

Analysis and Recommendations on the  
Development of Vietnam's Electronics Cluster

Harvard Business School  
Microeconomics of Competitiveness (MOC)

Professor Michael Porter  
Professor Christian Ketels

May 2008

Najim Dost \*  
Jaime Frias \*  
Irene Liu \*\*  
Ziang Tony Ngo \*\*  
Markus Taussig \*\*

\* John F. Kennedy School of Government  
\*\* Harvard Business School

TABLE OF CONTENTS

<b>I. EXECUTIVE SUMMARY.....</b>	<b>3</b>
<b>II. VIETNAM COUNTRY ANALYSIS.....</b>	<b>4</b>
HISTORY AND BACKGROUND: FROM REVOLUTION TO EMBRACE OF GLOBALIZATION.....	4
MAIN ISSUES ARISING FROM COUNTRY DIAMOND ANALYSIS .....	7
<b>III. VIETNAM ELECTRONICS CLUSTER ANALYSIS .....</b>	<b>20</b>
HISTORY AND BACKGROUND .....	20
MAIN ISSUES ARISING FROM CLUSTER DIAMOND ANALYSIS.....	24
<b>IV. RECOMMENDATIONS.....</b>	<b>29</b>
OVERVIEW OF APPROACH.....	29
SUMMARY OF CONSTRAINTS AND IMPLIED RECOMMENDATIONS .....	30
RECOMMENDATION DETAILS.....	31
<b>V. APPENDIX.....</b>	<b>34</b>
<b>VI. BIBLIOGRAPHY .....</b>	<b>38</b>

## **I. Executive Summary**

Vietnam has achieved numerous remarkable milestones over the past two decades. In that time, the Vietnamese government and private sector players have laid the groundwork for Vietnam to become globally competitive through liberalization, market reforms and structural adjustment of the economy. With GDP per capita (adjusted for purchasing power parity) of only US\$4,356 (Economist 2008), Vietnam remains one of the world's poorest economies. However, the country has achieved some of the world's highest rates of growth in both output and productivity, driven in large part by the ability to draw foreign capital. Vietnam has proven that the country can compete successfully as a factor-driven economy, but going forward, Vietnam's leadership faces the daunting task of navigating the country's transition to a productivity-driven economy in the medium term and innovation-driven in the long term.

However, numerous impediments threaten Vietnam's ability to sustain its competitiveness and continued prosperity growth. Vietnam's education system remains oriented towards labor-intensive industry and does not equip the country's student population with the skills for management or knowledge-intensive industries. Creaking infrastructure and discriminating policy incentives impede interaction between export-oriented and domestic-oriented enterprises. Largely as a result of the problems mentioned above, Vietnam has been unable to develop a robust domestic network of related and supporting industries, particularly in clusters where domestic players require value-added labor.

Without solving some of these structural competitiveness issues, Vietnam is at risk of losing out to other countries as its factor-cost based advantages are eroded over time. The "China + 1" strategy being pursued by many multinational corporations (MNCs) provides benefits that currently accrue to Vietnam because of its relative political stability and cost advantages over its regional peers. However, if the motivations of MNCs merely reflect a diversification of political risk away from China and arbitrage of currently low wages in Vietnam, then Vietnam's current

boom may not prove defensible in the long term. Therefore, it is a critical priority for Vietnam's political and business leadership to promote sustainable productivity growth of the country's clusters.

Therefore, our team provides recommendations on further significant structural adjustments for the country and cluster members to realize Vietnam's true potential based on two guiding principles, (i) leveling the playing field, and (ii) maximizing spillovers. At its heart, this paper seeks to evaluate the competitiveness of Vietnam at the country-level and of Vietnam's electronics cluster as a case study at the micro level. The assessment considers key performance metrics and identifies the strengths and problem areas of Vietnam and its electronics cluster through the lens of the Diamond Analysis developed by Michael Porter.

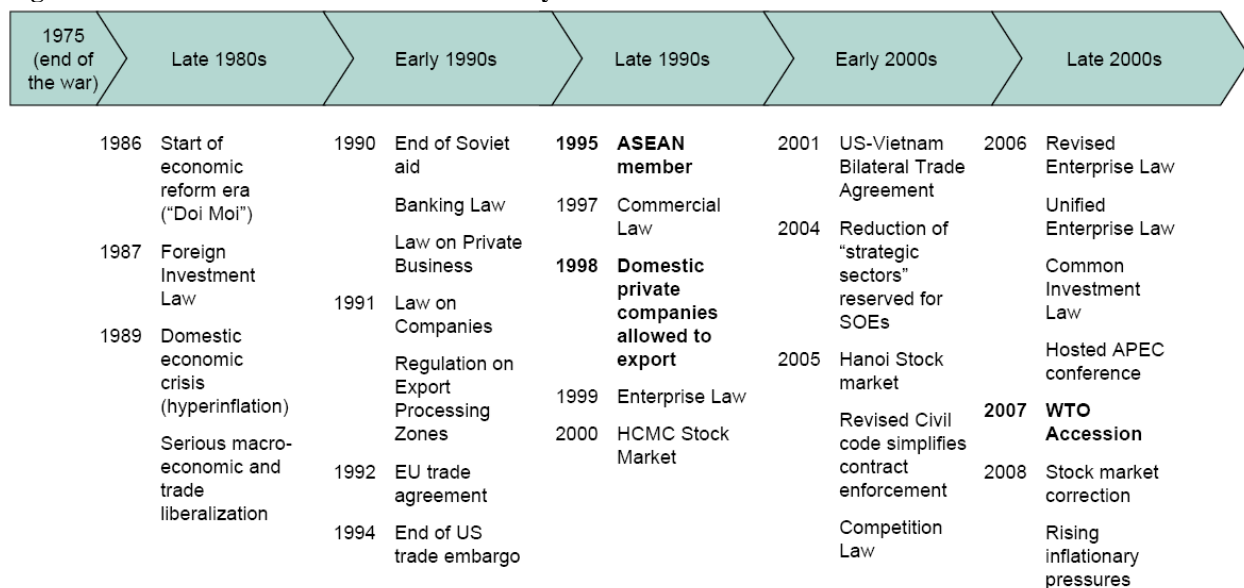
## **II. Vietnam Country Analysis**

### History and background: from revolution to embrace of globalization

Vietnam was engulfed by war throughout much of the twentieth century, hosting armies from not only the United States and France, but also China, the USSR, and Japan. The advent of peace at home led to rigorous implementation of Marxist-Leninist central planning policies, including nationalization of all industry and collectivization of agriculture. While these policies helped achieve unusually high literacy rates and health indicators, Vietnam remained destitute and ravaged by famines. Under central planning, economic crises became commonplace, including bouts of hyperinflation in both 1985 and 1988.

In 1986 the Vietnamese Communist Party (VCP) announced its doi moi ("new change") program. The reform program was inspired and implemented by Nguyen Van Linh, who previously as Party Secretary of Ho Chi Minh City, had allowed limited private sector activity in contravention with national policy. (See Figure A.)

**Figure A: Timeline of Vietnam's Recent History**



Actual implementation of the doi moi agenda did not begin in earnest until the 1988-89 economic crisis. Tangible economic benefits were immediate and substantial, highlighted by a dramatic change from being a net importer of rice in 1988 to being the third leading exporter in the world in 1990. Fundamental regulatory institutions were also established, including creation of a two-tiered banking system with a separate (though not politically independent) central bank and laws establishing an initial framework for registration of sole proprietorships (in 1990) and of limited liability and shareholding companies (in 1991). 1991 also saw introduction of the first regulations on establishment of export processing zones.

Additional government moves were trade initiatives such as an EU Trade agreement (1992), the end of the U.S. trade embargo (1994), and ASEAN membership (1995), US-Vietnam bilateral trade agreements and finally WTO membership in 2007. Domestically, the government tried to maintain state-owned enterprises (SOEs) as the backbone of the economy, providing them preferred access to scarce resources such as land, capital, and export markets. As a result, foreign investors often found it difficult to operate without forming joint-ventures with SOEs. By 1997, the lack of further reform was contributing to a slowing of economic growth. Along with the onset of another international crises (this time the Asian financial crises), these domestic

issues set the stage for a second round of reforms.

In 1998, private companies were for the first time allowed to export their goods abroad (as opposed to exporting through a state-owned middleman). The following year, the National Assembly passed a new Enterprise Law that radically reduced the costs of registering a private company. Perhaps most importantly, this law was also vigorously enforced, with the leadership unleashing the media to police implementation across ministries and at the provincial level. The way implementation was carried out sent a clear message that the government was truly committed to private sector development.<sup>1</sup> Vietnam also launched the country's first stock market in Ho Chi Minh City (in 2000).

Unlike the years following Vietnam's first round of economic reforms, the years since the second round have seen continued attention to issues of market competitiveness. This is likely due to the momentum and creation of new interest groups for change created as a result of the liberalization of private sector entry. Important subsequent policy changes included a reduction of the "strategic sectors" reserved for SOEs (in 2004) and revision of the Civil Code to facilitate contract enforcement by the courts (in 2005). Further reforms to the Enterprise Law, addressing issues of corporate governance and reducing differences in regulation of private and state firms, were introduced in 2006.

