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Emerging Market Spotlight

South Korea & Taiwan Electronics: Race to the Top

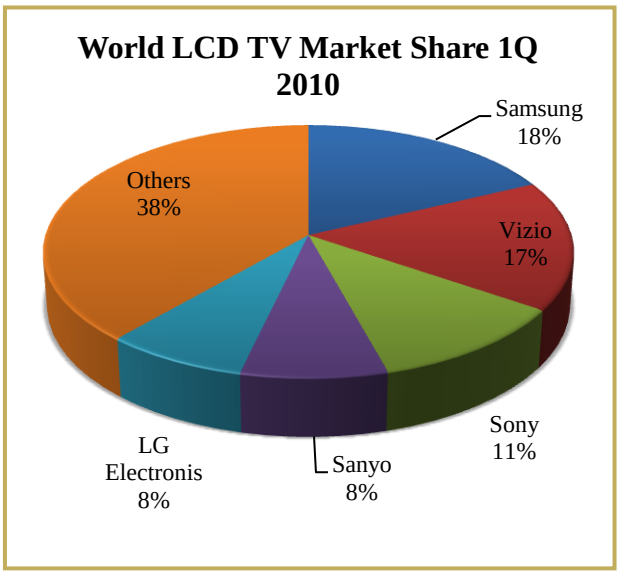
March 2011

Perhaps it was the result of America's technology investments in emerging Asia in the 1960's. Or it was the case of enthusiastic governments determined to use technology to boost their economies. It might even have had something to do with their studious Japanese neighbors. Whatever the reason, the East Asian nations of South Korea and Taiwan have transformed themselves from being the manufacturing backyards of the U.S. and Japan into high-tech giants in just over a generation. Their expertise in the field of electronics is impressive and all-encompassing. From manufacturing the highly-commoditized chips that go into

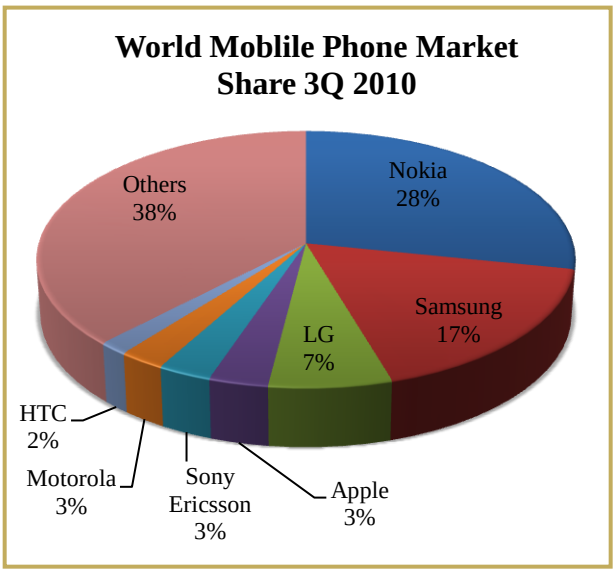
Fast Facts

- South Korean firms are market leaders in consumer electronics products such as TVs, mobile phones and other household electronic devices.
- Taiwan is the home to the world's largest contract manufacturing firms, accounting for 65% of the world's Electronics Manufacturing Services business.
- In 2010, South Korea's Samsung Electronics raced past HP to become the world' largest technology firm. With revenues of around $120 billion, Samsung Electronics accounts for 8% of South Korea's GDP.
- A number of Taiwanese firms, such as MediaTek, HTC and Foxconn Holdings, all saw their revenues more than double over the last three to five years.
- Despite a stellar year in 2010, Lee Kun-Hee, Samsung's boss commented, "Even the top companies of the world are collapsing. In ten years time most of Samsung's products will be obsolete. We must begin fresh now for the future."

electronic devices to producing smartphones, South Korean and Taiwanese firms have successfully challenged the likes of Sony and Panasonic across major markets. These new firms have even dislodged the Japanese giants as the market leader in products such as TVs and mobile phones.

