings to recover going forward following business unit sales, exits, and headcount reductions, mainly in plasma panels, semiconductors, and mobile phones. Balance sheet risk has been reduced with a string of structural reforms, removing a major risk. Valuation levels are in line with the sector average and we think there is room for upside given the potential for strong earnings recovery from restructuring. While the slowdown in the digital home appliance market is leading to sluggish sales, growth is emerging in household appliances and B2B. We expect a sustained move away from the volatile digital home appliance and B2C businesses into the more stable household appliance and B2B businesses.

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Sharp (6753)

Small but unique, profit margins are high

- **Overview of business** — The profit margin for Sharp's household appliances business is high and stable, and it is a major cash cow for the company. Primary products are refrigerators, air conditioners, and washing machines, but in recent years it has added microwave/convection ovens and air purifiers to its areas of focus as products in these businesses have proven to be hits.
- **Business strategy** — While Sharp has been making progress overseas, it does not have a large presence in the industry so it basically follows a niche strategy. It aims to grow sales of high-end products in Asia. In Japan it gets high marks for unique functions and designs, so its products are highly competitive. Its Plasmacluster ion generators have grown more than any other household appliance over the past five years. Backed by its technological advantages we believe growth potential was originally higher than it is now. However, the business is not of a scale that would enable it to compete in a global household appliances sector where the weighting for low-priced products is high.
- **FY13 Outlook** — In FY3/13 sales were ¥310bn and OP was ¥32.2bn (operating margin of 10.4%). Sales in the segment come to 11.5% of consolidated sales. In FY3/14 we estimate sales will be ¥327bn and comprise 12.2% of consolidated sales and OP will be ¥31.1bn (operating margin of 9.5%).
- **Investment opinion** — We rate the shares of Sharp Sell, with a ¥160 target price. There are limits to how long financial rebuilding can be put off, and with the firm bringing pension liabilities onto its balance sheet we believe a large-scale capital increase is likely. We believe BPS will remain low due to dilution.

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Fujitsu General (6755)

A Japanese Hidden Champion in air conditioners

- **Overview of business** — Fujitsu General is a maker of air conditioners and electronic products, mainly wireless fire/disaster prevention systems. The mainstay air conditioner business boasts advanced technologies, a broad product lineup, and sales channels worldwide supporting continued growth in Japan and overseas. We expect demand for air conditioners to expand in both developed and developing economies. Fujitsu General is highly competitive in the field of room air conditioners and well positioned to benefit from market growth, in our view.
- **Geographic exposure and growth rates** — The FY3/13 air conditioner sales breakdown by region was: Japan 28%, Europe 16%, the Americas 11%, Oceania 11%, Middle East/Africa 20%, China/Asia 14%. This shows Fujitsu General sells air conditioners in almost all regions. Average sales growth for the last 10 years is 5%. Top line growth has been maintained despite a strong yen and the OP margin has remained stable at 4%–5%.
- **Business strategy** — Fujitsu General has a particularly strong presence in Japan, Europe, the Middle East, and Oceania, where its market share (value basis) ranges from just under 10% to almost 20%. Slow development in North America, China, and Asia is an issue for Fujitsu General. This is because energy-efficient room air conditioners have yet to make significant market penetration in these regions. However, demand for energy-efficient room air conditioners in China and the US is increasing as environmental awareness increases. Fujitsu General aims to cultivate markets by introducing products that meet local requirements.
- **FY13 outlook** — In FY3/14, we expect domestic sales to continue to trend upward because in addition to the progressive weakening of the yen, we also see sales mix improvements in Japan and domestic market share growth. We forecast further YoY sales growth in FY3/14 too in Europe as the ending of inventory adjustments leads to an increase in demand. We see a similar trend in North and Central America, where we expect the company to capture demand and grow sales of room air conditioners. We forecast overall FY3/14 air conditioner segment sales of ¥197bn, up from ¥171.6bn in FY3/13. While progressive yen weakening is a concern, we think air conditioner OP can rise to ¥8.4bn in FY3/14 from ¥7.1bn in FY3/13, on sales growth and cost-cutting progress. From FY3/15 too, we think the growth trend in sales in profit will continue on sustained growth in the air conditioner market overall and ongoing cost cutting.
- **Valuation and investment opinion** — We rate the shares of Fujitsu General Buy, with a ¥1,330 target price. We base our target price on a DCF-derived theoretical price and also reference to the average PER for global household appliance majors. Applying a PER of 14x to our FY3/15 EPS forecast yields a theoretical price of ¥1,410, while our DCF model yields ¥1,240. We therefore adopt ¥1,330 as our target price.