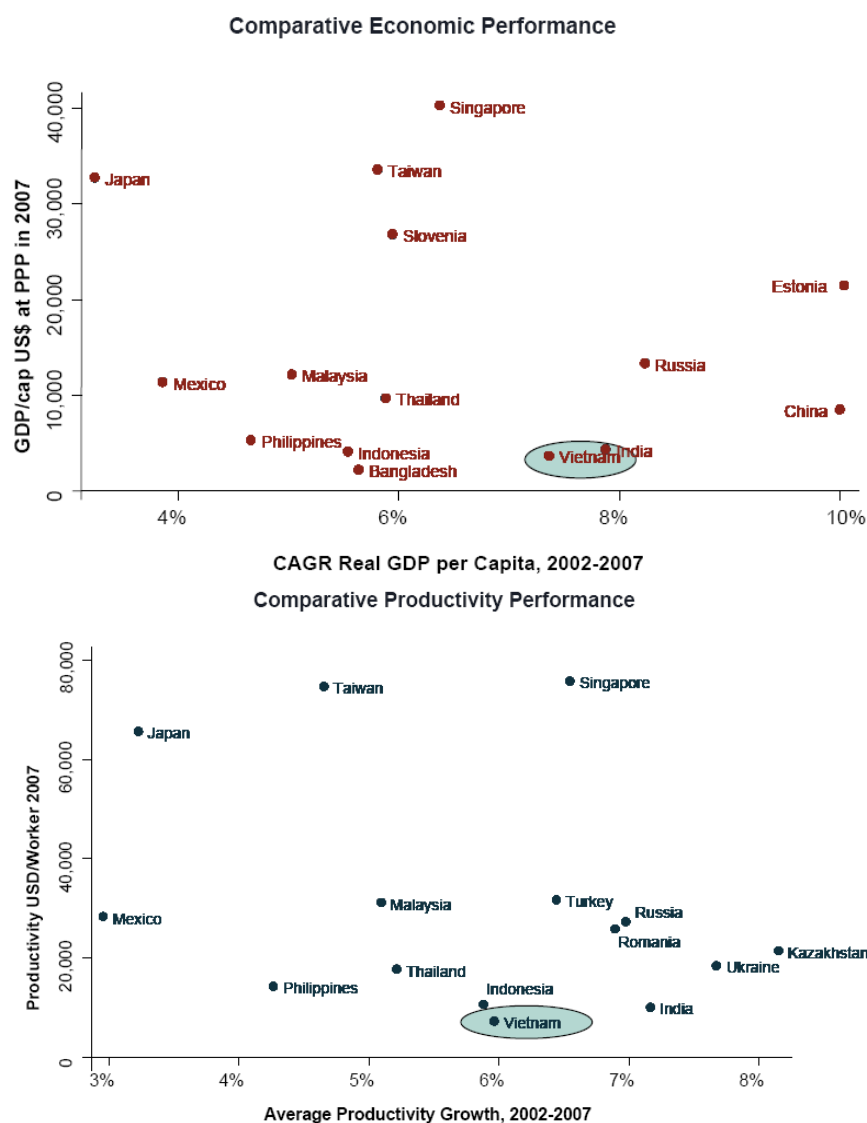
Vietnam is today still a poor country, with nominal GDP per capita of \$1,119 and PPP GDP per capita of \$4,356 (Economist 2008)<sup>2</sup>, leaving Vietnam even poorer than other poor countries such as India and Indonesia. The country also ranks quite low in terms of productivity—well below productivity levels of its more industrialized ASEAN neighbors. (See Figure B.)

---

<sup>1</sup> In contrast, for example, to the Bankruptcy Law that Vietnam passed in the 1990s as part of a structural adjustment loan negotiation with the World Bank. This law was essentially done only to appease the Bank and proved irrelevant in practice.

<sup>2</sup> It may be that Vietnam's GDP is under-reported due to the significance of the informal economy and the generally poor quality of data. A 2002 International Finance report used electricity usage statistics to very roughly estimate that informal activities could be worth half the value of official GDP (Tenev et al 2002).

Figure B: Vietnam's Comparative Economic & Productivity Performance



Source: EIU(2007); MoC: Vietnam Electronic Cluster.

Productivity growth, as well, has been impressive, trailing only Turkey, Romania, China, India, Ukraine, Kazakhstan, Russia, Azerbaijan and Singapore over the past 5 years.

## Main Issues Arising from Country Diamond Analysis

### ***1. Excellent conditions for globally competitive labor-intensive industry...***

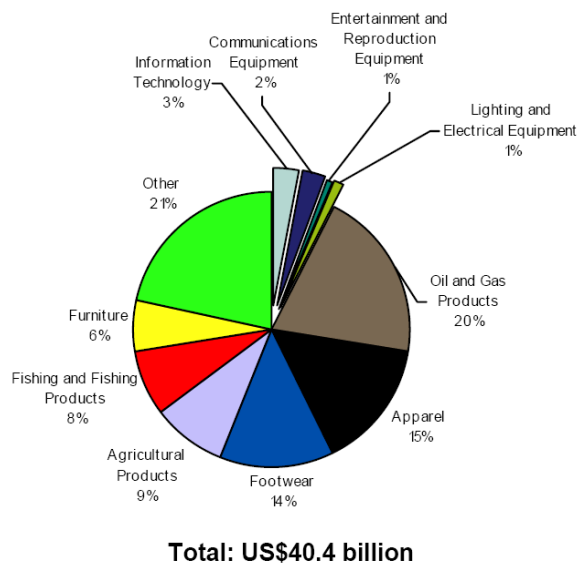
For the first two decades of economic reforms, Vietnam has effectively leveraged its young and relatively well educated workforce (e.g. basic literacy rates were above 90% even when annual GDP per capita was below \$300) to taking a global leadership position in numerous labor-

An appropriate framing of Vietnam's economic standing, however, requires focus also on performance flows. Over the past two decades, Vietnam has transitioned from a centrally-planned economy to one of the world's most integrated and fastest growing economies. From 2002 to 2007, Vietnam recorded GDP per capita growth of 7.37%, surpassed only by the economies of China, Russia, Estonia, and India.

intensive industries such as footwear. Over this period, the country's workforce has been further buttressed by a large reserve composed of the 80-90% of the population that worked in the countryside.

Vietnam's export portfolio reflects the factor driven nature of its economy. In 2007, apparel and footwear alone accounted for 29% of non-oil exports. Vietnam has also become a leading global player in agribusiness industries including coffee, rubber, rice, seafood, and cashews. (See Figures C and D).

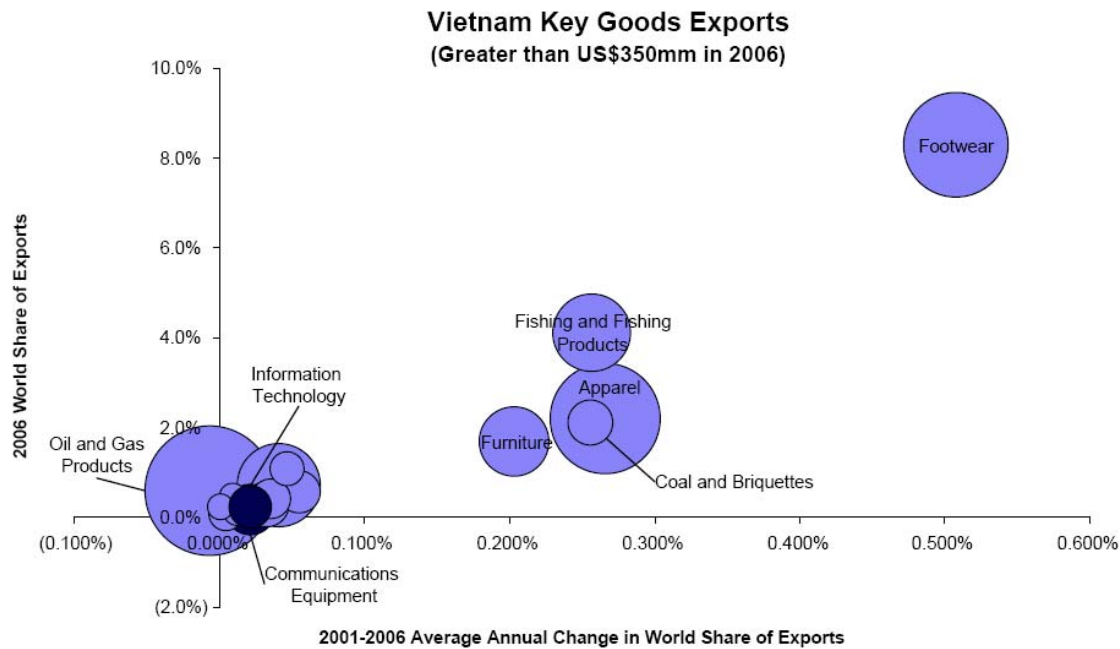
**Figure C: Vietnam Major Goods Exports, 2005**  
**Vietnam Major Goods Exports, 2005**



*Source: Prof. Michael E. Porter, International Cluster Competitiveness Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Underlying data drawn from the UN Commodity Trade Statistics Database.*



Figure D: Vietnam Key Goods Exports (Greater than US\$350mm in 2006)



Source: Prof. Michael E. Porter, *International Cluster Competitiveness Project*, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Underlying data drawn from the UN Commodity Trade Statistics Database.

Stable political conditions have served as an excellent complement to the country's labor cost advantages. While Vietnam is ruled exclusively by the Vietnamese Communist Party, the country enjoys relatively stable politics, with regular turnover in individual leaders. These conditions proved particularly attractive in the 1990s to manufacturing firms from South Korea and Taiwan who once benefited from similar conditions at home, but had been forced to look abroad as wages have headed towards industrialized country levels. At the tenth party congress in 2006, the party appointed Nong Duc Manh and Nguyen Minh Triet, economic liberals with strong anticorruption credentials. The party has managed peacefully to restrain organized opposition and dissent through its policy of national unity.

**... BUT poorly configured for transition to productivity-driven growth—due especially to lack of skilled labor.**

Given increasing demands as Vietnam tries to move into higher value added industries and up individual industry value chains, the severely underdeveloped nature of the country's university system has emerged as a major constraint. The average years of schooling for Vietnamese are

low for Asian standards, and well below that of Thailand, Indonesia and China. Especially, in rural areas, the education system was mostly oriented towards teaching basic reading and practical mathematics

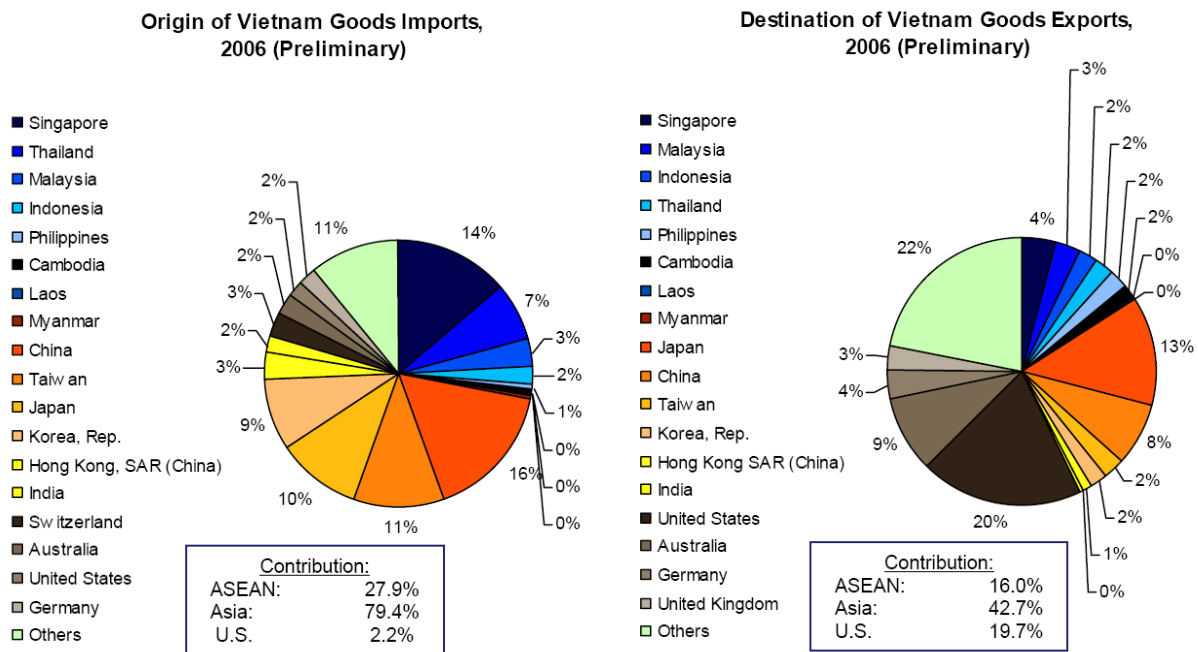
Vietnam's higher education system is still oriented to the lesser needs of a factor-oriented economy. With their 322 universities and colleges and 1.5 million BA students, the B.A. students/citizen ratio is a very low at 1.7 percent. The country's 10% enrollment rate in higher education is the lowest in the region. Vietnam ranks well below Thailand, China and India.

