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**Is China Alpha or Omega  
For the Rest of the World?**



# In China Alpha or Omega for the Rest of the World

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**In-Stat** **MDR**

# Is China Alpha or Omega For The Rest of The World?

November 2003

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# Is China Alpha or Omega For The Rest of The World?

## Executive Summary

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China has had a long and fascinating history, and is now the fastest growing economic power in the world. While other countries are searching for ways to continue to grow and prosper, China is growing almost effortlessly. If it were only that easy!

China has become the place to manufacture goods at rock bottom prices. This makes consumers happy with lower prices, and companies around the world happy through lower costs. For the US, outsourced manufacturing is becoming the de facto business practice. Competition, and the mantra of lower the costs and increase the margins is still the battle cry for most companies. But something has happened that has caused concern for not only the US, but Europe and the rest of the world as well.

## Eden, Valhalla, Paradise, Turns to Hell, Hades, the Fiery Pit

The virtuous cycles of the late 1990's were driven by a rapid adoption of new technologies, as digital technology pervaded cell phones, set top boxes, and even TVs. Both wired and wireless networks proliferated to connect this sea of digital devices. However, as the tech bubble burst, the virtuous cycle that had lifted all boats, came crashing down. Saddled with over capacity at every stage of the telecommunications and electronics industry, fortunes turned to deficits.

Equipment demand seemed to keep increasing, and chip companies built new fabs to keep pace with this virtuous cycle.

## Feeling The Pain

With all of the above firmly in place, grim reality set in and the situation was culminating in to the worst possible scenario; companies were losing massive amounts of money. Providers were looking to protect margins and increase market share, OEMs were looking to protect margin and increase market share, the entire food chain was looking for ways to either protect or increase margin and gain market share.

Something had to be done quickly. Headlines started reading "Company A. lays off 10% of its workforce," "Company B. shuts down manufacturing in two cities, laying off 15,000 employees," "Company C will reduce its workforce by 20% over the next year in the form of layoffs and natural attrition."

While the rest of the world fell into misfortune, China was seeing growth as it started to become the manufacturing engine for the world.

For semiconductors specifically, this region is estimated to have a compounded annual growth rate (CAGR) of approximately 24% for ICs over the next five years. China currently cannot facilitate its own IC demands. However, by 2006 it will require the lion's share of all semiconductors.

### **The First to Feel The Heat From The Dragon**

The new outsourced, china-based manufacturing business model emerged at US-based semiconductor manufacturers in the late nineties. US and European companies, with sales offices in the US, had identified this phenomenon and were trying to compensate for it. It was a trend that made it very difficult for companies to track business in the US.

Companies doing business in the US appeared to be losing revenue and losing their edge on the rest of the world.

In 1997 the worldwide semiconductor consumption by market looked like it had looked for years. The Americas represented well over a third of the worldwide consumption of semiconductors. Japan consumed 24% of the worldwide market at that time. Europe consumed 22% and Asia Pacific consumed 23%.

By 2000 The Americas' consumption had continued to decline, and was quickly dwindling to only 30% of the market. Japan grew to 23% of the market, Europe dropped again to 21% of the market, and again Asia Pacific rose up and went to approximately 26% of the market.

### **America Loses its Dominance**

For the American semiconductor market, 2001 marked the end of an era in leadership. The Americas has gone from 30% of the market in 2000 to 19.8% by the end of 2003. A new leader has emerged; Asia Pac, led by China, will represent a little over 38% of the worldwide semiconductor consumption market by the end of 2003. Japan will follow with 22.5% and Europe will continue to vie for last place with the Americas at about 19.6% of the total market.

# China The New King of The World

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The US also lost another dominant position in 2001. For the second year in a row China has received more foreign investment dollars than the US. This trend will continue. Chinese leaders have recognized its position in the world, and are doing everything in their power to bring the best semiconductor manufacturers in the world inside its borders.

To accomplish this, the Chinese government offers value added taxes for semiconductor manufacturers at rates of 3% that will be paid back as investment credits, tax exemption status for the first two years of profitability and a 50% reduction in tax for the next three to five years. Chip manufacturers are exempt from income tax for the first five years after they break even. They will also get another 50% reduction in tax over subsequent years. For those who want to build 200 mm fabs, they will find that such an investment will be nearly tax-free and that the infrastructure will be subsidized.

Because of the acceptance of China into the WTO, the elimination of tariffs on semiconductors, and reduction of all tariffs on all IT products are to reach zero by 2005. Chinese officials are also supposed to ensure that all manufacturers' are afforded IP protection. In order for China to be successful, officials must find a way to protect IP and greatly reduce piracy and theft. With all of these incentives and margins being pressured by constant price erosion, how can any company not afford to move its operations to China?