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LG Electronics (066570)

Targeting a top home appliance maker in the medium-term

- **Overview of business** — LGE's home appliance division, including air conditioner & energy solutions, accounted for about 30% (home appliances 23% and air conditioner & energy solutions 7%) of total company sales and 60% of total company OP in FY12/12. Other businesses include TV and handsets.
- **Geographic exposure and growth rates** — About 20% of divisional sales come from South Korea, about 25% from Europe, about 15% from US, and 20% from other Asian markets. Home appliance division sales grew by 14% and 15% YoY respectively on a US\$ basis in FY12/10 and FY 12/11 but declined by 2% on US\$ basis in FY12/12 due to slower global consumer demand.
- **Business strategy** — LGE targets a global No.1 home appliance maker position in the medium term through the timely introduction of high efficiency/high capacity appliance products. LGE plans to expand its high-end appliance market presence by leveraging its success in the washing machine market. To effectively penetrate into the global high-end built-in appliance market, LGE signed a strategic alliance with Viking in 2010. LGE has also started sales via Lowe's in the US this year. In addition, LGE has been very aggressive in expanding commercial air conditioner operations via continuous R&D/marketing (distribution channel expansion) investment. With in-house solutions for core components like linear compressors (refrigerator) and direct-drive motors (washing machine), LGE is looking to maximize time-to-market benefits.
- **FY13 outlook** — For FY12/13, we forecast total home appliance revenue growth of 7% YoY on a KRW basis (14% on US\$ basis). We also expect a steady operating margin of 4.4% this year. We see some downside risk to our current margin estimate, as the company increases marketing spend for channel expansion and brand positioning amid slow global consumer demand.
- **Valuation and investment opinion** — We retain our Neutral rating. Despite steady earnings in the appliance division, we continue to see a challenging competitive landscape in smartphone/TVs. Our target price of KRW78,000 is based on our sum of the parts (SoTP) valuation. Referencing peer companies, key assumptions are appliance division valued at 4.8x EBITA, display and media at 4.8x EBITA and mobile communication at 6.0x EBITA, for 5.6x for the company as a whole applied to FY12/13 forecasts. For the investment value of LG Display and LG Innotek, we apply a 30% discount to FY12/13E book value.

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Haier Electronic (1169.HK)