Quality of higher education is a major problem. Among the total of 52,000 faculty, only 13.5% have PhD degrees. Salary levels are very low and politics play an important role in promotions. Furthermore, the education system tends to lack training in critical reasoning, emphasizing rote learning instead. University teachers themselves have little incentive to engage in advanced research, as they are paid by the volume of teaching they do. One consequence is that Vietnam has low shares of scientists and research specialists—measured as the rate of professionals per thousand citizens—when compared to regional nations, including Pakistan, Malaysia and China. These factors likely contribute to Vietnam's quite poor record with regard to innovation, as reflected in the low number of patents the country produces. The poor state of the higher education system has recently been the issue of criticism from the World Bank (World Bank 2007) and the subject of an ambitious government "Higher Education Reform Agenda" (HERA), laying out goals for the coming 15 years. The World Bank, however, has specifically criticized HERA for not being sufficiently specific in how to operationalize change (World Bank 2007). Deputy Prime Minister and Minister of Education Dr. Nguyen Thien Nhan has made a specific call for more private sector investment in professional training (Nhan 2007). Still, Vietnam has been slow to introduce fundamental reforms, leaving even technology students saddled with outmoded requirements such as Marxist-Leninist classes. Such requirements have naturally dampened enthusiasm for private investment into education.

**2. Highly globalized economy, with especially strong regional ties...**

Perhaps the most impressive single characteristic of Vietnam's economy is the degree to which it is connected to the global economy. Today, despite remaining difficulties with regard to tariffs in certain still protected industries, infrastructure, and bureaucracy, Vietnam is statistically one of the world's most open economies: imports and exports as a share of GD stood at 153% in 2007. Vietnam has seen its popularity within the "China + 1" scheme of international investors rise substantially, especially in terms of investments from newly-industrialized nations such as Taiwan and Korea. "China + 1" is the strategy that says that while China is clearly at the center of global manufacturing, it comes with certain risks that make geographic diversification advisable. The increasing sophistication of Vietnam's export-oriented industries is reflecting in the increasing weight of industrialized countries in the country's export portfolio. In recent years, the United States and Japan have accounted for more than a third of exports. Growth in exports to the U.S., in particular, grew nearly tenfold in the six years following the signing of the Bilateral Trade Agreement in 2001. Nearby ASEAN countries, in turn, were the destination for only a sixth of Vietnam's goods exports in 2005.

**Figure E: Origin of Goods Imports and Destination of Vietnam Goods Exports, 2006 (Preliminary)**



Source: Vietnam GSO

In contrast to export markets, Vietnam overwhelmingly purchases its imports from within its own neighborhood, especially Chinese traders in China, Hong Kong, and Taiwan. Almost 80% of imported goods were sourced from Asian nations in 2005—in contrast to only 2.2% from the U.S. Another third of total imports comes from fellow ASEAN countries. This likely reflects the fact that many of the imports are inputs for export-oriented industries that are more developed in these neighboring countries. It is also likely influenced by the networks of the country's leading foreign investors.

Success in attracting East Asian investors and the economic growth benefits that have come with them appear to have contributed to a virtuous circle of business friendly policies and economic growth as reflected in the second round of economic reforms described earlier in the paper. As was already mentioned, establishing trade relations with East Asian, as well as Western countries, was actually a priority even during the lull in the 1990s between rounds of economic reforms. This appears to have been, at least in part, due to the country's desire for non-military means of improving national security and understanding of the domestic stability benefits of job creation by labor-intensive industry. Perhaps most clear, in this regard, was Vietnam's integration into ASEAN—an organization largely formed for security purposes, in response to Vietnam's invasion of Cambodia in 1979. The decision to participate in the ASEAN Free Trade Area (AFTA) subsequently set the stage for Vietnam's application and entry into the WTO.

***...BUT concerns over limited movement into higher value exports and lack of depth of industrial cluster development***

The concern is essentially that Vietnam may be suffering from a broader factor-driven exports version of the infamous “Dutch Disease”. Oil and gas itself actually remains the countries leading export, accounting for 18% of 2007 exports. Furthermore, as seems to happen when a government can count on oil revenues, the job creation of successful labor-intensive industries may have reduced social pressure and bred complacency in local bureaucrats. For whatever reason, Vietnam has only recently begun to aggressively consider how to promote productivity.

Vietnam is still competing mostly on price—though, as noted above, it has begun to bolster this advantage in the lower value added footwear and apparel industries. Too often, Vietnam is only contributing labor to the equation. Despite steady 20% annual growth in exports, Vietnam has consistently run trade deficits of 10 to 15% of GDP. This is related to the fact that many of the country's export-oriented industries are highly dependent on imported inputs.

The dependence on imports reflects the under-developed nature of the countries supporting industries. Despite policy advances described earlier, Vietnam has seen a double digit fall in its ranking in terms of local supplier quality as well as quantity, leaving it at the bottom percentile of countries in the GCR list. (Porter, 2008; See Exhibit 1). To some extent, this may reflect that the country is being held to increasingly high standards. A related issue is that the country is still quite early in the movement of firms into higher value-added industries for which appropriate supply bases do not yet exist. This parallels the nascent nature of the domestic private sector in general.

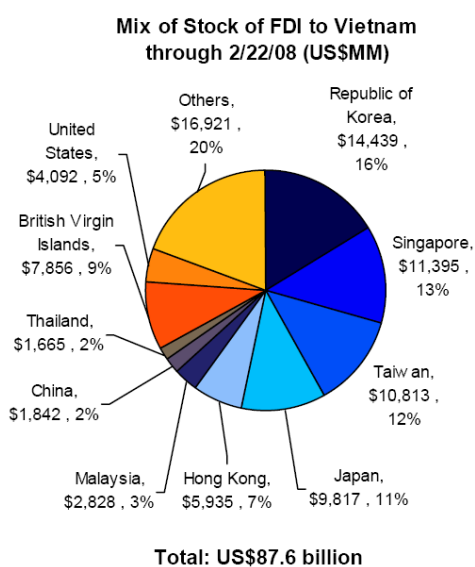
### ***3. Sustained market reforms, which are finally leading the state sector to relinquish leadership...***

The structure of Vietnam's economy is in transition. Vietnam made concerted efforts during the first decade of reforms to maintain a leadership position for the state sector. As noted earlier, this included pressuring foreign investors into joint ventures with SOEs. State enterprises do still enjoy preferential access to scarce resources such as credit and land. In addition, private firms are still barred from some industries. But since the beginning of the second round of economic reforms at the end of 1990s, the state sector has seen a steady decline in its share of GDP. The private sector accounts for more than half of all investment, 65% of manufacturing, and more than 70% of non-oil exports. The Common Investment Law passed in late 2005 represents a significant step towards leveling the playing field, as it applies to all forms of businesses, regardless of ownership or corporate structure. In addition, the government has recently

accelerating SOE reform and equitization<sup>3</sup>. Equitization, or transformation of ownership of firms, represents one of the main mechanisms to restructure the state sector. By the end of 2008, more than 3,500 SOEs are expected to have gone through this process.

It is noteworthy that, for the first time, industrial output by the domestic private sector converged with that of the SOE sector in 2006. This is actually probably no more the result of significant acceleration in the equitization program than the result of increasing interest from foreign investors and the dramatic growth among domestic private companies. The number of domestic private companies has exploded since implementation of the Enterprise Law in 2000. From 2000 to 2005 alone, the number of private companies more than tripled to nearly 100,000.

**Figure F: Mix of Stock of FDI to Vietnam through 2/22/08 (US\$m)**



Source: Vietnam Economic Times, March, 2008 / GSO 2008

While Vietnam has distinguished itself throughout its reform period with its ability to attract foreign investment, recent years have been particularly extraordinary. Vietnam has attracted the second highest ratio of FDI to GDP in the region and has achieved the 3rd fastest growing FDI rates during the past 6 years. Fellow Asian investors accounted for two thirds of FDI in 2007, with South Korean investors leading the way by alone accounting for one sixth. FDI from newly industrialized countries

from Asia accounted for two thirds of Vietnam's US\$87.6 Billion FDI stock in early 2008.

Korea, Taiwan, Singapore and Japan represent the major investors in the country. New FDI

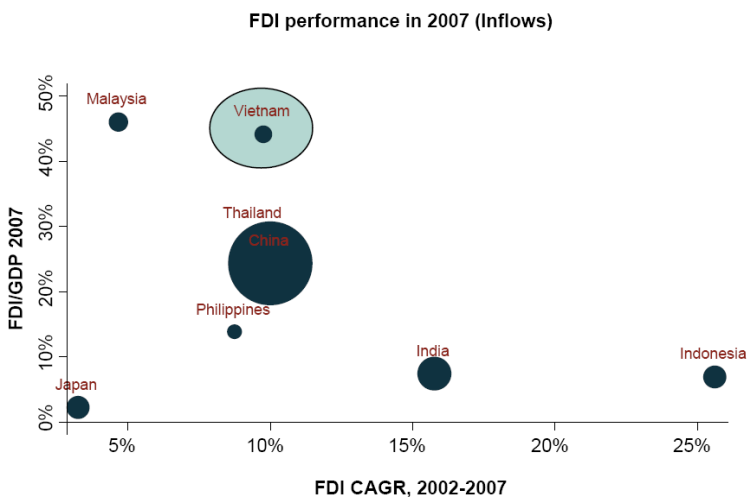
investment commitments (i.e. not including capital increases for existing projects) have

doubled—or nearly doubled—for three consecutive years, with the 2007 total reaching a quarter

<sup>3</sup> Vietnam uses the word "equitization" instead of privatization. The main distinction of substance is that the government frequently maintains a significant ownership share in equitized firms. There has also been an effort to give workers preferential access to shares in equitized firms.

of GDP (MPI 2008). According to a recent report by the UN Conference on Trade and Development, multinationals ranked Vietnam sixth on their lists of top investment destinations in the coming two years—the only South-East Asian country to make into the top ten (Economist 2008).” Approved foreign direct investment presents strong growth. Committed foreign investment topped 10.2 billion dollars in 2006.