## China OEMs and ODMs

Another trend is occurring because of China's allure. In 2000 EMS (Electronic Manufacturing Services) companies had approximately 25% of their capabilities outsourced to low-cost regions with 75% located in higher-cost regions.

By 2001, because of cost pressures, EMS companies were forced to shift operations from higher-cost locales to low-cost regions. By 2002, a full 75% of EMS productivity in the world had shifted to low-cost regions. There does not appear to be an end in sight. By 2006 China will be facilitating 55% to 60% of world's outsourcing needs. This could be a conservative estimate.

# China Could Rule the World

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China's impact on the entire semiconductor and electronics food chain is being felt around the world. Jobs are being lost as China's low costs have entered the equation. Mexico and Latin America, once American hotbeds for low-cost manufacturing are facing the reality that it's now cheaper to have products manufactured and produced halfway around the world rather than just south of the border.

## Perception is Reality

Much of what is occurring is due to the economic draw of doing business in China. We can't really say that the world is divided on this issue, but we can say it's a fairly heated topic. The US is still the largest economy in the world. In recent months the NASDAQ and the Dow Jones industrials have been active and growing. Japan is showing signs of life. But in the grand scheme of things, the US has accounted for over 60% of the worldwide cumulative growth in global output since 1995. The US being the champion has a lot to lose.

Is only the US feeling the pain? When you look at the trade deficit the US has with China, compared to other economies it is quite a telling story. In 2002, China's exports into the US exceeded well over \$60 billion while at the same time it only imported approximately \$25 billion from the US. Meanwhile, Japan and China were almost equal at approximately \$50 billion imported into China, and approximately 45 exported from Japan. Europe has a little deficit as well, but not as bad as the US. In 2002 China's exports to Europe were approximately \$45 billion while imports were around \$37 billion. As for Southeast Asia, China exports around \$22 billion, yet it imports around \$30 billion. This means that only the US has a huge deficit with China.

## Problem Solved, China??

This is where it truly gets ugly, and people become divided. China is a low cost manufacturing region, and it appears to have impacted the most influential segments of the US, the backbone of the US's tax base and consumer spending, the middle to upper-middle-class. Jobs have been lost at not only the manufacturing levels, but also at the white-collar middle and senior management positions. All those six-figure salaries are disappearing as companies have had to maintain shareholder value. These jobs don't appear to be resurfacing either. As these are very difficult times, people want to place blame somewhere, and what better place to lay that blame than China? The way to get satisfaction now will be coming shortly in the 2004 presidential election. The Democratic Party is more than happy to fuel the fire when it comes to this issue of where all the jobs have gone.

## Is China Really The Problem?

Many believe China is the problem, however on the other hand, maybe it isn't. On one side Democrats and even some Republicans are charging that China's monetary policies

are costing the US manufacturing jobs. On the other side of the equation, many believe that these jobs were lost to developing countries, long ago. India comes up in many conversations for the collapse of the entire IT infrastructure of employment. As more US companies began outsourcing IT to India to save money, more and more six-figure IT professionals lost their jobs here in the US -- but this is just one example. If we had a third hand, some believe China and the US have a strange symbiotic relationship. This is based on theories that the US and China have complementary economies currently. China provides low-cost merchandise to the US and allows low-waged Americans to live a better life. While the US supplies China with capital investment and high-value goods and services to help its economy grow. But there appears to be a problem with that theory. Even though China supplies low-cost products to the US, because of the current employment situation, many are hesitant to purchase those products.

## **Looking at the Money**

China's currency is currently pegged to the dollar and US companies are using that as a base for the low cost manufacturing issue.

Many economists, primarily from the US, and some in other parts of the world believe that currencies should be allowed to float and find their true market value. Over the last few months these statements have been aimed directly at China. The reason for this is that China's central bank has fixed the Yuan at an exchange rate of approximately 8.2 Yuan to the U.S. dollar, and this has remained at this level since 1994. Many believe that because of this and the fact that China has lately been running a large surplus in its trade with the U.S. that the Yuan has become undervalued. With that in mind, if the US dollar continues to drop the Yuan will continue to drop and make buying goods from China and investing in China even more attractive than investing in the U.S.

## **More Political Pressure on The Issue of China**

As the political race heats up in the U.S. more pressure to fix job loss heats up. And many presidential hopefuls would like to punish China and impose tariffs on Chinese products to counteract its perceived currency advantage. Many believe that Asian countries are manipulating their currencies, and would like to see this situation rectified. One way to do that would be to impose significant tariffs on imports from Asian countries, in particular China.