Riding household appliance demand growth in rural China

- **Overview of business** — Together with its parent companies Qingdao Haier and Haier Group Corporation, Haier Electronics (HE) is one of the largest home appliance manufacturers in China with a close to 9% market share by revenue in FY12/12. HE has been the number-one washing machine and water heater (electric and gas) manufacturer for the past decade and maintained its leadership with market shares of 31.2% and 36.4% by sales volume respectively as of FY2012. With HE's reputation for high product quality and continuous effort in improving its product mix, as well as its extensive sales network in particular in lower tier markets, we expect HE to maintain its leading position in China.
- **Geographic exposure and growth rates** — China is the biggest home appliance market in the world with a market size of \$82bn in 2012, followed by the US (\$54bn) and Japan (\$33bn), according to Euromonitor. Within China, home appliance sales in rural China grew faster than in urban areas, due to 1) faster income growth and 2) government's policy to promote household appliance consumption such as the "Go Rural" program (2009 to early 2013), "Trade-In" program (till end of 2011), and "Energy-Saving" program (2011 to May 2013). We expect long-term demand for appliances in rural China to remain strong given the penetration rates of the major household appliances (25%-66%) are still lower than urban China (95%-100%). In addition, the substantial amount of affordable housing completed (~10mn units) in 2013 and beyond will support the home appliance demand in China.
- **Business strategy** — Besides the manufacturing business (washing machine and water heater), HE expanded into the Integrated Channel Service (ICS) segment and transformed into one of the largest home appliance distribution channels in Tier-3 and lower cities together with logistic business, after-sales and e-commerce business, via taking over Haier Group's channel services operation arm named "Goodaymart" in 2010-2011. ICS segment will continue to be the growth driver, especially non-Haier brands, HE targets to provide more service solutions such as seeking OEM suppliers, providing after-sales service, training and advertising services to 3rd party brands in order to enhance its gross margin.
- **FY12/13 outlook** — Haier targets 10% and 20% growth in its washing machine and water heater business, respectively. Gross margin for its manufacturing is expected to expand further with lower raw material costs and better product mix. The ICS segment expansion remains a key focus for HE with the major growth driver coming from its non-Haier brands business. Capex for FY12/13 is expected to reach RMB720mn with ~50% of it to be invested into the logistics network (delivery trucks, warehouse, and IT systems).
- **Valuation and investment opinion** — While the penetration rate of TVs (black goods) has already reached 100% in rural China, the rate for household appliances is still relatively low. We believe HE is a good play on rising demand for home appliance in rural China given 80% of sales comes from rural areas. We rate HE Buy with a target price of HK\$15.70 based on a sum-of-the parts (SoTP) valuation, in which we value the household appliance manufacturing operation at 13x FY12/13E PER and the downstream channel division at 17x FY12/13E PER. Our target price implies a FY12/13E PER of 15x and ex-cash PER of 12.6x.

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Electrolux (ELUXb.ST)

Still plenty of upside

- **Overview of business** — Electrolux offers a wide range of home appliance products and solutions for both professionals and consumers. In FY12/12, the company sold more than 40m products across over 150 markets under strong brands (Electrolux, AEG, Frigidaire and Eureka). Kitchen appliances (e.g. refrigerators and dishwashers) accounted for 60% of 2012 group sales, followed by laundry (17% - washing machines and tumble-dryers); adjacent product categories (10% - AC equipment, water heaters and heat pumps) and small appliances (8% - vacuum cleaners, small domestic appliances and accessories). Electrolux currently holds the #2 position in the US appliance market with a share of 23% in 2012 (up from 21% in FY12/11) after Whirlpool (43% share). In Europe, Electrolux is ranked #3 with a market share of 16% (up from 15% in FY12/11).
- **Geographic exposure and growth rates** — North America was the largest market, accounting for 31% of FY12/12 group sales, followed by Western Europe (28%); Latin America (21%); Africa, Middle East and Eastern Europe (10%); Australia/New Zealand/ Japan (6%) and South East Asia/ China (4%). Between 2005 and 2012, global demand for core appliances increased significantly in growth markets (EAME, Latin America and Asia), while decreased in core markets (Europe, North America). Electrolux aims to increase its share of sales in growth markets from 35% currently to c.50% by FY12/17.
- **A play on US housing recovery** — Electrolux looks well positioned to benefit from the rebound in US housing markets, which appears increasingly durable. In FY12/12 Electrolux has enjoyed positive LFL sales, but this has been driven mainly by a combination of market share gains, continued replacement demand (c70%-80% of today's appliance market) and a positive price/mix. We are yet to see the effect of US housing recovery on earnings. We estimate 4% volume growth in FY12/13E, which may prove conservative.
- **Market share gains likely in Europe and US** — Whilst we acknowledge still challenging trading conditions in Europe, we expect Electrolux to gain market share in Europe with a major product re-launch (around 80% of products renewed). We believe Electrolux will continue to gain market share in the US through the new Home Depot distribution channel (introduced Electrolux's products in 120 out of 2,000 stores and planned additional roll-outs at 100-150 stores per quarter).
- **Input cost tailwind** — We estimate the cumulative input cost benefit over the next two years could be as high as SKr1.6bn, but we do not reflect this amount in our model (forecasting instead cumulative benefit of SKr600m). The key raw materials for Electrolux are carbon steel and plastics (65% of total input costs). It is worth noting that 90% of steel-related contracts this year were already locked in December 2012 and carbon steel is down a further 8% YTD. Plastics are starting to come off recently (down c2% M/M in May) having reached an all time high in April. If this trend continues, risk to FY12/14E forecasts could lie on the upside.
- **Valuation and investment opinion** — We upgraded Electrolux to Buy from Sell in mid-February this year ([Electrolux \(ELUXb.ST\) - Time to Buy](#)). This reflects our belief that Electrolux is well positioned to benefit from US housing recovery, a raw material tailwind, especially as we look into 2014, and potential earnings accretion via a step-up in M&A activity, plus having potential to gain market share in its key regions and scope for self-help. In the near-term we continue to see downside pressure from Europe, but we believe this is widely acknowledged by the market. On our current FY12/14E forecast (we view FY12/13 a transition year), Electrolux is trading on PER of 11.5x (EV/EBIT of 10.8x, EV/sales of 0.6x vs. our conservative 5% through-cycle EBIT margin assumption (the company is guiding for 6%), a dividend yield of 4%, and a FCF yield of around 8%.