Figure G: FDI Performance in 2007 (Inflows)



Source: EIU(2007); MoC: Vietnam Electronic Cluster

**...BUT a continued lack of general commitment to “Rule of Law” and disparity in the quality of local governance.**

Vietnam has shown slow progress on land reform, judiciary independence and providing a legal basis for the independence of NGOs. The World Bank’s “Doing Business” report of 2008 ranks Vietnam especially low on protecting investors, paying taxes and closing a business.

The lack of a “rule of law” orientation has a clear cost on competitiveness. The investment climate surveys have shown that domestic, newer and smaller firms that are not recipients of foreign direct investment (FDI) and that cater to domestic markets, report more acute business constraints than do firms that are older and larger, that export, that have FDI, or that are state-owned.

While Vietnam’s communist leadership has generally been quite pragmatic about the role of communist ideology in the doi moi era, property and land use rights remain highly ambiguous.

The government has also shown only limited willingness to enforce intellectual property rights.

More generally, the government has shown little inclination to ever yield to an independent judiciary. Decisions normally made by courts are instead usually made by local bureaucrats. As a result, private sector actors remain largely disinterested in using the nascent court system for resolving disputes and are unlikely to have much hope of using the courts to object to actions by the government itself.

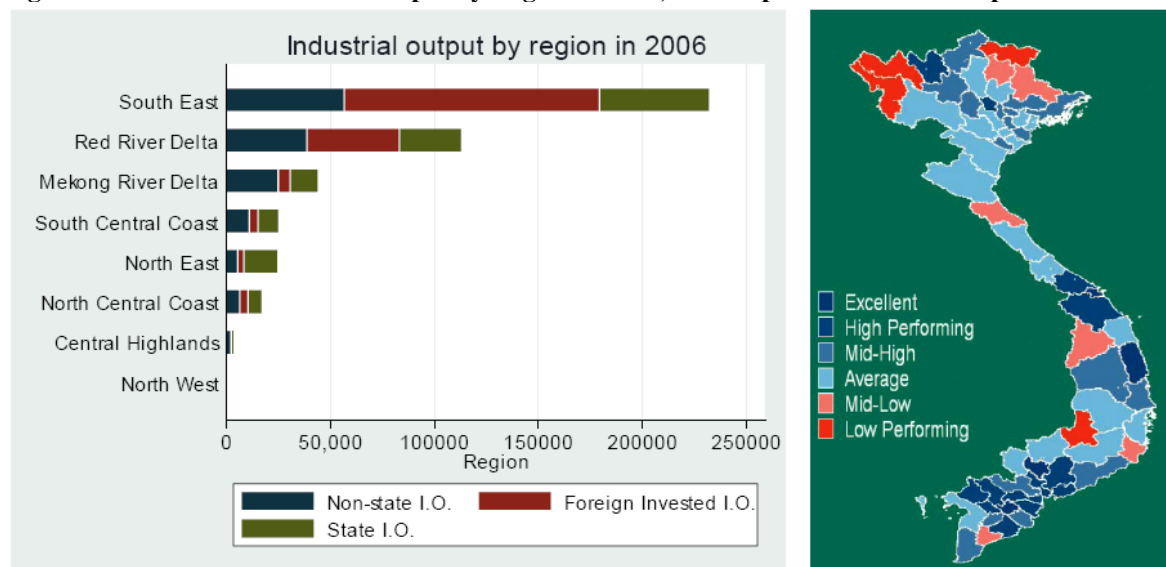
The lack of commitment to a system of “rule of law” has contributed to problems of corruption. Transparency International’s 2006 Corruption Perceptions Index, released in November 2006, ranked Vietnam 111th of 163 countries compared with 107th out of 159 nations in 2005. The IFC indicated in a report dating April 2007, that particular difficulties remained in terms of over-prescriptive laws, frequent inspections, high taxes, weak regulatory accountability and overlapping jurisdictions.

Vietnam’s leadership has shown some signs of strengthening efforts to eliminate corruption. The National Assembly approved the country’s first anti-corruption legislation in November 2005 and in 2007 established an anti-corruption council. Additionally, despite low rankings, Vietnam still has favorable comparisons relative to many of its ASEAN peers that would be substitutes in any foreign investor following a “China + 1” strategy, including Philippines, Indonesia, and Malaysia (Economist, 2008).

Growth across geographic locations has been unequal, particularly for provinces outside the areas surrounding urban centers of Hanoi and Ho Chi Minh City. Southeastern and Red River delta region accounted for a disproportionate share of industrial output in 2006. The increased industrial output in these regions has been driven by private and foreign investment.



**Figure H: Vietnam's Industrial Output by Region in 2006, and Map of Provincial Competitiveness Index**



*Sources: Vietnam GSO and Malesky, Edmund (2007), Provincial Competitiveness Index.*

The aggressive economic policies of leaders in Ho Chi Minh City and Binh Duong have made those provinces frequent testing grounds for future national reforms. Given the clustering of more friendly provincial environments, there is reason to believe that neighboring provinces learn from the benefits that accrue to good governance. On the other hand, many provinces are so poor and so dependent on allocations from Hanoi that they engage in very little local policy initiative. The provincial competitiveness index project, an initiative implemented by the Vietnamese Chamber of Commerce and Industry, indicates that increased industrial output is associated to better economic governance. Well governed provinces in Vietnam have consistently attracted more enterprises.

The Vietnamese government therefore has two goals that are often at odds: (1) to promote the fastest economic growth for the country, and (2) to spread benefits of growth to the poorest parts of the country. The pursuit of redistribution has resulted in at least a few notable misguided initiatives by the Vietnamese government. Redistribution policies have distorted the incentives of provinces with higher revenues and created moral hazard problem for those with lower levels of revenue. Dung Quat oil refinery and Dung Quat deep water port located in central Vietnam but are very distant from input sources and commercial markets. Both projects are mega-

infrastructure investments that are designed to help provide increased development in the poorer central region. However, they fail to leverage the existing assets of various regions and instead build capacity in a vacuum. Without strong supporting industries and weak infrastructure, these projects are likely to operate at artificially high expense levels.

***4. Significant investment into upgrading physical infrastructure, including world-class industrial zones...***

The World Bank and Asian Development Bank, among others, have supported major investments into infrastructure improvements and Vietnam has consistently invested approximately one tenth of its GDP in infrastructure. Remarkable progress has occurred with regard to access to the road network, water and sanitation, electrification and telephone lines. And the country is in the midst of dramatic facelifts to both its major airports in Hanoi and HCMC, beginning with a brand new, world-class international terminal at Tan San Nhat airport in HCMC opened in 2007. Vietnam now possesses impressive world-class industrial zones (IZs) and export-processing zones (EPZs), with more than 96 industrial processing zones. The southeast region, including Ho Chi Minh City, represents the focus of industrial development in Vietnam, counting with the highest density of industrial parks in the country.

***...BUT still, overall, infrastructure outside of IZs remains far from adequate.***

Despite the substantial improvements that have resulted over the past decade, however, Vietnam still ranks in the bottom third in every aspect of infrastructure (according to GCR data). The problems of infrastructure throughout much of the country contrast sharply with the modern infrastructure of many of the special economic zones. More than forty% of the respondents of the Investment Climate Surveys (ICS) indicated that improvements in electricity and roads would be the most beneficial (Vietnam business, Vietnam Development Report in 2006). The EIU gave Vietnam the lowest rating in the region in terms of quality of roads—well below Taiwan, Thailand, India and Indonesia.

***5. Dramatic increase in financial development and general access to capital...***

The banking sector has grown faster than 20% per annum since 2002. Further liberalization and accession to WTO will likely sustain this drive in the upcoming months. Public confidence in banks has improved and banking services have penetrated into both the corporate and consumer sectors. The delayed reform of state owned commercial banks (SOCB) remains a bottleneck. The SOCBs currently account for more than 70% of total bank credit in Vietnam. Commercial banks, especially SOCBs, dominate Vietnam's financial sector, preventing market-based credit allocation as well as equity base growth of Vietnamese industries. In the equity markets, financial development has been highlighted by the evolution of the Ho Chi Minh City stock market, which (prior to 2008) had been one of the worlds fastest growing stock markets. Vietnam has also been one of the leading beneficiaries of the emerging markets private equity boom of the past three years.

***... BUT emergence of new reality that government has less capacity to guarantee stability.***

Vietnam's success has been paralleled by speculation that the country is in the midst of an investment bubble. Equity investors have already been exposed to the growth pains of emerging market investing, as they have seen the bursting of Vietnam's first equity market bubble. The VN Index is currently down approximately 60% from its all time high, and is one of the world's biggest declining indexes in 2008 through the first quarter. Several expert reviews indicate that corporate governance, transparency, and the judicial system need further reform for further financial deepening and protection of minority shareholders.

### **III. Vietnam Electronics Cluster Analysis**

#### History and background

Vietnam's electronics cluster dates back to the 1950s when Vietnam first became a location for assembly work of imported components. North Vietnam's government began importing components from the Soviet bloc in the 1950s for factories it set up to assemble amplifiers, transformers, and loudspeakers.<sup>4</sup> In South Vietnam, in the early 1970s, Japanese investors imported parts for assembly of black and white televisions. However, with the end of the war in 1975, southern electronics factories were all incorporated into the state-owned sector. See Exhibit 3.

Under the Comecon system, Vietnam's electronics cluster was driven by low quality demand from other communist states and the cluster's capabilities advanced little. Reunified Vietnam's trade relations were almost exclusively with other communist countries over the following decade, which meant the industry had little access to the technological innovations made in the non-communist world. Interestingly, despite the fact that private enterprise was not legalized until the start of reforms in 1986, Vietnam's oldest private electronics company, Tien Dat, began production in 1979. With the collapse of Comecon in 1992, exports of Vietnamese electronics plummeted to US\$3 million (from US\$9 million in the prior year).