The current administration has, in many people's opinion, been too gentle with China to relax control of its currency. Chinese officials know that this is an issue that needs to be handled and, according to the Chinese government, they are in the process of dealing with this situation directly.

## **Other Issues**

Money isn't the only issue when it comes to the concerns of Americans and significant job loss. Visas are also being addressed, but this doesn't impact China alone, it impacts several countries.

H-1B Visas, designed for companies to allow specialty workers such as design and software engineers to work in the U.S, and L-1 Visas, designed to allow both small and large corporations to transfer executives and managers as well as specialized knowledge workers from overseas operations to the U.S. are both being restricted. For now, a proposed cap is being suggested for the H-1B Visa to 65,000 from 195,000, and to 35,000 for L-1 Visas. Some believe this will have a negative impact when the market rebounds, and others believe that it will not be a problem to raise the number if needed.

This has been a point of contention for labor unions for years. Why in the world would American companies want to bring in labor from foreign countries when we have more than enough unemployed resources available currently? While that may be the case today, in the past a shortage of technical resources forced companies to look outside their own borders to get the job done.

American companies also found it advantageous to have foreign workers on the payroll. Workers brought to the U.S. to work for a company had no choice but to stay with that company during the course of their Visa -- up to six years. In addition, these workers were often paid less than U.S. workers, which also benefited the company. But it appears that those days are gone. With unemployment at its highest rate in over 10 years, Americans are demanding that companies located here in the U.S. hire Americans living in the U.S.

Until this current recovery really starts to take hold and produce jobs, and until, as many believe will happen, baby boomers begin to retire and create open positions, companies around the world will continue their lean and mean non-hiring policies.

## **Markets and Other Interesting Facts on China**

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Conversely, many companies around the world are very excited about a potential TAM of 1.3 billion consumers. We all know that all of those 1.3 billion people can't currently afford most of the products that are being produced inside China's borders. But as more and more foreign investment flows into China, more people will be able to buy what were once considered luxury items; over 200 million Cell phones are currently in service. This, in addition to personal stereos, TV's, DVDs, and for the dual-income houses, is what is generating so much interest in this market. Yes, The US is a huge market, but what if for now 10% of those 1.3 billion people could afford all these items and more. You are talking about a market of 130M people. This is a market that many companies want to address, and are positioning themselves to ensure they are on the leading edge of facilitating that potential demand in China.

This market is absolutely burgeoning and in need for logistics help. Federal Express and the United Postal Service are looking at huge potential gains by working with China. Fast food franchises, rental companies, specialty shops, and an entire host of service-oriented businesses are chomping at the bit to get inside China.

Be sure, that Cisco, IBM, Nortel, Oracle, SAP, Microsoft, 3Com, AT&T, and every other technology company are looking at how to exploit the potential that China brings the rest of the world.

China is becoming the new frontier. But how will that impact the rest of the world?

## **The Chinese Machine and Markets**

- Over 75% of DVD players are manufactured in China as Japanese manufacturers have moved operations there to lower costs. Chinese TV set manufacturers are very eager to move into the U.S. market with low cost digital TV products as well as Set Top Boxes (STBs). Just think of the contract DirecTV could be proposing to the Chinese government.
- China has a total of 244 million wireless subscribers (end of Aug. 2003), with a penetration rate of about 18%, much lower than mature mobile markets in Europe and North America. Considering the number of people there are, this really isn't many, and China has one of the lowest cell phone penetration rates of the larger countries. The reason for this is that many people in China just can't afford a phone, even though the rates in China are some of the lowest. China currently has approximately 500M fixed-line phone subscribers as well.
- There are about 25M PHS subscribers, and this is fast growing. This is a "poor man's" cellular which is also popular in Japan. The majority of Chinese phone users are GSM subscribers, but about 10M are CDMA as well, and China is getting UMTS (3G) as well as their version of 3G called TD-SCDMA. TD-SCDMA is a homegrown standard, and "official" licenses will be awarded next year. Some believe that "secret" TD-SCDMA licenses have already been awarded.
- Handset-generated revenue in China amounted to about \$9 billion last year, and is headed for \$16 billion by 2008.
- China's mobile phone regulator Ministry of Information Industry (MII) has a goal of 360 million mobile subscribers by 2005.
- China's homegrown 3G technology, TD-SCDMA is still undergoing testing, and a decision is expected next year on licenses, China will have a mix of 3G: UMTS, TD-SCDMA and CDMA2000 1X-EV-DO/DV.
- There are 24 domestic and 11 foreign companies licensed to manufacture handsets in China, and competition is fierce. The latest quarterly market share is: Motorola 15.5%, Nokia 14.7% and Ningbo Bird 11.9%.
- Some of the leading wireless players in China are (in alphabetical order): Alcatel, Amoisonic, Haier, Legend, Motorola, Ningbo Bird, Nokia, Philips, Samsung, Siemens, Sony Ericsson, TCL, UTStarcom.