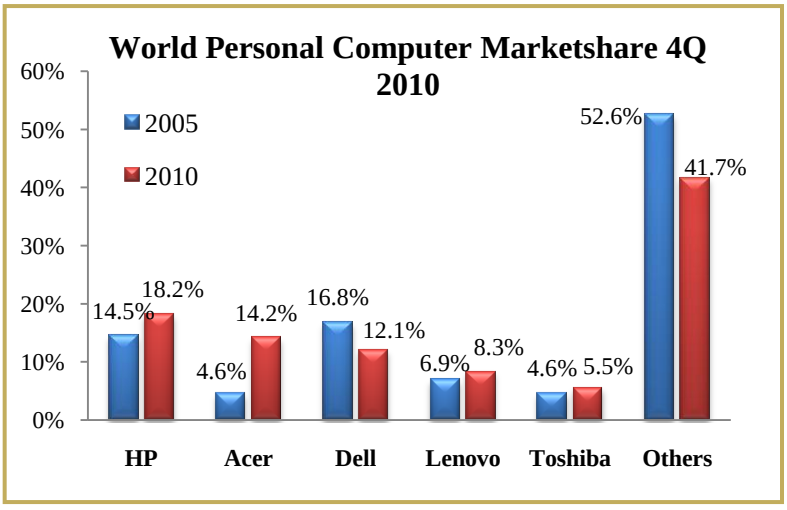


Source: DisplaySearch



Source: Gartnerr Research

Today, South Korea's Samsung and LG are the world's largest and fifth-largest producer of LCD TVs, respectively. Their rise is threatening Finland-based Nokia, which was for long the dominant force in the mobile phone market. Combined, Samsung and LG account for one in every four LCD TVs and mobile phones manufactured in the world. Acer, a Taiwanese firm, recently raced past Dell to become the second-largest personal computer maker. What's more? Some of the recent events in Asia have brought into the limelight the real power of South Korean and Taiwanese electronics. In March 2011, when Japan was hit by an earthquake and a tsunami, electronics giants across the world were initially worried about their supply of memory chips and semiconductors. However, they quickly found a partner in South Korean chip firms that have promised to work overtime and alleviate their supply concerns. Such were their technological capabilities, that these Korean and Taiwanese firms stood ready to fill the shoes of Japanese

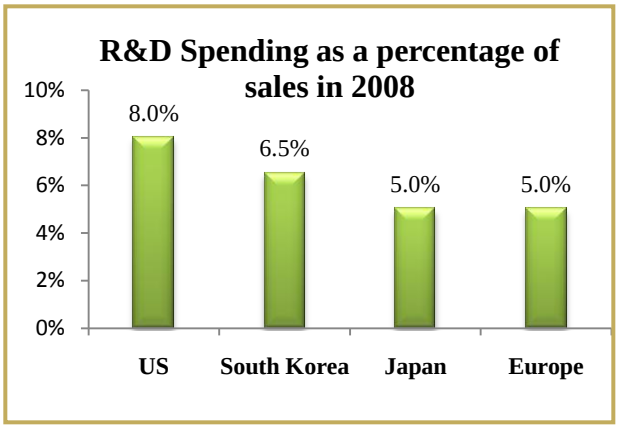


Source: Gartnerr Research

giants at a moment's notice. In fact, Korean and Taiwanese companies could use Japan's adversity into a permanent advantage. Many Japanese export giants will rightfully be concerned that what has started as temporary partnerships between Western consumer brands and Korean electronic suppliers could actually turn into long-term ones. Given the history of the growth of Korean and Taiwanese firms, Japanese might be justified in their worries.

South Korea and Taiwan share certain similarities in their journey from being the colonies of Japan in the mid-twentieth century to technology giants. Firstly, both nations capitalized on the sound education system that Japan had initiated and made conscious decisions to excel in the fields of science and technology. Further, after the Second World War both were mistrustful of their common neighbor, communist China, and moved closer to the US. With the help of the U.S., both the countries attracted the necessary capital and technology to initiate growth. The two nations also had abundant supply of cheap labor in the mid-twentieth century.

Using these resources, the two countries made themselves an export base for companies in the developed nations. Gradually, they ramped up their research and development spending (R&D) and started accumulating technology. (South Korea's R&D expenditure in recent years as a percentage of sales has exceeded that of Europe and Japan). After having accumulated adequate technology and the confidence to build their products, they eventually mastered the art of marketing their products to many international markets. Nonetheless, despite these similarities, Taiwan and South Korea chartered a different course for their private enterprises that explains their standing in the world of electronics.



Source: OECD Patent Statistics

South Korea and Taiwan – Different paths, same goal

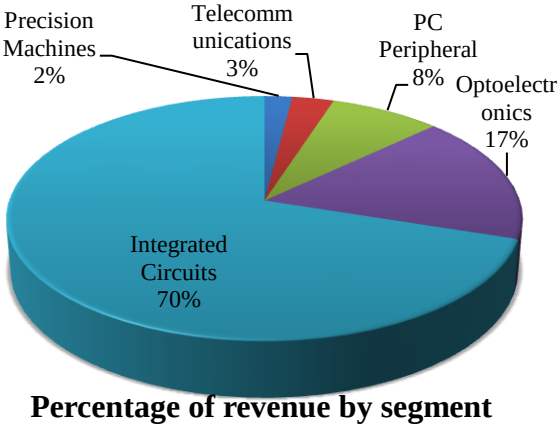
When South Korea set out industrializing its economy soon after the Korean War in the 1950's, it followed a unique Chaebol model – handpicking a few small companies and turning them into giant conglomerates. These Chaebols were free to enter any sector of the economy and the government would implicitly back them by setting up the necessary infrastructure and providing them subsidized credit. This led to the development of few large conglomerates, which during their heights in the early 90's, accounted for 30% of Korea's GDP and devoured 80% of the country's credit. The Chaebol structure came to dominate the electronics industry of Korea at a very early stage during the 1970's. This resulted in an electronics industry dominated by the same conglomerates that also had significant interests in varied industries such as automobile, ship-building, and construction, among others.

