

Heavy duty China's next wave of exports

A report from the Economist Intelligence Unit





Heavy duty

China's next wave of exports

Executive summary

China's export sector will cross two important milestones in the coming year. First, developing countries (here defined as non-OECD members) will take over as China's primary export market. Second, domestic Chinese firms will overtake foreign-invested companies as the dominant exporters from China.

This white paper looks at how the following trends will shape China's export sector in the coming decade and assesses the implications for Western businesses:

- As wages in China rise and technology progresses, exporters will move up the value chain and increasingly compete in the core product markets of developed countries. Heavy-equipment manufacturers, notably in the construction machinery sector, are likely to take the lead. China is expected to overtake Germany and Japan in construction machinery exports by the end of 2011 to become the world's second-largest exporter of such goods, after the US.
- China's export growth will be driven primarily by demand from non-OECD countries. Penetration of OECD markets in high-end manufactures is likely to be limited, although China will see rapid increases in market share in non-OECD markets. Western companies have in recent years lost significant export market share in non-OECD markets.
- In a related trend, foreign-invested firms in China will relinquish their dominant role in driving China's export growth. Over the coming year, the share of China's exports produced by domestic companies, currently at 48%, will cross the halfway mark.
- Within China, the heavy-machinery export boom will support the development of the country's poorer inland regions, where heavy industry is dominant. Extensive infrastructure development within China and with its neighbours is accelerating economic integration in Asia and connecting the Chinese hinterland to the vast pan-Asian market.



Heavy duty

China's next wave of exports

China's golden decade

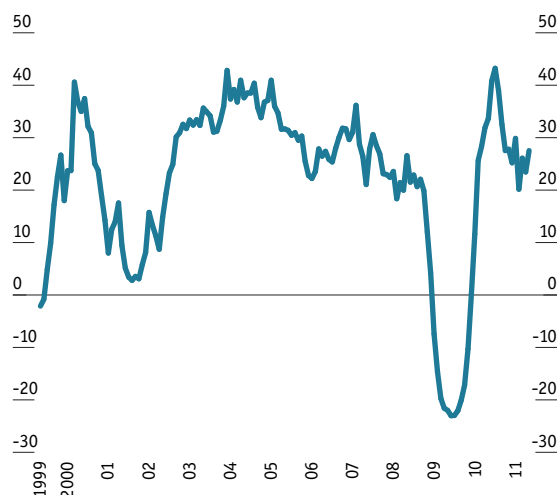
After a painful 2009, China's export growth has recovered to levels seen just before the downturn. Since 2001, China has steadily increased its share of global manufactured exports, by around 1 percentage point per year. In 2010 the country's share of global manufactured exports reached 13.7%, up from 12.1% in 2009. This trend in growth is likely to persist in the coming decade. However, China will reach a point where mounting labour costs trigger declining shares in low-end exports, offsetting gains in the mid- and high-end value segments.

But that point has not yet been reached. China's export market share in low-end goods is still increasing and, thus far, the degree of export competition between developed countries and China is still relatively low. The Export Similarity Index (ESI) provides some sense of the degree of overlap of China's exports and those of its wealthier trading partners. A score of 100 suggests identical export structures; a score of 0 means that both exporters do not participate in any of the same markets (no competition).

The graph at the top of the next page shows the ESI over the last decade in trade between China and Japan, the EU and the US. The trend is clearly upward, although levels are still low, indicating that China is still predominantly a labour-intensive, low-end export power, excelling in production of commodities such as clothing, textiles, footwear and toys.

This situation is changing, however. The graph at the bottom of the next page shows how China and the developed economies (here consisting of the US, EU27 and Japan) perform in nearly 900 product categories. The product markets have been sorted by developed economies' global export market

China exports: back in full force, May 1999-May 2011
(% change, year on year; 3-month rolling sum)



Source: China Customs.