- While the market is large and growing, one caveat is important: annual per capita GDP is at \$1,090. And keep in mind, many of the current wireless subscribers are the low-hanging fruit -- those people living in urban areas with better than modest incomes. The next wave of growth will come from second- and third-tier cities, where per capita GDP is much lower and per capita disposable income for rural residents stands at \$320 (\$26.67 per month). This means that handset prices will have to be lower (and explains why PHS, also called "Little Smart," has staying power), and carriers can expect much lower ARPU from these subscribers. So, all is not as rosy as it might seem, but China is still a large and important market.
- According to the China State Statistical Bureau, there was an average of 13.31 computers for every 100 urban households in 2001. In major cities such as Beijing, more than 75% of the population owned a mobile phone in 2002, according to China's Ministry of Information Industry – in Shanghai, the rate was 55%.

## Markets of Interest In China

**Table 1. Total Semiconductor Capital Spending (Dollars in Billions)**

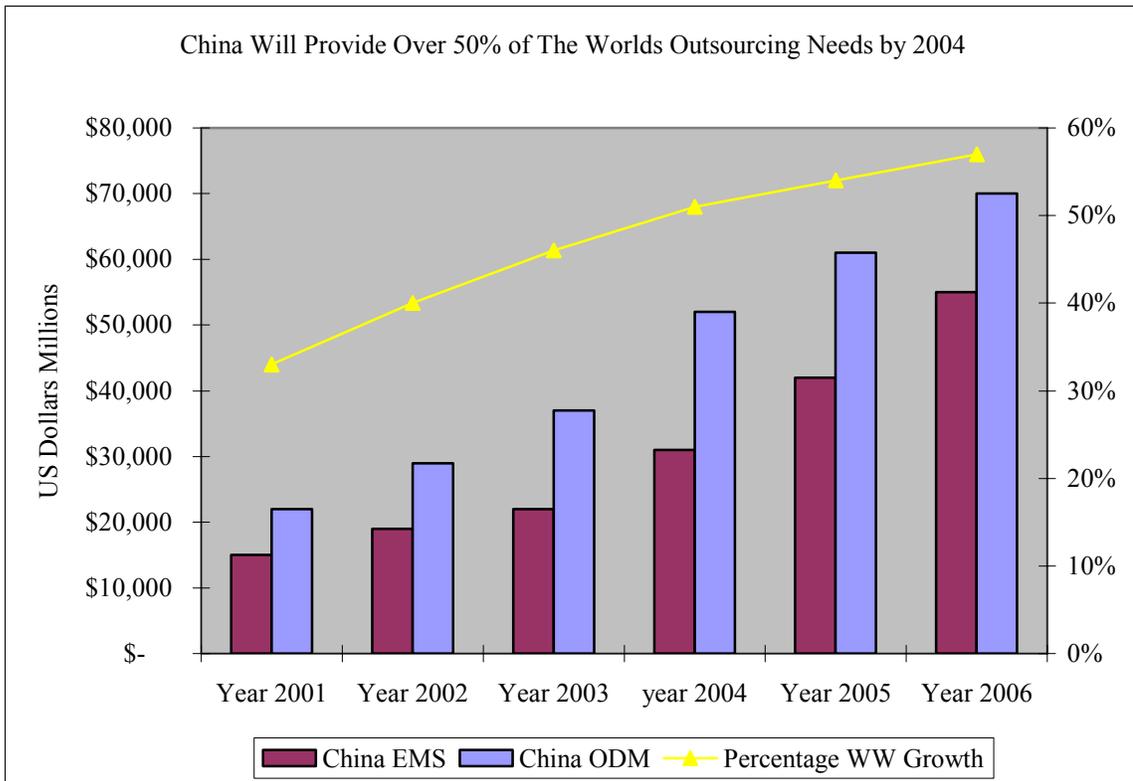
	1997	1998	1999	2000	2001	2002	2003*
<b>Americas</b>	\$14.1	\$12.6	\$12.3	\$20.3	\$16.9	\$10.5	\$9.2
<b>Europe</b>	\$4.0	\$3.2	\$3.8	\$7.5	\$5.1	\$2.5	\$2.7
<b>Japan</b>	\$10.4	\$6.9	\$8.2	\$14.7	\$7.4	\$5.1	\$6.3
<b>Asia Pacific</b>	\$12.6	\$8.8	\$11.9	\$18.7	\$11.2	\$9.5	\$12.7
South Korea	\$5.7	\$2.5	\$3.1	\$5.6	\$3.3	\$2.6	\$4.6
Taiwan	\$5.5	\$4.7	\$6.7	\$10.3	\$5.4	\$3.8	\$4.3
China					\$0.8	\$1.7	\$2.9
Malaysia					\$0.3	\$0.3	\$0.2
Singapore					\$1.4	\$1.1	\$0.7
Rest of Asia Pacific	\$1.4	\$1.6	\$2.1	\$2.8	\$0.0	\$0.0	\$0.0
<b>Worldwide</b>	\$41.1	\$31.5	\$36.2	\$61.2	\$40.6	\$27.6	\$30.9
<b>Growth Rate %</b>	-9.1%	-23.4%	14.9%	69.1%	-33.7%	-32.0%	12.0%