Subsequently, the electronic cluster's experience with Japanese multinationals shows that not all foreign investments result in increased cluster competitiveness. Soon after the dissolution of Comecon, Japanese electronics investors began to return, and numerous early Japanese investments involved joint-ventures with state-owned partners. Because of the limited capacity and the non-economic motives—e.g. retaining redundant workers—of SOE partners, the Vietnamese electronics cluster did not experience material transfer of knowledge and skills from

---

<sup>4</sup> It is very difficult to find information about historical development of the electronics industry, so the following two paragraphs borrow extensively from the detailed research presented in Vind (forthcoming).

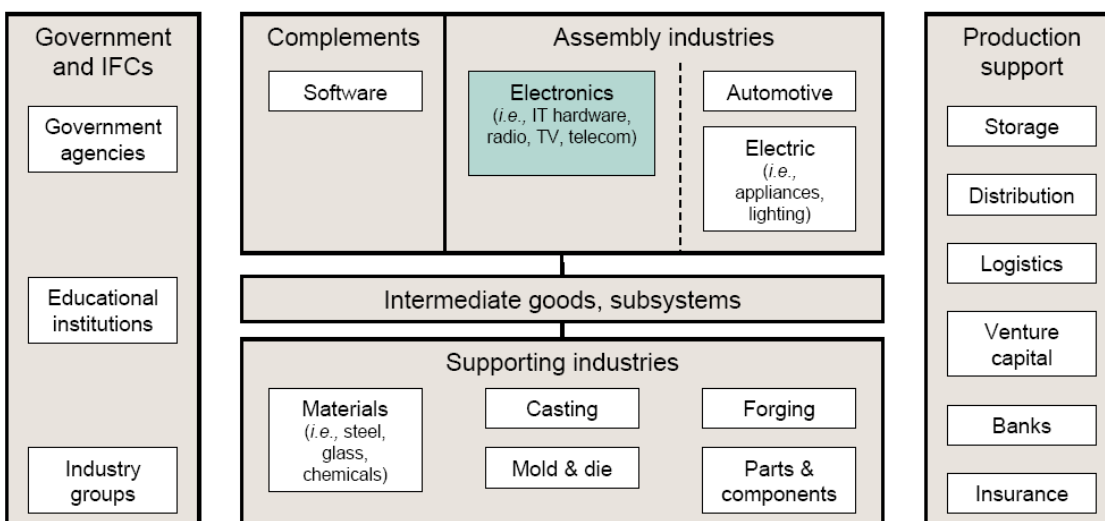
Japanese joint ventures. Instead, Vietnam was utilized primarily for its cheaper labor costs in labor intensive parts of the value chain, with minimal re-investment into the JVs by Japanese firms. By the end of the 1990s, Japanese firms were largely moving to end the partnerships.

Currently, accelerating trade liberalization and integration into the world economy are catapulting the Vietnamese electronics cluster into a challenging growth phase. The decision of numerous major global electronics firms to invest heavily in Vietnam has coincided with the lowering of electronics tariffs to 0 – 5% from 15 – 20%, thanks to Vietnam's participation in the ASEAN Free Trade Area. The below statistics on growth of the electronics cluster predate the coming online of the largest foreign investments, such as those of Intel and Foxconn.

Today, Vietnam has two evolving electronics clusters, corresponding to Vietnam's two main growth centers, the Ho Chi Minh City area in the South and the Hanoi area in the North. We found little linkages between the two geographic clusters in our research. Because of land prices and government efforts to limit the negative impact of industrial development in these major cities, most operations are actually in neighboring provinces or inside of special economic zones. It is worth referring back to the earlier PCI data map on economic governance to note that these provinces happen to also be the ones whose business environments have received the highest scores on economic governance. These areas have also seen a clustering of private and government invested IZs, which, in turn, have also seen substantially greater demand for their services. Great potential for integrating the northern and southern clusters to promote cross-fertilization of ideas, diffusion of technology, specialization, and country-wide standards, particularly as the cluster advances up the value-chain.

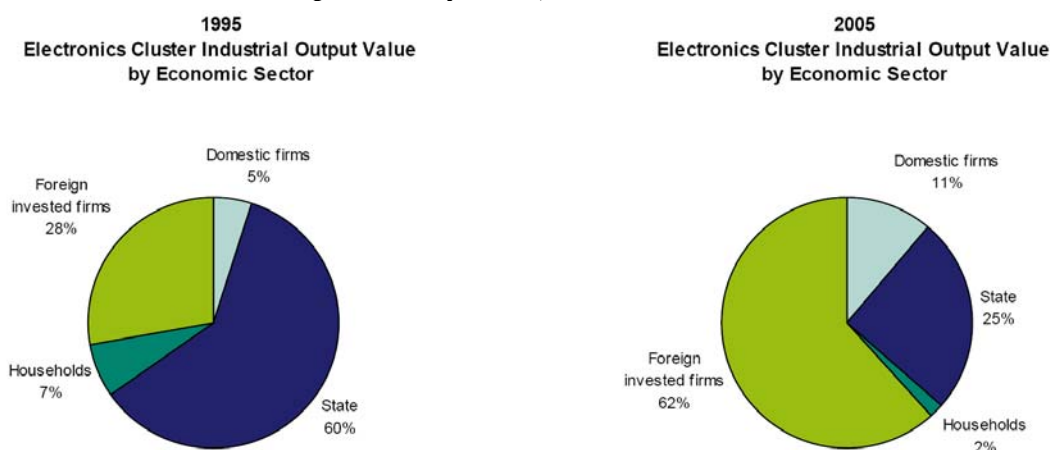
Vietnam's electronic cluster focuses now on assembly, which benefit from adjacent assembly industry verticals. Current cluster activities are, in large part, consistent with the historical legacy in assembly. It has thus benefited from the spillover effects of other assembly-related industries that have been developing in Vietnam, in particular automotive and electric goods.

Figure I: Vietnam Electronics Cluster Map



The leading role of the state sector is change: in 1995, SOEs accounted for 60% of cluster industrial output value, while foreign invested firms, households economy and domestic firms accounted for 28%, 7% and 5% respectively. This mix has flipped over time: in 2005, foreign invested firms accounted for 62% in total electronics cluster industrial output value; within private sector, the production has also moved from household economy to more formal sector (domestic firms) as illustrated in Figure J.

Figure J: Cluster Industrial Output Value by Sector, 1995 vs. 2005



Source: Vietnam GSO, based on constant 1994 prices. Electronics cluster comprised of manufacture of machinery and equipment; office, accounting and computing machinery; electrical machinery and apparatus; and radio and communication equipment and apparatus.

***Major trends***

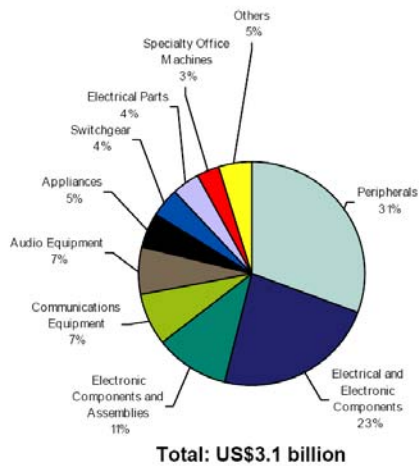
Global demand for electronics has grown steadily during the past decades. Industry experts suggest demand will continue to grow steadily for the next 5 years. Growing competition in the global electronics market has created increased pressure for efficiency through outsourcing of manufacturing and specialization. Shorter product cycles and sophistication of demand have pushed firms to become increasingly flexible in manufacturing, manage lighter balance-sheets and focus on core competences. Most original manufacturers pursue one of the following strategies: competing on costs, design superiority or branding.

Vietnam is in a neighborhood that is very much an integral part of the global electronics business. Southeast Asian nations represent a source of diversification from China, in keeping with the well-known “China +1” strategy. In fact, specialization takes place within Southeast Asia, with countries like Singapore and Malaysia transitioning from capital intensive manufacturing to low volume high value added manufacturing including medical equipment, data processing equipment, wireless technology and Aerospace technology.

The composition of Vietnam's electronic exports mirrors that of the broader economy – Vietnam exports primarily low value-added, labor-intensive products. In “electrical and electronic components”, the category is comprised primarily of insulated wire. (See Figure K.)

**Figure K: Vietnam Major Electronics Goods Exports, 2005**

Vietnam Major Electronics Goods Exports, 2005



Source: Prof. Michael E. Porter, *International Cluster Competitiveness Project*, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Underlying data drawn from the UN Commodity Trade Statistics Database.

## Main Issues Arising from Cluster Diamond Analysis

### ***1. Enormous interest in Vietnam as an export-oriented electronics manufacturing base, especially among foreign investors...***

The Vietnamese electronics scene burst onto the global scene in 2006 with Intel's announcement, first, of its plans for a \$300 million chipset assembly and testing plant and then, second, its subsequent decision to increase that investment to \$1 billion (directly employing approximately 4,000 workers). Previous to that announcement, the largest industry investments, by far, had been the assembly operations of Canon and Fujitsu. Since the Intel announcement, Vietnam's electronics industry has seen a major jump in large-scale foreign investments and investment announcements. These include:

- Foxconn: US\$5bn commitment in computer and consumer electronics factories. >50,000 workers.
- Compal Electronics: US\$500mm laptop factory in Vinh Phuc.
- Meiko Electronics: US\$300 million PCB factory in Ha Tay (50 km from Hanoi).
- Jabil Circuit: US\$100mm factory in Saigon Hi-Tech Park.
- Samsung: Vietnamese newspapers are reporting that an announcement is imminent that Samsung will move its printer assembly operations from South Korea to Vietnam.

The largest domestic electronics firms are still state invested (e.g. Hanel), but the partial



equitization of FPT headlined a changing trend in the cluster. Vietnam's electronics cluster has experienced an explosion of domestic entrants and created a lot of employment opportunities in recent years. The number of domestic electronics companies grew at a CAGR of 22% from 2000 – 2005, with the accounting and computing machinery sector growing the fastest.

*A clear area of opportunity for domestic growth is in provision of cluster inputs.* Major international assemblers are actively looking to increase local procurement, and in certain product categories are able to do so. For example, CRT TV producers were able to source 20 – 40% components locally in 2006, compared to ~0% in 2002. It is possible, however, that CRT TV production may be a special case in Vietnam, as the technology is becoming outdated and Vietnam has been producing TV parts since the earliest days of the cluster in the 1950s. Still, according to a survey conducted by Japan External Trade Organization, 73% of Japanese manufacturers in Vietnam planned to increase local procurement in 2004, compared to 62% in ASEAN and 28% in China in the same year.