In Taiwan, as well, politics played a role in the formation of the electronics industry. Towards the 1940s, the Kuomintang Party, originally a party from mainland China, occupied Taiwan after losing control over the mainland to the Communists. In fact, the Kuomintang Party, which was mostly composed of officials from mainland China, ruled Taiwan through martial law, which lasted until the 1980s. During this time, engineering and technology was viewed as one of the most apolitical and safest things to do, attracting a number of Taiwanese to take up the field.

Consequently, the industrious Taiwanese entrepreneurs started their businesses with a small capital base and a conservative approach. In effect, Taiwan's electronics industry as we know today was shaped by small businesses that were once engaged in the production of devices such as calculators and telephones. These small businesses grew primarily by making the most of the country's skilled labor and generous R&D grants and infrastructure.

Collaboration with Japan and the U.S.

During the 1960's both South Korea and Taiwan depended on Japan and the U.S. for technology. In an attempt to acquire new technology for its chaebols, South Korea marketed its cheap labor to electronic firms abroad with a catch: foreign firms could use the country's cheap labor, but had to setup a joint venture with a local chaebol to run the factories. This led to Japan's Matsushita Electric and Sony joining hands with local players to setup export-oriented facilities in Korea.



Percentage of revenue by segment at Hsinchu Sciene Park 2010

Source: Hsinchu IT Park

For the South Korean players, these ventures opened up a new world of much-needed technology. Consequently, local players gradually acquired the technical expertise required to produce consumer electronics goods on their own.

This even led to a paradoxical situation in the late 1960's – South Korean firms such as Samsung Electronics, Goldstar Co. Ltd (now a part of LG Corp, then known as Lucky and Goldstar) and Taihan Electric Co. were producing color television sets for export even though South Korea had no color broadcasting services.

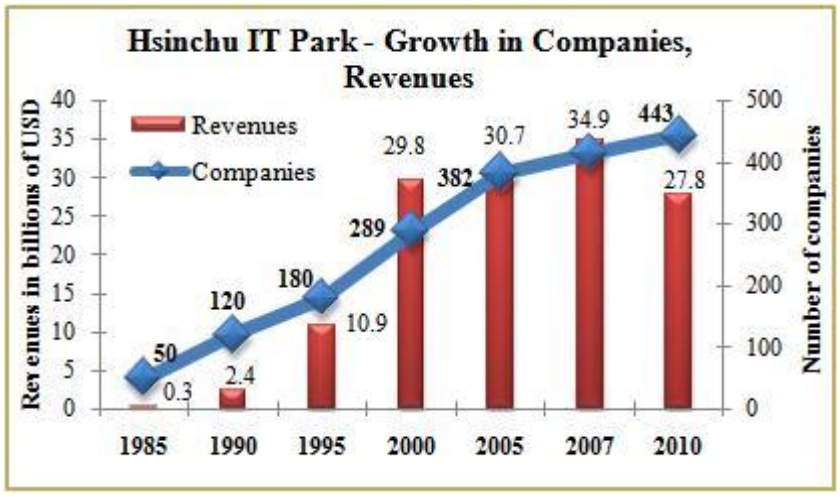
However, in a move favoring home-grown firms, South Korea's government began restricting further foreign investments towards the early 1970's. With little scope for expansion, Japanese partners were forced to pull out of Korea in the late 70's eventually paving the way for a Korean oligopoly in the electronics industry. As a result, Korean firms enjoyed the domestic market for themselves and achieved the scale to build consumer electronics products profitably. Small players that tried to challenge the chaebols floundered due to lack of credit and technology. This partly explains the dominance of behemoths such as Samsung and LG in the Korean market.

Meanwhile in Taiwan, the situation was quite different. Japanese firms such as Matsushita and Sanyo and U.S. firms such as Zenith and Texas Instruments set up shop to make use of the country's skilled labor. Taking advantage of Taiwan's cost and labor advantages they developed the country as a strong export base. Most U.S. firms also cultivated a strong supplier base that went on to excel in cutting-edge manufacturing technology.

For its part, the Taiwanese government setup the Hsinchu Science and Industrial (HIS) park in the early 80's and gave these manufacturers tax holidays and subsidized infrastructure. A number of prominent assemblers and original design manufacturers (ODMs) of today had their birth in the HIS during the 1980's.

Ultimately though, Japanese and the U.S. firms had to leave Taiwan, as labor became progressively expensive and the Taiwanese dollar appreciated. Nevertheless, by the time foreign firms exited Taiwan, the country had a sprawling campus with a number of electronic firms that specialized in the design and manufacturing of electronics. Later, these firms became instrumental in driving the electronics industry of Taiwan.

HIS, which had around 50 companies when it was started in the 80's, is currently the home to 450 companies that generate revenues of around $30 billion a year. The 14 square km park alone accounts for approximately 8.62% of Taiwan's manufacturing segment and contributes to around 3% of total GDP.