fabs and equipment, source is SMA

source: SMA

As you can see in the above chart the Americas region is about to lose another leading position. Asia Pacific will pass the US in Semiconductor Capital Spending.

**Figure 1. Chinese Outsourcing Forecast**



Source: In-Stat/MDR and TRIMM

As the world seeks cheaper labor, China will accommodate all comers over the next few years. In 2004 China will represent over 50% of the worlds outsourced needs. Because of the great potential in China and the low cost of labor, both EMS companies and ODMs will see significant growth as more regions start to transfer operations and pump more investment dollars in to China.

To insure success, China is producing engineers as fast as it can, at almost double the rate the U.S. is currently. This is to ensure that China has enough resources to maintain a bright future and for it to continue to see growth.

In fact many believe that this current atmosphere in China is very similar to the way is was in the early '90s back in Silicon Valley. Only the future will prove this to be true or not. But for the time being it appears that China is the place to do business and make things happen.

# **Is This a Good Thing or a Bad Thing?**

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This is the \$64 billion question. To China it all appears to be good news but what about the rest of the world? Will Americans have to alter their lifestyles in the coming decades or will this China situation create new jobs and help America and the entire world prosper and grow? These are questions that need to be answered. China is not a black-and-white issue – there are several factors, and variables that can cause this new trend to be successful or extremely damaging. Is there a herd mentality to move into China? China can become very dangerous because of several problems that need to be rectified and addressed. Any company that moves into China to reap the benefits better make sure it has done its due diligence. And In-Stat/MDR has decided to help guide the way.

# Helping Navigate The Dragons Lair

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## CHINESE IMPACTS

In-Stat/MDR announces the inception of a new multi-client study that aims to obtain a comprehensive understanding of the semiconductor and electronics manufacturing impacts on US and European companies/economies resulting from China's emergence in the manufacturing and technology markets.

Initial areas of focus will include the Chinese business landscape, including issues impacting US and European companies in terms of:



- Technology landscape
- Intellectual property evaluation/preservation
- Cost of goods manufactured and impacts of migration to low-cost labor centers
- Challenges for global manufacturers and evaluation of those currently doing business in China
- Specific Opportunities in China, as they relate to the issues and market areas that will be covered in the research
- Strategies and goals of pertinent Chinese manufacturers
- China's five-year roadmap for technology evolution, market focus and revenue share of specific domestic and global markets.
- Identification and assessment of semiconductor companies in China
- Identification and assessment of Original Design Manufacturers (ODMs) in China

Analysis of impacts of this marketplace, and why it is different from, and farther-reaching than earlier markets that have had an adverse impact on US and European markets, e.g. Japan, South Korea, etc.

Sponsoring companies will be involved from the project's inception to its completion, having direct input into research scope and direction. Sponsoring companies will have the opportunity to be presented the following deliverables on an ongoing basis as results become available:

- An in-depth, on-site, presentation with supporting data upon completion of the study
- Comprehensive reports that will encompass:
  - Chinese contract manufacturers - profiles including areas of expertise and share of market where feasible
  - Chinese ODMs - profiles including areas of expertise and design capabilities
  - Chinese Semiconductor Manufacturers - profiles including areas of expertise and share of market where feasible
  - Government and Business Associations/Entities - profiles including contact information that can aid in facilitating migration to, and participation in, the Chinese marketplace

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