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Philips (PHG.AS)

Softness in consumer markets weighs on consumer lifestyle division

- **Overview of business** — Philips' consumer lifestyle division accounted for 19% of the group's sales in FY12/12 and is further broken into domestic appliances (8.6% of Group sales), health & wellness (6.5%) and personal care (3.8%). Since last year Philips has exited or formed JVs across its consumer electronics business within this division (TV, audio, video, multimedia and accessories, speech processing). The domestic appliances business sells coffee makers, floor care products, garment care products, kitchen appliances, water & air purifiers, and beverage appliances. The health & wellness business provides mother & child care and oral healthcare products. The personal care business sells male grooming and skincare products.
- **Geographic exposure and growth rates** — Nearly half of the division's sales come from the emerging geographies of Asia, Africa, and Latin America. The business grew revenues by 10% in FY12/13 Q1 with EBIT margins of 8.4% and 9.9% ex-charges. Philips has #1 or #2 positions across a host of product categories like oral healthcare and beauty products.
- **Business strategy** — Philips is currently focused on FY12/13 targets set within its "Accelerate!" program. Under this program the division has moved away from a centrally led model to an organization built around its different businesses and markets. The company seeks to expand its footprint via acquisitions in growth geographies (emerging markets like India and China) and adapting its products to according to local needs. Philips acquired Povos in China and Preethi in India in 2011 and is growing its product portfolio in both countries by leveraging these brands. New group targets beyond 2013 are expected in September.
- **FY12/13 outlook** — We forecast organic revenue growth of 6% for the consumer lifestyle division, and an EBITA margin of 12%.
- **Valuation and investment opinion** — We retain our Sell rating. With nearly all sales related to consumer, construction and government spending we continue to see a challenging trading backdrop. Business specific pressures also appear significant. Our target price of €19.80 is based on our sum of the parts (SoTP) valuation. Our key assumptions are healthcare valued at 9x EBITA, lighting at 8x EBITA, health & wellbeing and personal care at 8x, domestic appliances at 5x EBITA, applied to FY12/13 forecasts.