Source: Hsinchu IT Park

Almost all of Taiwan's prominent tech stalwarts, such as Acer, BenQ, Logitech, Foxconn, Kingston, and Taiwan Semiconductor Manufacturing Company (TSMC), have their largest production facility in the HIS. In recent years, HIS has expanded beyond computer and peripheral makers to include more sophisticated fields such as optoelectronics and biotechnology.

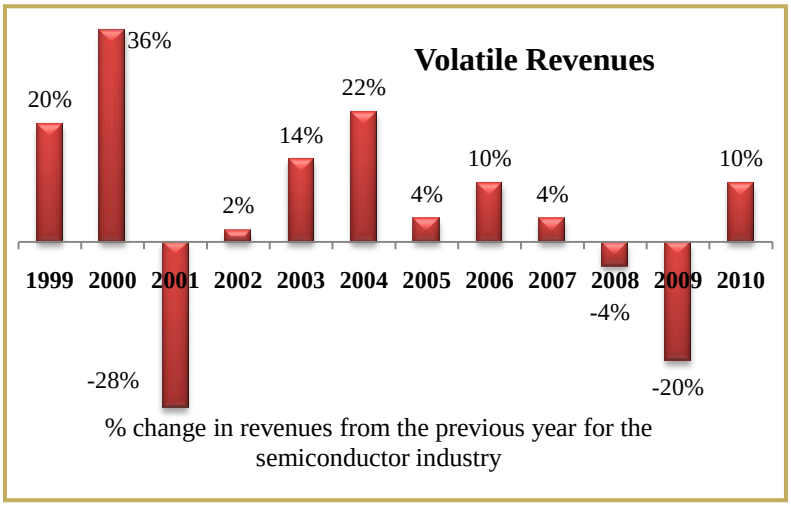
The rise of computers and its offshoots

To understand the development of Korean and Taiwanese brands one needs to rewind the clock by a few decades. The 1970's were the time when Japanese electronics giants were ruling the roost. Innovations such as Sony's Walkman and JVC's portable video recorders captured the imagination of millions of consumers the world over. Sales and profits at Japanese giants grew by leaps and bounds and they emerged as undisputed leaders of electronics, dislodging the U.S.

and European brands from their top slots. For a time, Japanese companies such as Sharp, Sanyo, Matsushita and Sony looked unstoppable.

However, the world was on the verge of another spectacular revolution as the 80's bloomed: the growth of personal computing. As the personal computer industry boomed, it created unprecedented demand for chips and processors of the semiconductor industry.

It was the semiconductor industry that really caught the eyes of South Korean giants like Samsung and LG, which until then were catering to the domestic demand for consumer electronics. Taiwanese firms that excelled in manufacturing hardware also jumped into the fray. The result was a red-hot semiconductor industry whose competitive landscape was defined by companies from the U.S., Japan, Korea and Taiwan.



Source: isuppli

With the help of respective governments, South Korean and Taiwanese firms started establishing semiconductor manufacturing and research facilities. Samsung and LG started expanding their foundries, while Taiwan setup companies such as United Microelectronics Corporation (UMC) and TSMC.

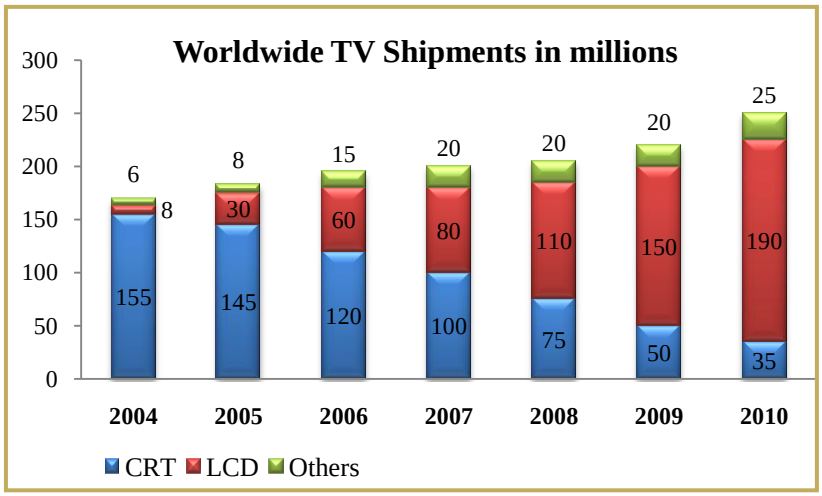
However, the semiconductor industry was not quite the gold mine anticipated. Much to their disappointment, firms that rushed into the industry found that the semiconductor industry, for all its prestige, was notoriously fickle. There were little profits to be made in the industry primarily due to cut-throat competition and due to the fact that chips became outdated at a rapid pace.

Moreover, the investments needed to manufacture new chips hardly justified the profits made. As a result, firms in the industry found themselves making blockbuster earnings in one year only to bleed in the next. But Korean and Taiwanese firms overcame this problem mainly by successfully lobbying the government.