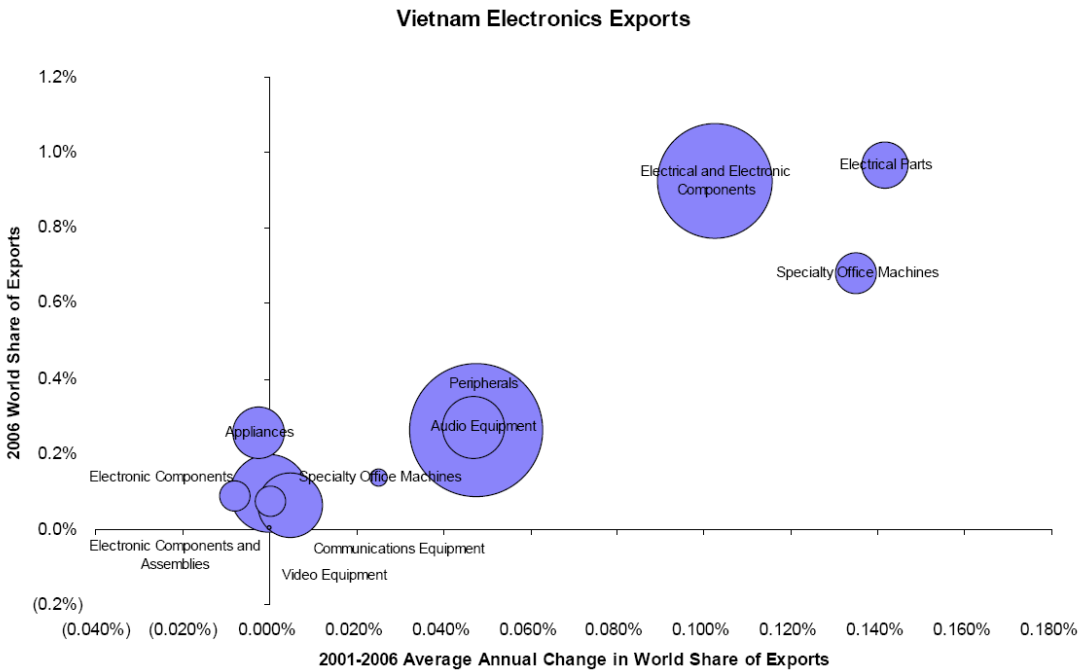
***... BUT the domestic sector remains quite weak, and has noticeably fallen short in its response to opportunities in support industries***

*The domestic sector is highly fragmented.* The rush of new entrants has contributed to small average scale in the cluster: average employees per domestic company fell from 181 to 134 from 2000 to 2005, and average fixed assets and long-term investment decreased from VND 23.6 billion to VND 18.4 billion simultaneously. Productivity, measured by net turnover, grew only modestly. Only 0.2% hired more than 5,000 employees, while 87.4% domestic enterprises hired fewer than 200 employees. Similarly, only 2.7% domestic companies deployed more than 500 trillion VND capital, while 85.6% companies deployed less than 10 trillion VND capital (equivalent to ~ US\$ 600 million).

As a result, it is not surprising that there are few local brand names of note, few products are exported in scale and that, despite strong growth, the cluster's share in world exports is negligible (Figure L). There is no doubt the country's electronics industry is still in a relatively

early stage of its life cycle. Given the major scaling up of the industry that is currently being driven by foreign investors, it would seem likely that some industry consolidation is likely in the coming years.

**Figure L: Cluster Exports Share and Annual Change, 2001 – 2006**



Source: Prof. Michael E. Porter, *International Cluster Competitiveness Project*, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. Underlying data drawn from the UN Commodity Trade Statistics Database.

*Quality and cost issues are problems nascent electronics inputs providers.* It is sometimes still more expensive to purchase domestic parts than to import parts. A significant hurdle to addressing these issues is that current levels of local demand are low for investment in capital intensive raw material sectors.

**2. Recent announcements of prominent public-private partnerships to provide high-tech-oriented training and research...**

Toshiba, Panasonic, Microsoft, and MIT have all announced new programs in collaboration with Vietnamese universities to increase the supply of trained high-tech workers. See Exhibit 4.

**... BUT such intra-cluster collaboration is still rare and the limited supply of relevant skilled high-tech workers remains a major constraint on growth.**

While the Ho Chi Minh City Computer Association puts out a nice annual report on the cluster,

*industry associations appear to still be playing a quite limited role.* Their activities do not seem to directly address any of the major issues facing the cluster. This was perhaps less relevant in the past, when more firms were taking the less realistic strategic approach of trying to internalize the entire value chain of products and services. For its part, the government is only beginning to recognize the potential of domestic firms and thus the benefits of working with them through associations.

The clearest short-to-medium term problem for the cluster is the country's inability to supply foreign investors with a sufficient number of skilled workers. Japanese firm Renesas, for example, had plans for a high-end design center held up substantially because after 2 years of advertising and 1,000 applicants, it could only identify 60 satisfactory candidates for 500 engineering positions. Perhaps even more alarming were the troubles faced by the cluster's showcase investor, Intel. In tests given by Intel to 1,965 engineering students, only 320 obtained an acceptable result--including only 90 with score over 60% (World Bank 2007). Substantial retraining was required for 1,000 engineers that were hired for work in electrical engineering, electronics, IT, and automation. Punctuating the urgency and scale of the need, Taiwanese firm Foxconn (Hon Hai) will require over 50,000 workers for its network of plants

While Vietnam's higher education system is indeed training a reasonable quantity of engineers and scientists, the quality simply leaves much to be desired. In addition to the problems with the university system described in the country section, linkages between industrial companies and higher education institution are weak. In some cases, university graduates do meet changing requirements because of a decoupling between industry needs and obsolete education system.

### ***3. Concerted government efforts to support export-oriented electronics cluster...***

*The government has recognized the importance of the electronics cluster with numerous initiatives including a Master Plan in 2007, laying out goals to 2010 and 2020, and creation of a*

new office of IT and electronics within the Ministry of Industry and Commerce.<sup>5</sup> In somewhat typical fashion, though, these efforts do have a top-down nature and often put government in the unlikely role of initiator rather than regulator.

***... BUT artificial distinction between firms with domestic-orientation and those with export-orientation undermining cluster efficiency.***

While firms exporting to world markets face serious pressure to be competitive, domestic-oriented firms may also contribute significantly to cluster competitiveness. Some companies, for example, produce goods that are first sold domestically and then sold internationally. “Reverse tariffs”, therefore, that penalize producers of sub-assembly inputs sold to export-oriented manufacturers actually undermine the industry’s global competitiveness. Similarly, tax incentives reserved only for 100% export-oriented firms discourage local experimentation.

***4. Rapid increase in use of high-tech technologies by young population...***

Vietnam is experiencing a rapid increase in the uptake of new technologies, e.g. application of cutting edge technologies such as cell phone banking. These improvements are reflected in the Business Competitiveness Ranking (Porter 2008). The upward arrows in the Exhibit 1 show an improvement in ranking of greater than 10 in the last six years. For instance, while Vietnam was ranked 72nd out of 74 countries in the year 2001 in terms of internet users per 10,000 inhabitants, they managed to make it up to 51st in 2007, a significant improvement of 21 ranks.

***... BUT the current base, and even the long-term potential, of demand is small.***

Growth in technology uptake must be kept in proper perspective: Vietnam is still a poor, largely rural country. Despite growth in Internet penetration per household, for example, the level remained below 10% in 2007, behind Taiwan and China. Even looking long-term, for firms in Vietnam’s electronics industry to achieve scale and efficiency, the general orientation will need to be towards global markets.

---

<sup>5</sup> See Decision 0338/QD-BCT, dated January 21, 2008 on creation of the new department.

## **IV. Recommendations**

### Overview of approach

Clearly, Vietnam has achieved remarkable improvements in recent years given its legacy.. The relevant question to ask, however, is whether Vietnam will be able to maintain and strengthen its competitiveness within the rapidly changing global economy.

To do so, we recommend that Vietnam's political and business leaders focus their attention on achieving two broad goals. One, they should try to *maximize the positive externalities* associated with the activities of existing firms and companies. Second, they, especially the government, should try to *level the playing field* for all so as to pave the way for further development of the cluster and creation of more spillovers among the industries.

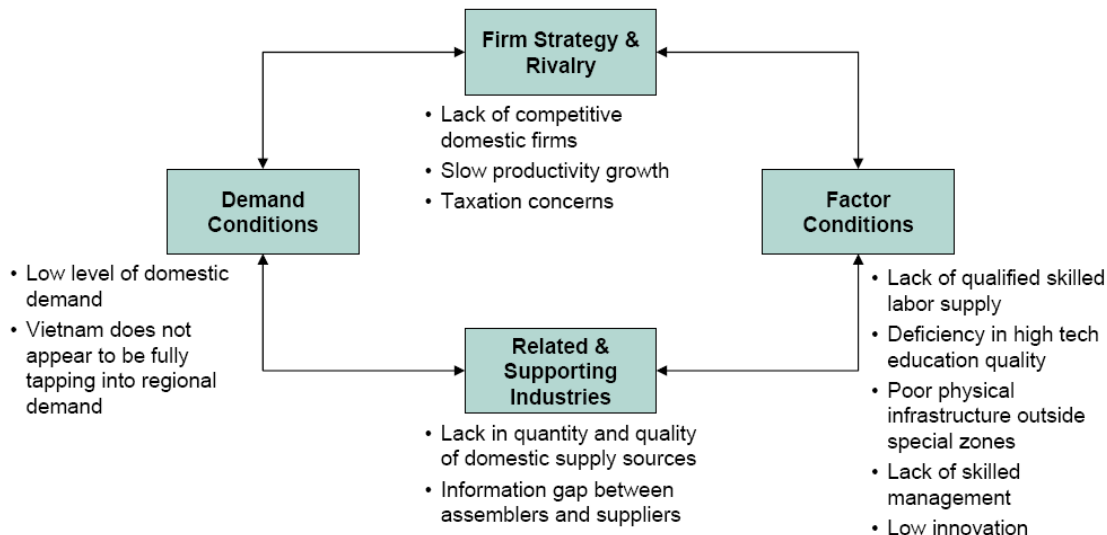
Short-term strategy will help move Vietnamese electronics cluster from a currently factor-driven sector to a more productivity-driven sector. Vietnam could continue to pursue cost-competition in activities of assembly and testing. Vietnam must remain cost competitive as an investment destination against similar countries such as Thailand and Indonesia. Vietnam's incipient electronics cluster relies on the initial advantage of unskilled labor, but labor productivity must also continue to advance faster than that of Vietnam's peers.

Long-term strategy will help Vietnamese cluster transition from productivity-driven to innovation-driven cluster with a different product mix. Over time, Vietnam can transition towards capital intensive manufacturing investments or differentiated activities in the supply chain (i.e., front-end design, research and development and after sales support services).