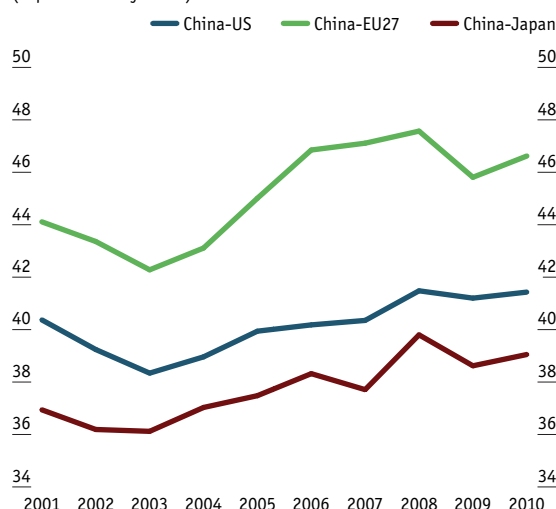
Heavy duty

China's next wave of exports

share in 2001. In general, product markets dominated by developed economies tend to be high-end, technology- and capital-intensive products and are located at the top of the graph. In turn, markets dominated by China tend to be low-end and labour-intensive and are located near the bottom of the graph.

China and other developing countries are increasingly encroaching on categories in which developed countries have traditionally been dominant. It is also apparent that China's global export presence in the mid- and high-range of exports is considerably larger than it was a decade ago. Meanwhile, the combined share of global manufacturing exports held by the US, EU27 and Japan fell from 63.3% in 2001 to 56.3% in 2010. The specialisation of developed economies and China in high- and low-end goods still prevails. However, it is less distinct than it was in the past.

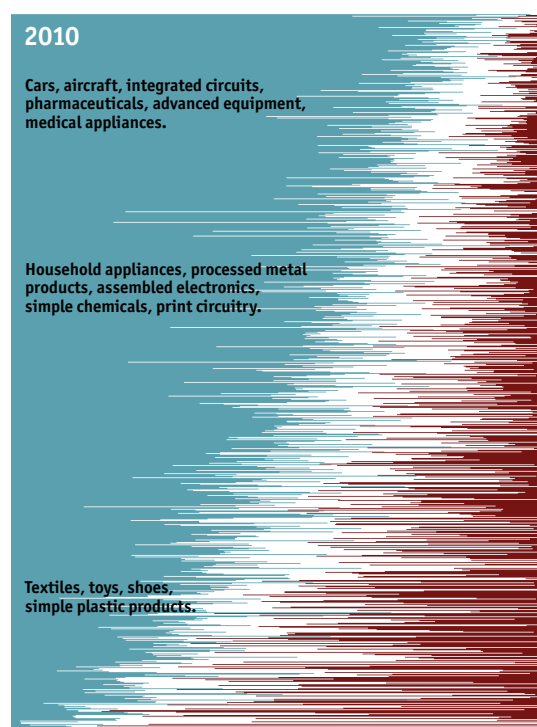
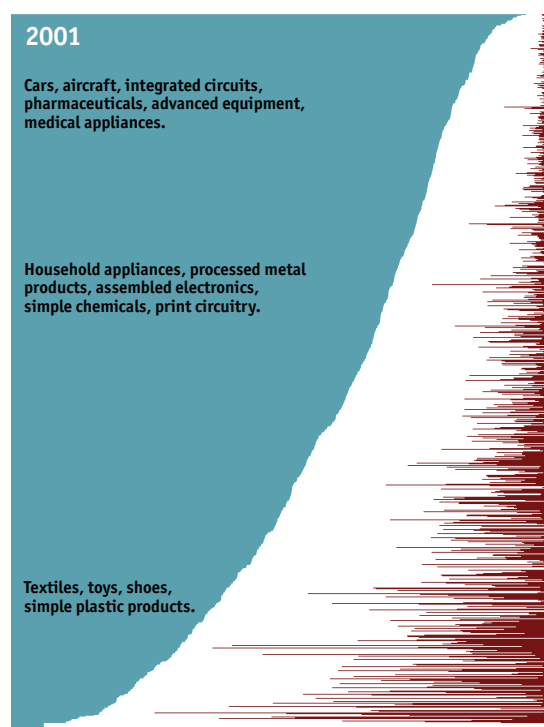
Increasingly similar exports, 2001-10
(Export Similarity Index)



Sources: ITC; Economist Intelligence Unit calculations.