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Arcelik AS (ARCLK.IS)

Strong domestic positioning with regional growth plans

- **Overview of business** — Arçelik is the leading household appliance producer in Turkey (c50% market share) and third largest appliances company in Europe (c10%). Of the sales 70% are in higher margin household appliances, 20% are in electronics, and 10% are in small household appliance and air conditioners. The company differentiates itself from its peers through 1) lower logistics costs in the European market than Asian peers 2) lower unit costs versus Western peers 3) economies of scale through largest plants under one roof.
- **Geographic exposure and growth rates** — The Turkish household appliances market has grown around 5%-6% on average over the last decade while the European market has grown at low single digits. The company's European sales have been growing at double digits as the company has been gaining market share through trading down and increasing popularity of Arçelik brands. The company has been increasing its exposure in Eastern Europe, Russia, and MENA, where sales grew faster than both domestic and European sales. Most recently the company acquired South African Defy to increase sales in the promising sub-Saharan region. Current breakdown is: 45% of revenues are in Turkey, 30% in Western Europe and 25% in CIS, MENA, and other emerging countries.
- **Business strategy** — Arçelik looks generally satisfied with its 50% market share in household appliances in Turkey as the market leader and it has one of the highest margins among global consumer durables peers in the Turkish market. The company in Turkey is also focusing on higher growth but lower margin electronics and air conditioners, which have lower penetration, to support domestic top-line growth. In Europe, the company is mostly focusing on market share gains as price-sensitive consumers are trading down to Arçelik goods. In emerging countries, the company continues to focus on CIS and recently has been benefiting from Turkey's increasing soft influence in MENA, where its share of sales has been increasing consistently. Arçelik also acquired South African Defy with plans to grow in sub-Saharan region. The company is also currently looking at Asia for inorganic growth opportunities.
- **FY12/13 outlook** — We see a mixed 2013 as we expect a slowdown in top-line growth but rebound in margins. Weak European consumer demand coupled with high base in electronics segment due to EURO 2012 and the London Olympics will result in a sluggish top-line growth (11% in 13, 25% in FY12/12). However we are positive on margins on a favorable product and geographical mix (higher share of higher margin domestic household appliance sales). Lower steel prices and TRY devaluation versus the euro will also help the margins in FY12/13 (EBITDA margin, 10.9% in FY12/13, 10.0% in FY12/12) offsetting some of the weak top-line growth in FY12/13.
- **Valuation and investment opinion** — Our valuation is based on a combination of DCF analysis and international peer comparison. In our valuation analysis, we attach limited weight to peer comparison (15% to EV/EBITDA, 15% to PER), as we believe DCF analysis more appropriately takes Arçelik's organic and inorganic growth projections into account. Our free cash flow based DCF valuation of TL13.6 per share uses a WACC of 8.4%-8.6%, beta of 1.03 and terminal growth rate of 2.5% in USD terms. The combination of these metrics suggests a valuation of TL13.6 per share, which we set as our target price.

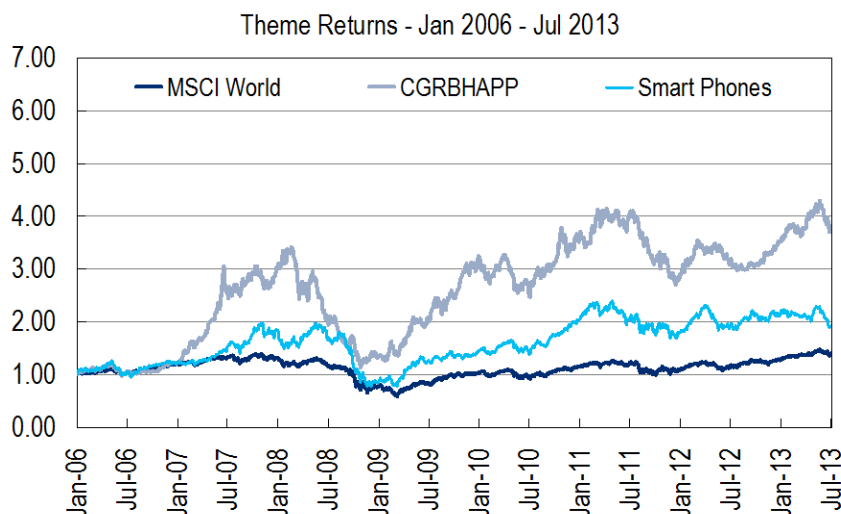
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7. Household appliances theme basket

Our household appliances basket

We have created a global household appliances basket. Details about the basket and performance data can be found under the Bloomberg ticker (CGRBHAPP).

