

Why China Matters in Global Electronics

In the universe of the global electronics industry, China has emerged as the rising star. In the wake of the recession in information technology—the worst in the industry's history—the world's leading electronics companies are flocking to China in search of low-cost labor and a share of the rapidly growing Chinese market. The electronics industry is in line with many others, not only shoe and garment companies with their notorious appetite for cheap labor, but also technology-based manufacturing industries such as automobiles. However, electronics has a pioneer status for higher-technology manufacturing in China, since no other industry has production networks of similar size and scope in China.

The figures are impressive. The UN Conference on Trade and Development reports foreign direct investment (FDI) in China of \$46.8 billion in 2001. Growth rates for FDI have been constantly on the rise since the 1990s, reaching 15% between 2000 and 2001. This development has been linked closely to the deflationary forces behind the so-called “new economy” in the United States and other industrialized countries, as illustrated by the electronics sector. According to *Far Eastern Economic Review*, China's exports of television and audio equipment to the United States rose by 13% per year between 1998 and 2001; in the same period TV-set prices fell by 9% each year. In the wake of the economic downturn, this trend has accelerated. In the first seven months of 2002, China's export of electronics goods to the United States rose by 47%, reaching \$1.2 billion in June 2002 alone.

As in other industries, the development in electronics has been characterized by rapid upgrading from low-cost consumer goods to higher-technology items. Today, information technology (IT) is key—i.e., the manufacturing of personal computers (PC), cell phones, handheld computers, and consumer electronics such as game consoles. An increasing proportion of this is carried out by subcontractors—multinational electronics manufacturing services (EMS) firms from the United States such as Soletron or Flextronics, or Taiwanese subassemblers operating under what is called an original design manufacturer (ODM) model.

This is accompanied by the shift of the electronic industry's key sector, chip making, to China. Up to now, most chip producers, such as Intel, have limited their Chinese investments to the back-end

processes of assembly and testing. However, Taiwanese contract manufacturers in the chip industry (called *foundries*) have taken the lead to build wafer-fabrication plants in China—after massive conflicts with conservative Kuomintang forces in their home government. Whereas Taiwanese companies with their strong relations to Silicon Valley, play a key role in managing relationships with U.S. IT firms, a new generation of indigenous electronics firms is emerging on the Chinese mainland. Its leaders, such as Legend, Haier, TCK, and Konka, are potential multinationals themselves.

For foreign multinationals, the most important attraction has been the low wages (generally estimated at around 80 cents per hour in light manufacturing), driven by the transformation of China's huge agricultural workforce of 700 million into wage laborers. In addition, China is offering low costs for land and other investments, a well-developed infrastructure in roads, railways, and telecommunications, and a national market with huge growth opportunities. For cost-effective manufacturing, the availability of low-cost components is a key factor. Guangdong Province is said to have the largest supply base of this kind in the world, mostly built up by companies based in Hong Kong. An EMS firm such as Flextronics purchases a volume of \$9 billion in components and raw materials per year. China offers unique economies of scale to rationalize the supply chain.

The development, however, is highly uneven. Investment is concentrated in the huge urban metropolises of the coastal areas, whereas the rest of the country is exporting low-wage labor to these regions. Southern China's Guangdong and Fujian Provinces, with their proximity to Hong Kong and Taiwan, Shanghai and nearby Jiangsu province, and Beijing are the places “where the action is” (*Business Week* 12/09/2002). The South is seen as the major base for mass-production items such as PCs, cell phones, and game consoles. Shanghai and Beijing have been attracting investment in telecommunications infrastructure plus a substantial amount in software research. Shanghai is also the emerging hub for chip manufacturing.

The strong regional bias has created enormous competition between the regions. Politically, the driving forces are powerful alliances between local government and party officials, multinational investors and

new Chinese entrepreneurs, the latter now officially admitted as members to the Communist Party of China. The politics of market-oriented reform since the early 1980s has given increasing autonomy to local and provincial governments, resulting in a massive shift of China's tax base to local authorities and the transformation of many local politicians and party officials into entrepreneurs.

Trade unions, however, have been mostly left out of this transformation of the state apparatus. In provinces such as Guangdong with thousands of electronics firms, the official All-China Federation of Trade Unions does not have a direct presence in foreign and Chinese electronics firms. As in the rest of the country, independent unions are nonexistent. Only a few Chinese NGOs, supported by labor lawyers and local journalists, take up the widespread complaints of electronics workers over low wages and withheld payments, long working hours, poor safety and health conditions, and living conditions in dormitories. Relatively strong labor laws do exist on most of these issues; the problem, however, is the poor enforcement at the local level.

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This explosive growth in the electronics sector has also generated concerns about its impact on occupational and environmental health and safety. These concerns center on increasingly well-documented cases of elevated cancer rates and adverse reproductive outcomes in the semiconductor industry, and ergonomic injuries and solvent exposure-related illnesses in all sectors of the electronics industry. As the numbers of Chinese electronics plants and workers skyrocket, evaluation and control of adverse health effects must also be a priority.

However, given the relative strength of China in the world market, economic conditions for new, effective occupational safety and health (OSH) policies are not entirely hopeless. Two key issues are the enforcement of OSH regulations in the sprawling low-end components industry, and in the now-rapidly-growing semiconductor industry. Given the ongoing struggle over health and safety research in the chip industry, the latter is a truly global conflict. As China is upgrading its production base, higher quality standards for products and processes, as well as increasing pressure to enhance skills, are appearing on the agenda. Stronger law enforcement would most likely not drive multinationals out of the "wonderland."

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