China exports: climbing the ladder, regional share of global exports in 2001 and 2010

(export product categories sorted by developed economies global export share in 2001)



Sources: ITC; Economist Intelligence Unit calculations.



Heavy duty

China's next wave of exports

What would the graph look like in 2020? As China vacates the low end and builds market share in the middle end, its export profile could be expected more closely to resemble a hump, rather than a bottom-heavy pyramid.

The hot zone

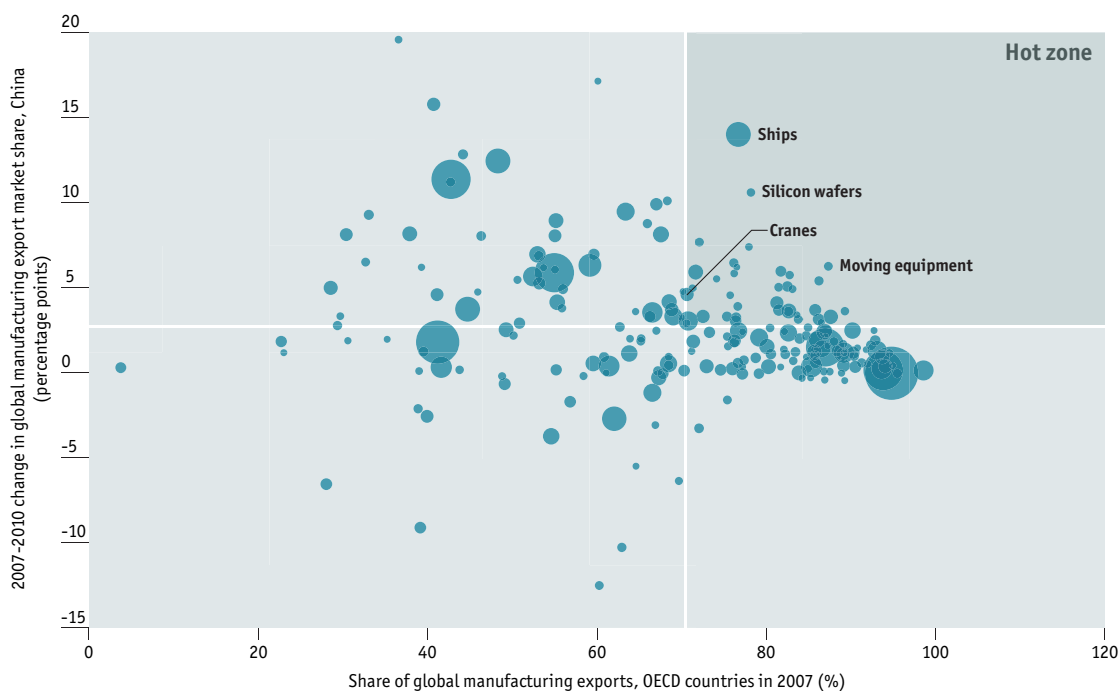
To what extent should developed economies be worried about rising manufacturing sophistication in China? Past experience suggests that when China ramps up in a sector, backed by economies of scale and substantial investment, the global impact can be considerable. This was the case in the steelmaking industry in the mid-2000s. To answer such a question, however, consideration needs to be given not only to those markets that China is entering in a big way, but also to the importance of the markets in question for developed economies.

The graph below provides an overview of which sectors in OECD member countries are currently experiencing the strain of Chinese export competition. A total of 217 commodity export markets with a global export value of at least US\$10bn in 2010 are plotted in terms of OECD countries' share of global exports (horizontal axis), together with the three-year change in market share experienced by China (vertical axis).

The graph is then segmented into four quadrants, based on the average market share increase experienced by China, and the average market share held by OECD countries. Thus, the top-right quadrant (the "hot zone") shows the sectors in which OECD economies held a dominant market share, and in which Chinese exporters have made significant inroads over the past three years.

China export "radar"

(circle size indicates global export value)



Sources: ITC; Economist Intelligence Unit calculations.



Heavy duty

China's next wave of exports

A total of 37 sectors are found in the hot zone, representing a global export market value of US\$927bn in 2010. OECD countries' share of these export markets has fallen from 79% in 2007 to 74.7% in 2010. Meanwhile, China's share has increased from 8.5% to 14%.