Because most constraints facing the cluster echo the constraints facing the country, our team groups recommendations together and highlight issues that pertain explicitly to the country or cluster, where necessary.

## Summary of constraints and implied recommendations

Figure M: Summary of Key Constraints for Vietnam's Electronics Cluster



While firms may enjoy the abundance of low cost labor and highly well-developed IZs for export-oriented industries, they suffer from a lack of higher quality and competitive skilled labor, especially one that is innovative and productivity-driven. For instance, while Vietnam was ranked 72<sup>nd</sup> out of 74 countries in the year 2001 in terms of internet users per 10,000 inhabitants, they managed to make it up to 51<sup>st</sup> in 2007, a significant improvement of 21 ranks. (See Exhibit 1).

The widening supply demand gap in skillful labor needs to be addressed as soon as possible to avoid pulling back the electronics cluster development and foreign investment.

Vietnam is generally characterized by weak and unsophisticated demand conditions, which seems to be changing over time as evident from relatively faster increase of technological uptake among consumers i.e. rising numbers of cell-phone and internet users per 10,000 inhabitants.

Despite liberalization and recent progress, much remains to deepen rivalry, which primarily is done on price, and nurture a healthy base of supporting industries, which is nascent at best.

## Recommendation details

### ***Short-term strategy:***

#### Upgrading skilled and semi-skilled labor to be more tailored to market demands

(Universities/MOE). A number of players, including universities, the Ministry of Education, and, most importantly, the private sector, should assist to increase the quantity and quality of skilled labor. Some is being done already, including the creation of the first private university in Vietnam, FPT University. IFI (Institut de la Francophonie l'Informatique), which is funded by Belgium, Quebec, Canada, France and Luxemburg, trains engineers and college professors in computer science. Additionally, government should relax ability of private educations, which will be more responsive to market needs, to flourish, particularly at the post-secondary level and technical training. The MOE is in the midst of and should continue to upgrade technical curriculum in the public education system.

Reduce regulatory distinctions between in IZs vs. outside and for export-oriented vs. domestically-oriented (National/local government). A reduction would help realize positive externalities among cluster participants and to promote domestic firm development. Accelerate the elimination of “reverse” tariffs on parts (which often makes it more expensive to purchase domestic parts than to import them). The Common Investment Law, which was passed in 2005 is an example in leveling the playing field given its appeal to all forms of businesses. Significantly more needs to be done.

Facilitate regional collaboration, including sharing information about global market trends and help develop regional standards where appropriate (private sector, national government, IFCs). Within ASEAN, leaders should promote regional linkages between industry, government, and academia that can help form common technical standards, integrate processes and promote sub-regional specialization. Some spillovers of regional integration include expanding addressable market size to offset weakness in Vietnam's domestic demand conditions and helping Vietnam upgrade its capabilities and specialization.

Continue to stimulate private and foreign sector investment by honing in on the key issues for investors outside of low labor cost (MOTI/MOJ). Protection of property rights, establishment of a predictable legal system, transparency of land use rights, etc. Provide tax “sweetner” for R&D investments.

Maintain parity on cost competitiveness and macro stability (MOF, MOTI, private sector).

Policy makers can use incentives including tax, tariffs, and industrial parks as levers to compensate investors for shortages in infrastructure, low availability of suppliers and related industries and skilled labor. Vietnam, should eliminate inflationary pressures, avoid capital and land bubbles and capitalize and stabilize on gains

Introduce collaboration across the Hanoi and HCMC regional electronics clusters (IFCs). IFCs such as the Hanoi ICT Association could also play the role of a bridge builder between firms in the two regions.

***Medium- and Long-term Strategy:***

Tackle Corruption (national and local government). Strengthen its anti-corruption efforts by giving the anti-corruption board more autonomy and resources. Also, accelerate the deployment of the Grassroots Democracy Decrees, which decentralize accountability and transparency to the citizens within provinces, districts, and communes.

Extend infrastructure beyond cluster IZs (MPI). In allocating investments, Vietnam should support electronics all firms, adopting a portfolio approach without choosing specific “winners” or over-catering to large multinationals at the expense of other players. Infrastructure outside of IZs lowers transaction costs for all participants, enables better access to domestic firms, and levels the playing field.

Emphasize creativity in basic education (MOE). Adjust the curriculum away from rote memorization to spur new ideas, encourage creativity, and applaud inventiveness early on during



school years. Consider inter-school competitions and awards for “Vietnam’s most creative student”.

Incentives for priority activities that move up cluster up the value chain (i.e., tax credits for R&D, accelerated depreciation) (MOI/IFCs). Investments necessary to participate in higher value-added product segments require long development times and targeted investments in building specialized labor skills and transparent legal institutions. These incentives encourage MNCs to invest for activities beyond labor-intensive ones. Moreover, as countries such as Singapore and Malaysia transition to higher value niche segments such as wireless technology and precision medical equipment, they will divest and phase out from their traditional electronic segments. In its path to gradual upgrading, Vietnam would benefit from absorbing these market niches that Singapore and Malaysia leave behind. Policy and environment should make it attractive to do so.

Public/private partnership for funding of R&D and training (MPI). Vietnam is currently far from the technological frontier in terms of innovation and R&D in the electronics cluster, and innovative activity, if any, is limited to industries in the export-focused and special IZs.

Go beyond equitization of SOEs to privatization (MOF/MPI). Mitigate conflicting, anti-competitive objectives of domestic partners. State partners often possessed significant non-economic goals (e.g. retaining redundant workers) that conflicted with operational enhancements. Engage in complete, gradual privatization, using the State Capital Investment Corporation as the vehicle.

Empower private firms to form independent business associations (IFCs/private sector). Having private-led industry associations will improve the usefulness and responsiveness of IFCs.

## V. Appendix

### Exhibit 1: Vietnam's GCR Metrics, 2007

	Rank (Out of 74)		
	2001	2007	Change
Business Competitiveness Index	61	60	1
Company operations & strategy	63	62	1
National Business Environment	63	61	2

FACTOR (INPUT) CONDITIONS	Rank (Out of 74)			
	2001	2007	Change	Change >10
<b>1. Physical Infrastructure</b>				
Railroad infrastructure	53	50	3	
Internet users per 10,000 inhabitants	72	51	21	↑
Quality of telephone/fax infrastructure	63	52	11	↑
Overall infrastructure quality	70	58	12	↑
Air transport infrastructure quality	68	59	9	
Quality of port infrastructure	68	61	7	
Quality of electricity supply	71	66	5	
Cellular Telephones per 100 inhabitants	71	71	0	
<b>2. Administrative Infrastructure</b>				
Decentralization of economic policymaking	18	28	(10)	↓
Reliability of police services	44	36	8	
Efficiency of legal framework	60	39	21	↑
Judicial independence	48	49	(1)	
Laws relating to ICT	66	58	8	
Low business costs of corruption	58	60	(2)	
Freedom from corruption	74	62	12	↑

FACTOR (INPUT) CONDITIONS	Rank (Out of 74)			
	2001	2007	Change	Change >10
<b>3. Human Resources</b>				
Quality of math and science education	59	48	11	↑
Cooperation in labor-employer relations	18	48	(30)	↓
Quality of primary education	50	56	(6)	
Quality of management schools	67	73	(6)	
<b>4. Technology Infrastructure</b>				
Availability of scientists and engineers	65	41	24	↑
University/industry research collaboration	43	55	(12)	↓
Quality of scientific research institutions	53	61	(8)	
Patents per capita	74	74	0	
<b>5. Capital Markets</b>				
Local equity market access	49	27	22	↑
Venture capital availability	54	44	10	↑
Ease of access to loans	68	62	6	
Financial market sophistication	71	70	1	

CONTEXT FOR FIRM STRATEGY AND RIVALRY	Rank (Out of 74)			
	2001	2007	Change	Change >10 Ranks
<b>1. Incentives</b>				
Lack of favoritism in decisions of government officials	48	41	7	
Efficacy of corporate boards	35	58	(23)	↓
Intellectual property protection	74	63	11	↑
Property rights	74	74	0	
<b>2. Competition</b>				
Extent of market dominance	28	38	(10)	↓
Intensity of local competition	30	52	(22)	↓
Effectiveness of antitrust policy	69	65	4	
Absence of trade barriers	42	67	(25)	↓

RELATED AND SUPPORTING INDUSTRIES	Rank (Out of 74)			
	2001	2007	Change	Change >10 Ranks
Local availability of process machinery	55	46	9	
Local availability of specialized research and training services	65	56	9	
Local supplier quantity	35	61	(26)	↓
Local supplier quality	47	69	(22)	↓

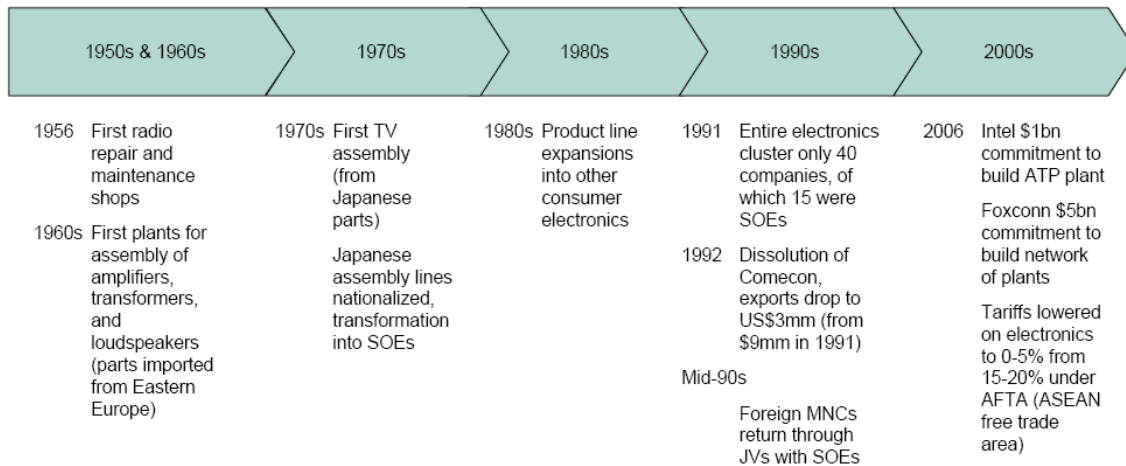
DEMAND CONDITIONS	Rank (Out of 74)			
	2001	2007	Change	Change >10 Ranks
Government procurement of advanced technology products	34	27	7	
Buyer sophistication	27	43	(16)	↓
Presence of demanding regulatory standards	65	67	(2)	
Stringency of environmental regulations	71	68	3	

Source: Prof. Michael E. Porter, International Cluster Competitiveness Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director. GCR data.