Figure 50. Our household appliances basket versus MSCI world and smartphones



Note: Our household appliances basket (CGRBHAPP) consists of Koninklijke Philips, Panasonic, Gree Electric Appliances, Daikin Industries, LG Electronics, Whirlpool, Electrolux, GD Midea Holding, Arcelik, Haier Electronics Group, Fujitsu General, and Indesit. The smartphone basket consists of Apple, Samsung Electronics, Qualcomm, Hon Hai Precision Industry, Sony, Murata Manufacturing, ARM Holdings, Nokia, HTC Corp, Research In Motion, and Flextronics International. Baskets are calculated in US dollars, price return only (does not include dividends), with equal weightings and fixed as of January 2006. Past performance is not indicative of future results. No transaction costs are assumed.

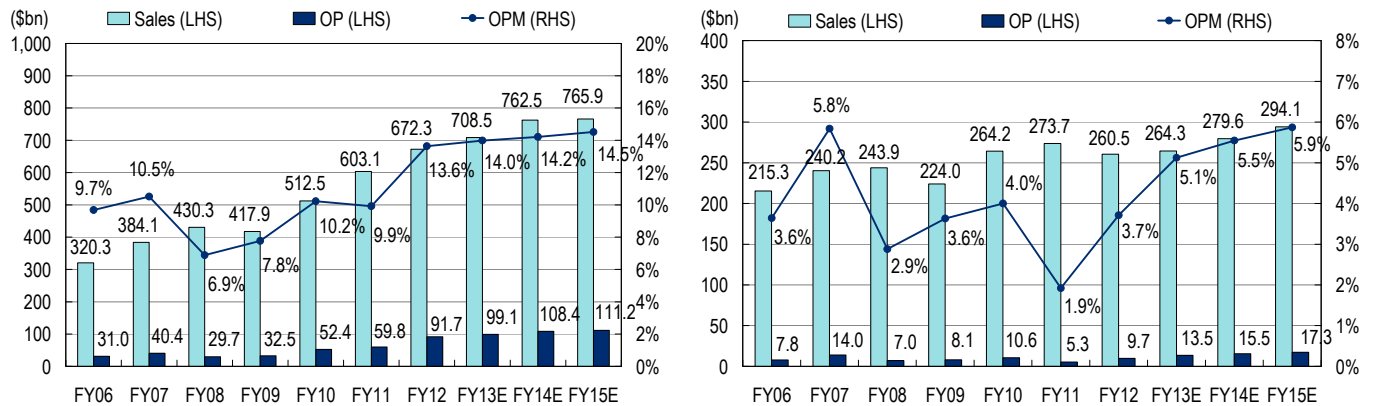
Source: Citi Research.

It is interesting to note the performance of the household appliances basket versus the smartphone basket since 2009 (when smartphones began to take off). While in smartphones there was clear polarization among winners such as Apple, Samsung, and Qualcomm and perceived losers such as Sony (Sony Ericsson), Nokia, HTC, and RIM, there seems to have been no such pronounced polarization in household appliances. In our view this could stem from the fact that companies within the household appliances basket have a diverse product portfolio, with no one company dominating sales in any specific product and/or geography. We do not expect this industry structure to change over the near future.

Based on the below, we estimate¹ that the companies that comprise our household appliances basket will see 40% YoY OP growth in FY13 and a further 14% in FY14, compared with companies comprising the smartphone basket where OP growth is expected to be 8% in FY13 and 9% in FY14.