Consequently, Korean firms that were already manufacturing TVs and radios now packed their wares with homemade semiconductors. They also specialized in producing memory chips that were in great demand due to the PC boom. Taiwanese firms, which were largely assemblers of consumer electronics products, also started offering semiconductors. Customers of Taiwanese firms, who were more than happy to focus on core operations such as branding and designing products, readily bought semiconductors from Taiwan assemblers.

The increasing diversity of work that South Korea and Taiwan offered to western brands enabled them to expand their technology. Empowered with incremental technical capability, firms from Korea and Taiwan eventually grew to challenge their clients in launching new products and branding them. Some of these brands, such as Samsung and HTC, went onto become well-known household brands, while others such as BenQ were not so successful. Nonetheless, their combined power in the consumer electronics arena is more dominant than ever and could increase given their emphasis on research and innovation.

Television market: The battle to dominate the living room



Source: DisplaySearch

Television is one of the most hotly-contested markets among consumer electronics giants. According to DisplaySearch, the number of TV shipments in 2010 grew 17% to 247 million. Of the total TV market, LCD TV shipments account for 190 million, almost 77% of the total market.

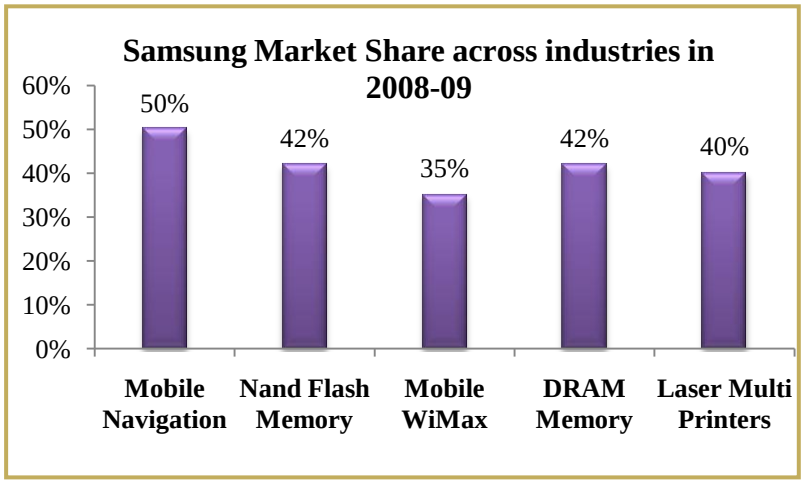
Currently, Samsung has built a commanding lead in the LCD TV market. It accounts for almost a fifth of the LCD TV market – ahead of U.S. manufacturers such as Vizio, and the once-mighty Sony and Panasonic of Japan. Samsung's home-grown rival LG is the fifth largest manufacturer of LCD TV.

Samsung has come a long way from being perceived as a stodgy manufacturer of TVs in the 90's to one of the most sought-after brands. The South Korean giant built this lead primarily due to the pricing advantage that it derived from building economies of scale, and a relentless focus on research, and branding and marketing.

Thanks to an ever-rising marketing budget and emphasis on quality, Samsung's brand image since 2005 has matched that of Sony, according to Interbrand, a brand consultancy.

Moreover, Samsung's status as a vertically-integrated TV maker (it manufactures semiconductors and builds LED and LCD panels for TVs) has also made the company an important link in the TV supply chain. Even Sony outsources a substantial portion of the parts used in its TVs to Samsung.

But TV making is certainly not the most profitable of businesses. Despite being tech-heavy, the conventional TV manufacturing industry is characterized by a large number of players with minimal product differentiation. Not surprisingly, even for a giant like Samsung, operating margins are minuscule. To overcome this, Samsung is venturing into manufacturing of 3D and internet-enabled TVs in the U.S. and other advanced economies. However, with increasing consumption in emerging markets such as China and India, profits in the industry will still be decided by volume and market penetration.



Source: Isuppli,IDC

Devising a Smart phone strategy

The market for mobile phones is comprised of two significant segments. First, the bare-bones, ultra-cheap mobile phones that offer very little margins for phone manufacturers. These inexpensive devices come with basic voice telephony and text messaging services. The second and the technologically advanced types of phones, widely referred as smartphones, pack in a variety of technology, ranging from internet to video-calling. Both segments of the market are ultra-competitive, although the smartphone segment offers slightly better margins. While South Korean firms have an established presence in this market, Taiwanese firms are some of the most fast-growing. Samsung, in particular, is closing the gap with industry leader Nokia, which is currently struggling in the smart phone market. The failure of Japanese consumer electronics firms to commercialize smart phones outside of their domestic market during the early stages of the smartphone boom has also worked to the advantage of Korean and Taiwanese mobile phone makers.