Exhibit 2: Vietnam electronics firms location



Exhibit 3: Vietnam electronics cluster development history



**Exhibit 4: Vietnam electronics cluster IFC list**

Category	Title	Mission and Accomplishments
Industry Associations (selected)	Vietnam Electronic Industries Association (VEIA)	"to help the electronic industry in Vietnam remain on a competitive edge through various local and international activities." VEIA's role as the bridge between the electronic industry in Vietnam and the global electronic industry
	Vietnam Software Association (VNSA)	organise an annual software contest; in 2006, they gave out 36 prizes to various individuals and organisations In 2005 signed agreement with Japan External Trade Organization (JETRO)
	Hochiminh Computer Association (HCA)	to be the leading association for IT businesses and experts in Hochiminh City and other areas It has 1200 individual and 187 corporate members
	Vietnam Electronics and Radio Association	"Promote electronic use and development" "Vietnam Electronics 2008" will be held in HoChiMinh City, 26-29 November 2008.
	Hanoi ICT Association	Organizing ICT events and bridging communication and cooperation Collaboration with organizations inside and outside the country
	Vietnam Association for Information Processing Quang Trung Software City (QTSC)	March 6 inaugurated the Software Business Incubator (SBI) in HCM City
Universities (selected)	Vietnam National University (VNU) Hanoi	Several new activities addressing the IT human capital shortage Active College of Technology, with 4 departments, 4 research centers and 5 labs Initiated software development lab with Toshiba Established separate Institute of IT (ITI) in 2001
	RMIT: International University Vietnam	Invited by Vietnam in 1998, RMIT started operation in Ho Chi Minh City in 2001 and in Hanoi in 2004.
	Hanoi University of Technology (HUT)	Panasonic-HUT Embedded Software Engineers Partnership
	Vietnam National University: Hanoi School of Business (HSB)	"to become the premier business school in the training of management and business leaders of Vietnam" Training future corporate and organization leaders
	Institut de la Francophonie pour l'Informatique (IFI)	fund the training of high-level Vietnamese engineers and college professors in Computer Science 2-year graduate program, recruiting engineers, funded by Belgium, Quebec, Canada, France, Luxemburg
	FPT University & Microsoft	First private university Managing organization: Corporation for Financing and Promoting Technology (FPT) Students to come to MIT - jobs guaranteed for graduates

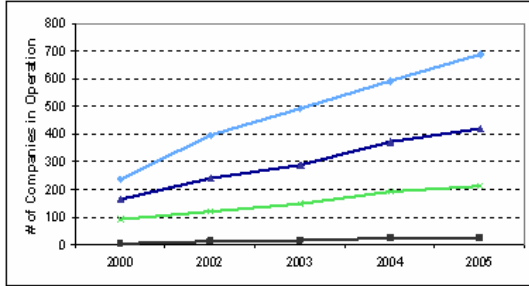
**Exhibit 5: Electronics cluster factor conditions comparison among Vietnam, China and Vietnam**

	Thailand	Vietnam	China
Tax Incentives	Corporate tax waivers 8 years	Exemption of 8 yrs in EPZs, 50% income tax for foreigners; 10% if social or tech	2 year exemption
VAT	7 percent	0-20 percent	17 percent
Ownership liberalization	High	Restricted (but changing)	High
Tariffs	Import duties exempted for 5 yrs; 75% exemption for domestic sales	Waived / claim with export receipts	Negligible import duties for export production
Local content (inputs)	n/a	Limited (5-15%)	Developed (70 %)
Industrial parks	Software park (SPT) for start-up companies	96 export processing zones, Saigon high tech park	Highly developed
Land cost	\$30 per sq. meter	\$35 per sq. meter	\$30 per sq. meter
Transport costs (40 feet container shipping cost)	US\$ 2,000	US\$ 2,500	US\$ 1,500
Skilled labor / specialized skills	Easy: Skill, Technology and Innovation (STI) Program	Moderately difficult	Easy
Unskilled labor cost	US\$70 per month	US\$35-45 per month	US\$63 per month

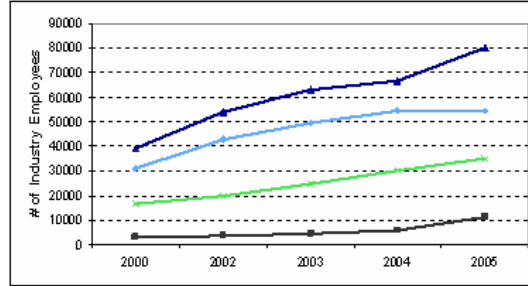
Source: *Isuppli - Validating Vietnam ODM and MES market intelligence, 2006-07.*

**Exhibit 6: Vietnam electronics cluster domestic sector competition landscape**

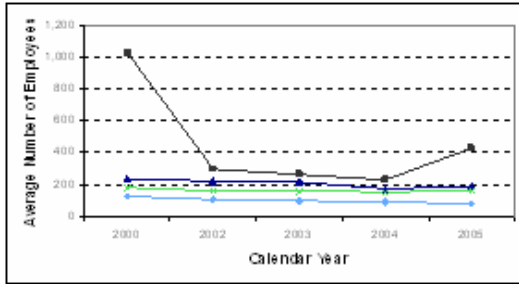
- Number of domestic companies in electronics cluster grew at a 22% CAGR from 2000-2005



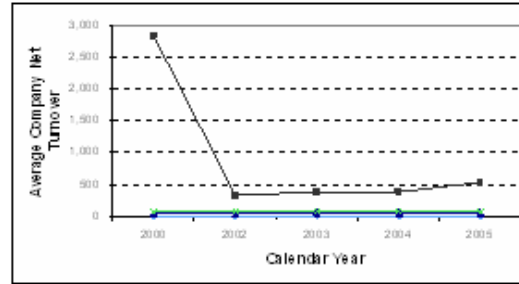
- Total number of employees in the cluster grew at a 20% CAGR from 2000-2005



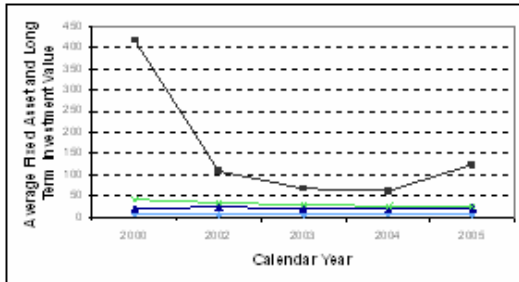
- Average employees per company fell from 181 to 134 from 2000 to 2005



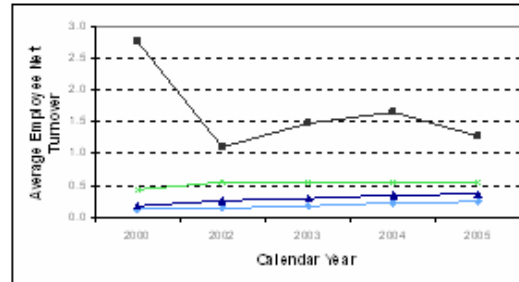
- Average company net turnover was flat (1% CAGR) from 2000 to 2005 (VND Billion)



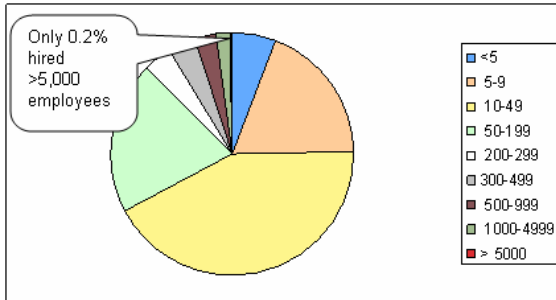
- Average company fixed asset and long-term investment value decreased from 23.6 to 18.4 (VND Billion)



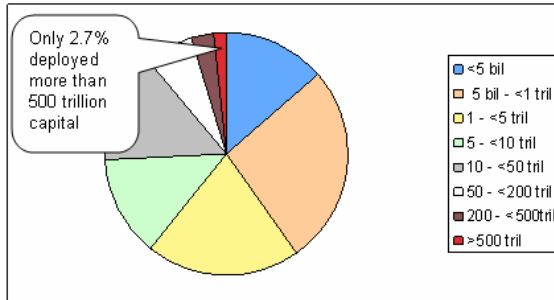
- Per employee net turnover increased by CAGR of 7% from 2000 to 2005 (VND Billion)



- Distribution of Domestic Electronics Companies by Employee Number



- Distribution of Domestic Electronics Companies by Capital Size



## **VI. Bibliography**

Emarketforecasts – Vietnam, Market (2003-2009) and production (2003-2006) statistics on the Vietnamese electronics industry. 10 major electronic product groups are tracked

General Statistics Office (GSO) of Vietnam official website, accessed in March 2008  
[http://www.gso.gov.vn/default\\_en.aspx?tabid=491](http://www.gso.gov.vn/default_en.aspx?tabid=491)

Hoi Tin Hoc TP HCM (2000-2007), Toan Canh CNTT Viet Nam (ICT Outlook)

Malesky, Edmund (2007), Provincial Competitiveness Index

Mallon, Raymond (2007). “Viet Nam: Recent Economic Developments and Key Challenges.” Draft Manuscript (December 30)

Nguyen Thien Nhan (2007) “Strategic Choices for Vietnam’s Higher Education” Presentation on December 3, 2007 in Kuala Lumpur, Malaysia

Ohno, Kenichi, “Building Supporting Industries in Vietnam, Vol.1, Vietnam Development Forum

Pick, Adam, iSuppli, Validating Vietnam – A Resurgence in Southeast Asia Contract Manufacturing Activity, EMS and ODM Market Intelligence Service, Topical Report, Q2 2007

Porter, Michael E., International Cluster Competitiveness Project, Institute for Strategy and Competitiveness, Harvard Business School

Survey Report on Overseas Business Operations by Japanese Manufacturing Companies, Results of JBIC FY2007 Survey: Outlook for Japanese Foreign Direct Investment (19th Annual Survey), JBIC Institute, Japan Bank for International Cooperation, November 2007

The Economist, “Half-Way from Rags to Riches”, April 24, 2008

Vietnam Telecomp 2008, Market Report of Vietnam Telecom Industry, edited November 2007

Vind, Ingeborg (forthcoming). “How do Linkages with Local Suppliers Affect Developmental Impacts of TNCs? The Case of Electronics in Vietnam” in Rugraff, E., Sanchez - Anchochea, D., and Sumner, D. (Eds.), Critical Perspectives on Transnational Corporations and Development Policy, Basingstoke, Palgrave

World Bank (2007) “Vietnam: Higher Education and Skills for Growth” Human Development Department, East Asia Region, Draft for Comments