What are these sectors? Most of them involve capital equipment and related parts, reflecting improvements in precision levels of metal-cutting/shaping facilities and in metallurgical processes. Many components that were previously hard to produce, in particular those that required a certain level of strength, durability and precision, are now being mass produced by start-ups that have successfully reverse-engineered imported products.

The sensitive nature of these hot zone sectors is also reflected in the use of government trade defence measures. Developed countries in particular have begun to diversify the range of measures used to shield their domestic industries, with the EU and US stepping up their use of anti-subsidy

Selected "hot zone" sectors and global export market share (%)

	2010 global export value (US\$ bn)	China		OECD countries	
		2007	2010	2007	2010
Cruise ships, cargo ships, barges	124.0	14.4	28.4	76.7	65.1
Electrical switching apparatus (<1,000 volt)	75.5	8.4	11.4	70.8	71.7
Centrifuges, filtering/purifying machinery	44.9	3.5	7.1	82.7	80.9
Transmission shafts/cranks, gears	42.5	5.1	8.4	87.6	83.0
Refrigerators, freezers, etc	35.5	12.9	16.2	72.5	69.2
Heating/cooling equip for plant/lab use	31.0	3.8	7.5	85.8	84.6
Ball or roller bearings	29.0	8.0	11.0	76.4	73.4
Lifting/handling/loading machinery	18.9	6.8	12.2	86.2	80.2
Motorcycles, side-cars	16.7	18.6	26.3	72.1	60.6
Electrical ignition/starting equip	15.2	4.8	7.5	84.9	82.6
Harvesting/threshing machinery	15.2	4.0	7.6	89.3	84.7
Chemicals in wafer form (mainly silicon)	14.8	7.0	17.5	78.2	65.6
Tube or pipe fittings, of iron or steel	14.6	15.2	18.1	70.6	68.0
Derricks; cranes; trucks with cranes	11.9	16.9	22.4	74.2	69.5

Sectors bordering the hot zone

Taps, cocks, valves for pipes	65.2	13.0	15.1	79.2	76.2
Construction/mining machinery parts	60.2	5.3	7.6	82.6	79.4
Air, vacuum pumps; hoods incorp a fan	59.8	10.6	13.1	76.8	74.5
Pumps for liquids; liquid elevators	51.1	5.3	7.7	86.9	84.3
Self-propelled bulldozers, excavators, etc	35.7	3.9	6.3	87.0	84.0
Optical fibre, cables	25.9	8.3	10.7	73.3	71.5
Aluminium bars, rods and profiles	13.5	14.9	17.3	67.0	65.9
Moving/grading/boring machinery for earth	10.4	14.6	16.9	77.2	75.3
Fork-lift trucks; trucks with handling equip	10.2	4.9	7.4	92.7	90.1

Sources: International Trade Centre (ITC); Economist Intelligence Unit calculations.



Heavy duty

China's next wave of exports

measures (so-called countervailing duties) in recent years in addition to traditional anti-dumping duties. Many of these new measures target machine parts, with 11 out of 18 different countervailing duties imposed by the US on China between 2008 and 2010 involving some form of metal componentry.

Yet there is a notable absence of trade defence measures when it comes to completed machines, with the exception of a World Trade Organisation (WTO) dispute won by the US in 2011 over China's state-subsidised wind turbine industry. This is because much of China's exports of finished machinery go to countries where there is limited domestic capacity to produce similar equipment (see section titled "A south-south affair").

For all the acrimony over the hot zone sectors, these segments still represent a relatively small portion of world trade. China has yet to make any notable impact on the US\$553bn car export market, the US\$310bn packaged pharmaceuticals market, or the US\$85bn aircraft market.

But changes are under way. China's share of the US\$361bn microchip export market has gradually crept up to about 8% over the past decade. The country now commands a substantial share of global production of information and communications technology (ICT) equipment, although export statistics in these sectors tend to be misleadingly high given the extensive degree of processing and assembly activity. But this, too, is changing as Chinese manufacturers gain a better grasp of how to produce imported computer and mobile-phone components.