On the other hand, Taiwanese firms entered the mobile phone market relatively late. The current crop of Taiwan's mobile manufacturers started out as original design manufacturers (ODM) that designed and manufactured hardware for western brands such as Motorola and Compaq. However, with the entry of Chinese ODMs, competition for Taiwanese contract manufacturers has only grown. In order to get out of the contract-manufacturing business with razor-thin margins, Taiwanese ODMs have started manufacturing and branding their own mobile phones. This, however, is a huge gamble for Taiwanese mobile makers. Their expensive and risky product development and branding exercises has been being financed through steady cash flows from contract manufacturing business. Taiwanese firms usually spin-off their branding divisions to separate them from their core contract-manufacturing business. For instance, Acer spun-off

BenQ in the early 2000s precisely for the same reason. HTC (formerly High-Tech Computer), which was involved in the design and manufacturing of mobile phones for Microsoft and Google, has also transformed itself into a mobile phone brand in recent years.

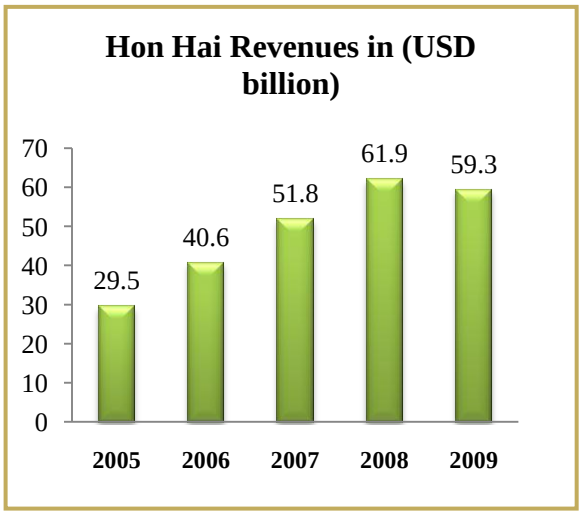
Leading Taiwanese Electronics Firms				
Firm	**Products**	**Market Capitalization (in $ Billions)**	**Key Customers**	**Stock Listing**
Quanta Computers	Notebook computers, Digital TVs, GPS Panels, Automobile Electronics	7.3	Apple, Compaq, Dell, HP, Siemens AG, Sun Microsystems, Sony, Sharp, Toshiba	Taiwan
Compal Computers	Notebook computers, Monitors, Digital Media equipment, LCD TV Equipment	5.6	Acer, Dell, Toshiba, HP, Fujitsu, Siemens	Taiwan
Foxconn International Holdings (Hon Hai Precision)	Mobile phones, Tablet PCs, Game consoles, LCD Panels	37.7	Apple, Amazon.com, Intel, Cisco, HP, Dell, Nintendo, Nokia, Microsoft, Sony, Sony Ericsson	Taiwan, Hong Kong
Wistron	Notebook PCs, Desktop PCs, Servers, Storage, LCD TVs, Mobile Devices	3.5	Acer	Taiwan
MediaTek	Mobile phone chipsets, Wireless communciation equipment, Optical storage, DVD players, Analog devices,	13.0		Taiwan
Taiwan Semiconductor Manufacturing Company	Dedicated semiconductor foundry, Integrated chips, Wafers, Solar cell equipment	63.5	AMD, Qualcomm, Altera, Broadcom, NVIDIA, Texas Instruments	Taiwan, US
United Microelectronics	Wafers, Semiconductors, Sensors and Integrated chips	7.2	Sony, Agilent Technologies, Infineon, MediaTek, Texas Instruments	Taiwan
HTC	Mobile phones	26.9		Taiwan, US
AU Optronics	TFT-LCD Panels	8.1	Samsung, LG, Dell, Apple, Viewsonic	Taiwan
Market capitalization data based on full capitalization as on February 16, 2011				

Branding by Taiwan's mobile phone makers, however, is replete with pitfalls. It puts them in direct competition with their own customers. When BenQ started marketing its mobile devices, the firm's biggest customers, Motorola and Nokia, shifted orders to other contract manufacturers. Losing a customer is only a part of the problem for Taiwanese brands. Relatively new to branding, Taiwanese firms have a long way to go before mastering the game itself. The eventual

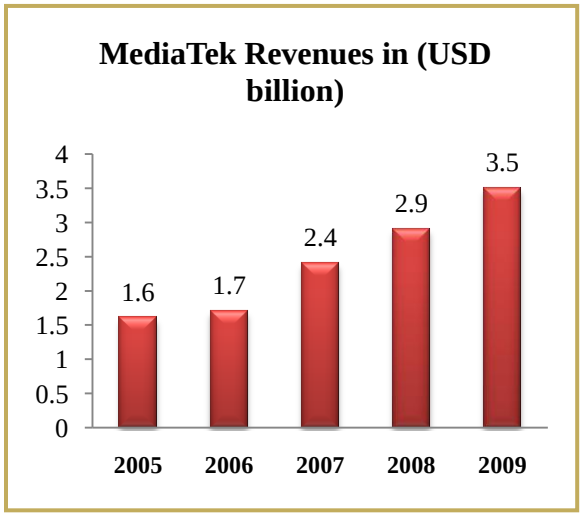
failure of BenQ to make it big in the mobile phone world is just an example. For all its growth, even HTC has been unable to generate the type of religious following that Apple enjoys for its products.