¹ Our estimates for companies we cover, Bloomberg consensus estimates for companies we do not.

Figure 51. Sales and OP for the smartphone (LHS) and household appliance (RHS) companies that comprise our baskets



Note: We do not cover Gree, GD Midea, Indesit, or Whirlpool, so for forecasts we use Bloomberg consensus numbers.
Source: Company data, Bloomberg, Citi Research.

Appendix A-1

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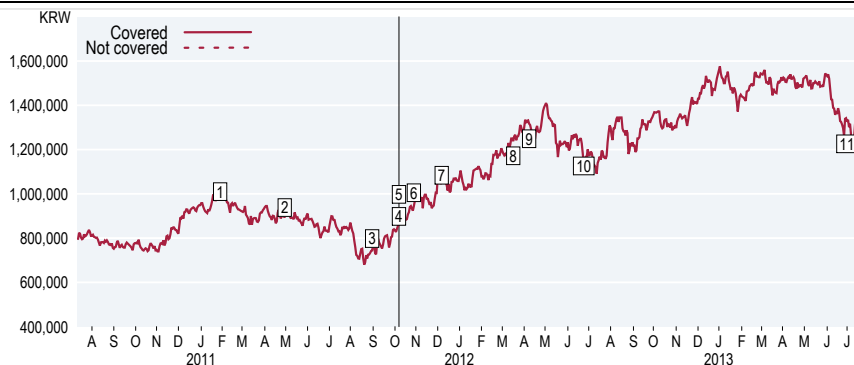
IMPORTANT DISCLOSURES

Samsung Electronics (005930.KS)

Ratings and Target Price History

Fundamental Research

Analyst: Henry H Kim, CFA



Date	Rating	Target Price	Closing Price
1 28-Jan-11	1L	*1,200,000.00	1,010,000.00
2 29-Apr-11	1L	*1,250,000.00	893,000.00
3 31-Aug-11	1L	*1,200,000.00	744,000.00
4 7-Oct-11	Stock rating system changed		

* Indicates change

Date	Rating	Target Price	Closing Price
5 7-Oct-11	*1	1,200,000.00	860,000.00
6 28-Oct-11	1	*1,300,000.00	945,000.00
7 7-Dec-11	1	*1,400,000.00	1,056,000.00
8 16-Mar-12	1	*1,800,000.00	1,238,000.00

Date	Rating	Target Price	Closing Price
9 9-Apr-12	1	*1,900,000.00	1,317,000.00
10 25-Jun-12	1	*1,970,000.00	1,132,000.00
11 1-Jul-13	1	*1,950,000.00	1,326,000.00

Rating/target price changes above reflect Eastern Standard Time

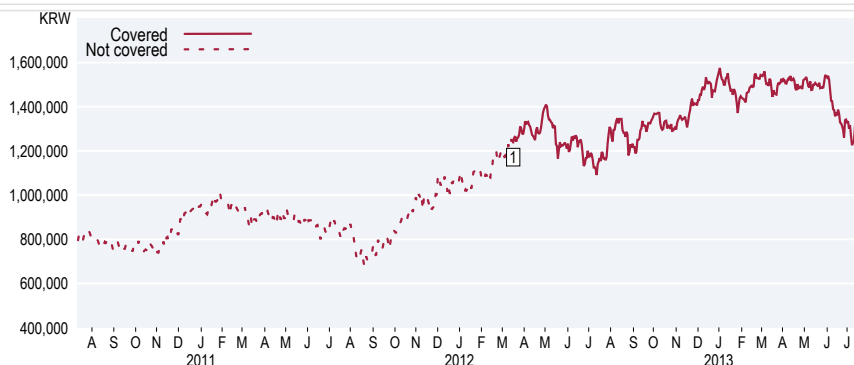
Samsung Electronics (005930.KS)

Ratings and Target Price History

Best Ideas Research

Relative Call (3 Month)