Gone are the days when the West had the luxury of worrying about low-end textiles and shoe exports from China. The future of exports from China will be led by equipment manufacturers, and although these may not yet be penetrating Western markets, competition in third markets is intensifying. The next section looks at one sector where this process is already underway.

Building the world's building equipment

A number of categories in the hot zone relate to construction machinery. China's output in this sector has grown rapidly in recent years, accounting for roughly one-fifth of global production in 2010. Having already established a firm foothold in cranes, and cement trucks and pumps, China's construction gear makers are now piling into the prized earth-moving equipment market, which has hitherto been dominated by US, South Korean and Japanese firms.

Chances are high that they will succeed. A global ranking of construction equipment producers released in 2011 by KHL, an industry magazine, lists three Chinese firms in the top ten (by sales revenue). This compares with only one in the 2010 list and none in 2009.

The number of excavators and wheel loaders produced in China rose by 78% and 75%, respectively, in 2010. China's global export market share of construction equipment more than doubled from 4.4% in 2005 to 10.2% in 2010. In 2011 China is likely to overtake Japan and Germany in construction equipment exports. Doug Oberhelman, the CEO of Caterpillar, the world's leading construction equipment manufacturer by sales, conceded recently that Chinese competitors would emerge as a "serious threat" in coming years.

Frenzied expansion in domestic capacity within China has led a number of construction equipment manufacturers to look to overseas markets. As a result of high import tariffs for construction



Heavy duty

China's next wave of exports

equipment, parts of production has been localised in overseas markets, notably in India, where two Chinese manufacturers, Liugong and Sany, now have manufacturing operations.

Global export market share of construction equipment (%)

	2001	2005	2010
China	2.3	4.4	10.2
US	21.2	16.0	15.7
Japan	10.0	11.5	10.8
Germany	12.8	12.5	11.5
Global export value (US\$ bn)	62.1	119.5	153.2

Sources: ITC; Economist Intelligence Unit calculations.

China's construction equipment sector is illustrative of a rather different type of manufacturing competition to come out of China. For a start, the construction equipment sector was domestically generated, not born out of foreign investment. In this respect it differs from many other sectors, ranging from textiles in the 1980s (led by investment from Hong Kong) to today's joint-venture-driven automotive industry.

Moreover, construction equipment manufacturers grew on the back of domestic demand, rather than exports. Given the tendency of foreign-invested operations in China to constitute a (often small) part of the global product supply chain, many export industries, especially in ICT manufacturing, are highly vertically specialised. This phenomenon is epitomised by the massive assembly complexes of a Taiwan electronics manufacturer, Foxconn, which relies largely on imported components for its laptops and mobile phones.

In contrast, the growth of the construction equipment industry—and heavy machinery industries in general—has been more organic. A relatively comprehensive domestic supply chain has emerged.

Furthermore, China's exports of construction gear are, by and large, not to developed-country markets. A bulldozer or excavator that was made in China is a rare sight in construction yards in the US or Europe today. Russia and Brazil are the largest importers of China's earth-moving equipment, while India is the biggest purchaser of its cranes.

There are many reasons that emerging markets are becoming the main buyers of equipment from China. First, and foremost, many equipment manufacturers in China are finding US and European markets to be impenetrable. In the case of earth-moving equipment, high standards for engine emissions are a key obstacle.

In addition, customers in developed countries tend to have a different emphasis in terms of value. A construction firm in the US will focus on productivity and the life-cycle cost of equipment, for example on the total tonnes of dirt per dollar an excavator will be able to move in its lifetime. This is where Chinese suppliers tend to fall short. After-sales servicing is also an important area of value-added for Western businesses.

Conversely, customers in developing countries tend to focus on up-front costs, partly owing to a lack of credit facilities, and prefer to repair equipment themselves. Thus, offering the most sophisticated



Heavy duty

China's next wave of exports

technology can often be a drawback for Western firms. Anthony Farmer, a former strategist at Caterpillar in China, has found that it is often easier to add value and features to a low-specification machine than to reduce the cost of a high-specification model to meet the requirements of a lower-price point market.