Still, Taiwan's contract manufacturers that managed to stick to their core operations seem to be growing at a rapid pace. Taiwan's Foxconn (subsidiary of Hon Hai Precision) is a case in point. The company, which started as a component supplier for the PC industry in the 70's, now employs around 920,000 personnel and has emerged as the world's largest electronic manufacturing services (EMS) company, controlling almost half the world's market share. An EMS company does not provide design services for its customers, but provides the manufacturing and assembly for consumer-electronics giants. (Foxconn assembles gadgets such as Apple's Ipad).

Over the past two years, revenue at Foxconn has doubled, primarily due to heady growth at its largest customer Apple. Further, the Taiwanese firm has grown strategically at the expense of many of its rivals. Foxconn employs around 50,000 toolmakers and 2,000 workers, who design and fabricate molds and dies. Ordinarily, none of the EMS firms would possess such capabilities as they procure most of the parts required to assemble a gadget. By also manufacturing the peripheral devices in-house, Foxconn is more value-added than any other competitor in the EMS industry. This has helped the firm race past a number of other Taiwanese EMS companies such Compal, Qantas, and Wistron Corp. in just a decade. Flextronics of Singapore, the second largest EMS firm, only generates a third of Foxconn's revenues.



Source: Bloomberg



Source: Bloomberg

Taiwanese firms have also scored well on the technology used to produce low-end mobile phones. The Taiwanese firm MediaTek is a case in point. Until 2004, the firm was engaged in just the production of chips used in CD-ROMs and DVD players. However, the firm moved up the value chain by bundling chips with the necessary software to manufacture mobile phones. MediaTek's technology revolutionized mobile phone technology overnight – it brought down the

number of engineers and capital required to produce a mobile phone by a tenth. This caused a huge disruption in the businesses of established mobile phone makers such as Nokia and Samsung, as emerging markets saw an explosion of new mobile manufacturers. MediaTek's revenue doubled in a matter of three years to around $3.5 billion.

Proud to be the foundries of the world

South Korea and Taiwan hardly hide their ambition to dominate the world's semiconductor industry. After all, this was the industry that raised their profile in the high-tech world. Both countries still have their semiconductor facilities at the center of their strategy to dominate the world of electronics. For instance, although Samsung's Galaxy competes with Apple's Iphone directly, Samsung is the single-largest supplier of semiconductor hardware for an Iphone. It supplies $76 worth of semiconductor and related hardware in an 8GB Iphone, which is made at a total cost of $255.

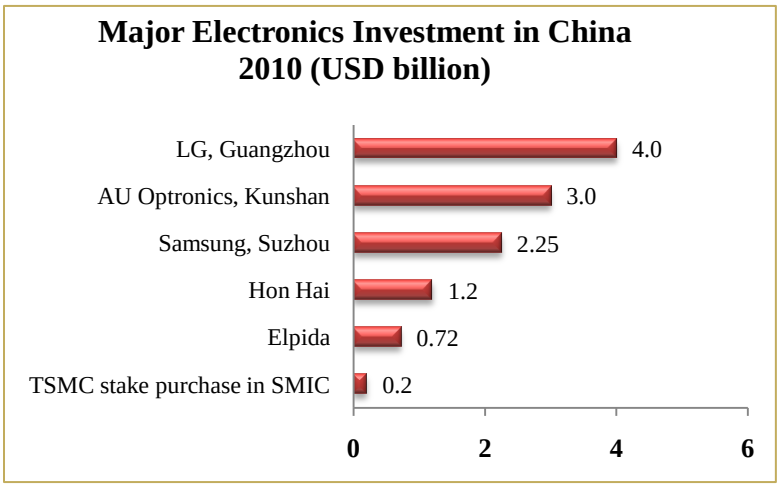
As mentioned earlier, manufacturing semiconductors is one of the most capital-intensive industries. It requires huge upfront investments – usually running up to billions of dollars– to build foundries, where integrated chips (IC) are fabricated. These ICs also have a tendency to get outdated almost every year, requiring constant investments in foundries. Consequently, the foundries are increasingly being shunned by chip designing and microprocessor firms in the U.S. and Europe.

This has given rise to the trend of going "fab-less" in the semiconductor world. Firms in the U.S. and Europe are going fab-less, a situation where microprocessor companies are giving up owning foundries needed to produce semiconductors and are instead settling to focus on the core business of designing chips. The West's downsizing is certainly an opportunity for the Asian tigers. Taiwan has already made the semiconductor industry akin to the contract manufacturing industry. With the exception of Intel, large microprocessor firms now design their chips and outsource them to be manufactured in one of the foundries in Taiwan.