Analyst: Henry H Kim, CFA



Date	Rating	Target Price	Closing Price
1 16-Mar-12	*ADD MP	-	1,238,000.00

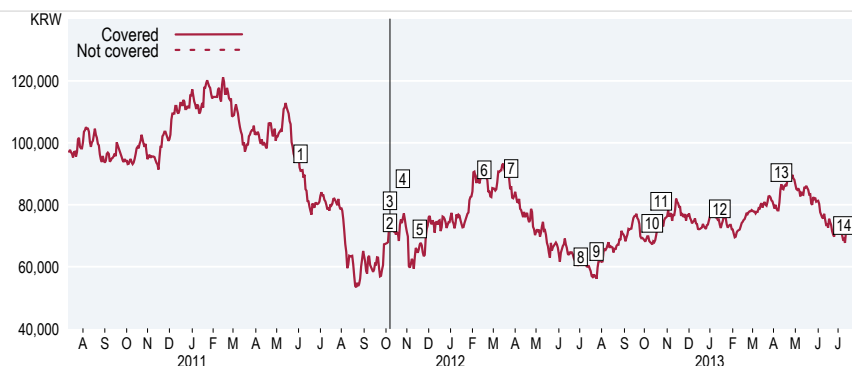
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

LG Electronics (066570.KS)

Ratings and Target Price History Fundamental Research

Analyst: Henry H Kim, CFA



	Date	Rating	Target Price	Closing Price
1	3-Jun-11	1L	*131,931.84	90,984.12
2	7-Oct-11	Stock rating system changed		
3	7-Oct-11	*1	131,931.84	72,318.20
4	26-Oct-11	1	*112,386.39	75,738.66
5	18-Nov-11	1	*112,000.00	67,200.00

* Indicates change

	Date	Rating	Target Price	Closing Price
6	17-Feb-12	1	*107,000.00	91,300.00
7	27-Mar-12	1	*105,000.00	86,000.00
8	3-Jul-12	1	*93,000.00	63,200.00
9	25-Jul-12	1	*68,000.00	56,100.00
10	11-Oct-12	*2	*70,000.00	67,200.00

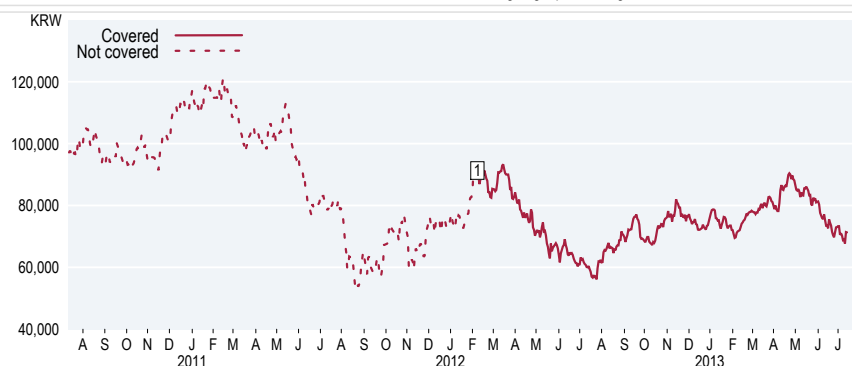
	Date	Rating	Target Price	Closing Price
11	24-Oct-12	2	*75,000.00	74,000.00
12	15-Jan-13	2	*77,000.00	73,500.00
13	11-Apr-13	2	*89,000.00	86,600.00
14	9-Jul-13	2	*78,000.00	69,000.00

Rating/target price changes above reflect Eastern Standard Time

LG Electronics (066570.KS)

Ratings and Target Price History Best Ideas Research Relative Call (3 Month)

Analyst: Henry H Kim, CFA



	Date	Rating	Target Price	Closing Price
1	8-Feb-12	*ADD LP	-	89,100.00

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

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Data current as of 30 Jun 2013

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