Gaps in perception of value between customers in developing and developed economies are pervasive across a broad range of sectors. Safety features or fuel efficiency in cars, for instance, tends to be a hard sell in poorer countries. Global carmakers have found that many of their best-selling models in emerging markets are decades old, mainly because garages are familiar with the technology and the less-sophisticated parts are widely available.

A heavy past

China's newfound heavy-machinery exporting prowess has its roots partially in its Soviet-era past. Under Mao, cities placed an overwhelming emphasis on building up heavy industry. A number of these state-owned firms were privatised from the late 1990s, which prompted consolidation and mass lay-offs. As a result, China had a surfeit of machinists and metallurgists.

Such was the story of Zhou Chaohui, a self-styled "blacksmith" who was laid off in the early 2000s by a state-owned equipment maker. In 2007 he started Tianfu Machinery in Hunan province and,

in collaboration with South China University of Technology, learned how to produce varieties of fishplate, a type of heavy adjoining plate, and wear-resistant curved pipes—parts that were hitherto largely imported from Europe.

Tianfu has enjoyed great success, with production value reaching Rmb50m (US\$7.4m) in 2010. Mr Zhou says that his firm is now struggling to meet its domestic orders, which are around double that of its existing production capacity. With a new facility under construction, plans are to increase output tenfold within three years. In the meantime, Tianfu's components are helping to cut production costs for a wide range of downstream manufacturers.

A south-south affair

The rise of emerging markets as a major source of external demand for China's exporters began in the mid-2000s. In 2012 it is likely that non-OECD countries will take over as the primary export market for China. If Turkey, Chile and Mexico are excluded from the OECD group, the transition will take place in the second half of 2011. However defined, developing countries—especially emerging markets such as India and Brazil—will be the dominant driving force behind China's export growth in the coming decade.

At the same time, the share of China's exports produced by foreign-invested manufacturers has also fallen steadily since peaking at around 60% in 2005. Domestic firms, such as producers of heavy machinery, are playing an increasingly prominent role in driving the country's exports. By 2012, Chinese companies will have taken over from foreign ones as the prime movers. The flip side of this is that foreign-invested firms in China are increasingly focusing on servicing the Chinese domestic market.

These two trends signify that China's economic engagement with the world in the coming decade, in terms of trade, will predominantly be carried out by Chinese firms serving markets in other developing



Heavy duty

China's next wave of exports

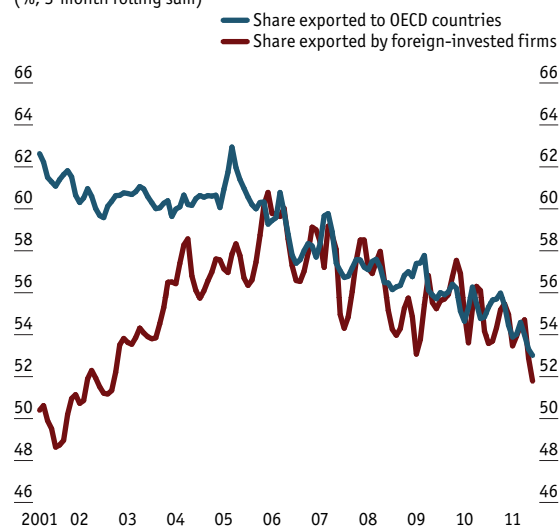
countries. This is in stark contrast with the past decade, during which investment from multinationals was a key factor in integrating China into the global economy.

More importantly, the higher-value goods that non-OECD countries are importing are those in which manufacturers in China are trying to build capacity.

Nearly all the trains, tractors and trucks (see table below) exported from China in 2010 went to non-OECD countries. This may well offer China's manufacturers the overseas markets they need to build scale and technology before entering more highly regulated and quality-conscious OECD markets.

Thus, although Western engineering and high-tech firms may not yet be seeing significant competition in their home markets, they will face a formidable challenge in their overseas markets. In 2008, for example, 71.5% of all machinery imports in the BRIC countries (excluding China) and South Africa came from OECD countries. This share fell to 63% by 2010, whereas China's share increased from 17.5% to 21.8% in the same period.