Korean firms in the semiconductor industry have gone a step ahead by trying to build brands. Apart from Samsung, which is the world's largest memory-chip maker, Hynix semiconductors, a homegrown competitor of Samsung is growing at a scorching pace. During 2010, the company ramped up its market share by 0.8 percentage points to 3.5% from 2.7% in 2009. HP, the world's largest hardware firm, has even chosen Hynix Semicoundutors as its partner in its effort to commercialize the production of memristor, a new type of electronic resistor. The memristor is expected to be ready for commercial production, and when used, could potentially challenge flash technology in mobile hand devices and tablet computers. Furthermore, firms such as Advanced Semiconductor Engineering, a chip-maker, switched some of its orders to Korean suppliers from Japanese firms to counter the supply disruptions that it faced from the earthquake in Japan.

China: The double-edged sword

Although climbing the value-chain of the electronics industry did wonders for Korea and Taiwan, it has also had some unintended consequences. First, is the dwindling of cheap labor. As both countries spend more time in R&D labs, the cost of operating their manufacturing floors has gotten expensive due to rising labor costs.



This has forced the two dragons to look for countries with cheap labor, especially in the neighborhood. Consequently, Vietnam, China, and India – economies with relatively cheap labor – have now become the recipient of foreign direct investment (FDI) from the electronic majors. China has emerged as a favorite for electronics FDI, not just because the country provides excellent infrastructure but also because of the huge domestic demand for electronics goods. In 2010, China is estimated to have surpassed the U.S. as the largest market for LCD TVs, according to Shinhan Investment Corp, a Korean investment firm. Nonetheless, Taiwanese and Korean firms are finding that doing business in China is not going to be easy, at least in the near future. Their biggest challenge in China is the lack of well-developed patent rights. More often than not, Taiwanese and Korean companies complain that their technology gets stolen by rogue firms within China. As a result, investment in research and development is severely hampered in the Chinese mainland and this affects innovation.

The tensions between China and Taiwan over technology is perhaps best explained by an industry none other than semiconductor manufacturing. For a long time, Taiwan's TSMC, which currently has an 8% stake in China's Semiconductor Manufacturing International Corporation (SMIC), accused SMIC of improperly acquiring its trade secrets. Situations such as these even accentuate some of the mistrust that persists between China and its trading partners. In fact, at some level, the Taiwanese government regulates the amount and nature of investment made by its private companies in China for fear of losing its hard-earned technology to the host country.

Old foes guard what is left

Even as South Korean and Taiwanese firms battle the up and coming Chinese setups for dominance in the electronics industry, they continue to be troubled by some of the well-healed Japanese competitors. The market for digital cameras and game consoles are still dominated by Japanese firms. In the market for opto-electronics, products such as cameras and lenses, the Japanese are still ahead. Of the five largest camera makers, four are Japanese and Samsung is the

lone South Korean firm. Japanese camera manufacturers account for nearly 65% of the market for cameras. A number of factors account for their huge lead over South Korean and Taiwanese firms.

Almost all Japanese camera manufacturers are of the stand-alone type (they predominantly manufacture cameras and little else). They are aided by a strong network of small and medium-sized suppliers that vigorously guard their technology. Consequently, the cutting-edge technology rarely crosses the shores of Japan. On the other hand, Samsung, being a conglomerate, manufactures most of its components in-house and has yet to challenge the superior Japanese way of manufacturing cameras. In the market of gaming consoles too, the Japanese have proved adept in combing hardware and software.Japanese component makers, mostly small and medium-sized ones specializing in electronic components, also deserve a special mention.

A large number of such firms that manufacture less fancy but integral products such as capacitors, phosphorescent materials, and carbon brushes among others, are virtually unchallenged by South Korean and Taiwanese firms. Famously known as *Chuken Kigyo* (strong and medium-sized), these inward-looking firms have thrived even as giant Japanese firms tumbled. With a promise of life-long employment to its workers and continuous innovation, these firms have built cutting-edge technology over a period of decades. Consequently, their products command a premium in the electronic supply chain. For instance, capacitor maker Murata is estimated to make 50% operating margins. Japanese firms, such as Shin-Etsu, Covalent, Kyocera, and Nidec, all are market leaders in many of the core products they manufacture.

The resilience of Chuken Kigyo gives an insight into some of the challenges that South Korean and Taiwanese suppliers will face in the future. Although they will continue to rule some parts of the electronic supply chain, complete dominance by Samsung and the like looks unlikely. Although the technological prowess that South Korea and Taiwan had built over the years will give them a substantial lead, the lead could diminish due to the proliferation of technology.

Moreover, with technology products increasingly being commoditized, the margins in such products will surely come down. For example, when Apple introduced the world's first tablet computer in 2010, the product sold like hot cakes and Apple made margins of close to 50%. Enter 2011, and there were 28 established companies trying to woo customers with their tablets. With such cut-throat competition, the companies in the industry will find it difficult to earn handsome margins on their products consistently.

And that is true for the South Korean and Taiwanese firms as well. Perhaps no one knows this fact more clearly than the Koreans themselves. Just after completing a stellar year with record sales and profits, Lee Kun-Hee, Samsung's boss commented, "Top companies of the world are collapsing. In ten years time most of Samsung's products will be obsolete. No one knows what will happen to us. We must begin fresh now for the future".

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