Changing buyers, changing suppliers: share of China's exports, Mar 2001-Jun 2011
(%, 3-month rolling sum)



Sources: ITC; Economist Intelligence Unit calculations.

Selected high-tech and heavy machinery exports from China in 2010

	Export value (US\$ bn)	Share to non-OECD countries (%)
Electric rail locomotives	0.2	99.8
Tractors	1.0	95.3
Trucks, motor vehicles for transport of goods	2.5	93.0
Steam turbines and other vapour turbines	1.4	89.7
Public transport vehicles	1.0	89.6
Earth-moving equipment	2.3	89.4
Printed circuits	11.2	76.0
Integrated circuits and micro-assemblies	29.6	75.6
Motorcycles, side-cars	4.4	74.3
Cranes, incl. trucks with cranes	2.7	73.3
Cruise ship, cargo ship, barges	35.2	71.9
Lifting/loading machinery	2.3	70.6
Cars	2.2	58.5

Sources: ITC; Economist Intelligence Unit calculations.



Heavy duty
China's next wave of exports

An opportunity for inland China

The rise of Chinese equipment manufacturers and their establishment of closer commercial ties with other emerging markets in recent years has been accompanied by an economic boom in China's inland provinces. For most of the past three decades, China's hinterland has taken a back seat to the coastal provinces, where economic growth has been boosted by foreign direct investment and exports.. However, since 2007 GDP growth in China's inland regions has consistently outpaced that of coastal provinces.

The two trends are not unrelated. For a start, inland provinces' economies tend to lack the light industries such as textiles and electronics that form the backbone of coastal regions' export industries. While inland provinces accounted for only 6% of gross output of telecommunications equipment in 2008, their share of national production in heavy industries was much higher.

In the largest equipment manufacturing segment in China—mining, metallurgical and construction equipment—inland provinces accounted for 53.5% of gross output in 2008. Provinces such as Hunan (see box on Changsha) and Henan took the lead. Inland provinces are therefore in a prime position to benefit from the current boom in heavy-equipment exports.

China's equipment manufacturing sector in 2008

	No. of companies	Gross output (Rmb bn)	Share of inland regions (%)
Mining, metallurgical and construction equipment	2,674	320.5	53.5
Lifting and transport equipment	1,618	246.0	22.7
F&B and tobacco processing equipment	3,912	186.0	39.6
Bearings, gears, transmission and drive components	2,885	167.2	30.3
Metal cutting/shaping equipment	1,230	150.7	44.9
Textiles, garments and leather-working equipment	1,516	77.2	13.0
Pumps, valves and compressors	623	72.2	20.5
Boilers and prime movers	537	30.8	43.7
Ovens and furnaces	249	11.5	20.2

Source: Economist Intelligence Unit.

Moreover, a number of inland provinces have already developed close trade ties with China's neighbouring growth markets. For instance, Sichuan's top export market (other than Hong Kong, which functions as a transit hub for Chinese exports) is now India. Guangxi and Yunnan are in close proximity to member countries of the Association of South-East Asian Nations (ASEAN), and are benefiting from crossborder infrastructure projects in road and rail transport. A newly established "special development zone" on Guangxi's coast is aimed at transforming the region into a logistics hub for ASEAN and the wider Pacific Island area.

A pan-ASEAN highway network is slowly taking shape to the south, stretching from China to Singapore, while a number of transcontinental rail routes are opening between western China and



Heavy duty

China's next wave of exports

Europe, expanding access to markets in Central Asia. In the north-east, cross-border trade between China's recently reinvigorated industrial rust belt (Jilin, Heilongjiang and Liaoning) and Russia has already taken off.

In 2010 Chinese officials floated the idea of building a colossal pan-Asian high-speed rail network. This may be a pipe dream for now, but the message is clear: Asian economic integration is under way and China is at the centre of it.

Changsha's Two Musketeers

When Sany and Zoomlion recently joined Xugong on the top ten list of global construction-equipment manufacturers (by global sales revenue), their CEOs were probably not the only ones wearing smiles on their faces. Zhang Jianfei, the mayor of Changsha, must have been beaming as his city consolidated its status as the construction machinery capital of the world's largest construction market.

Officials from Changsha, where Sany, Zoomlion and lesser-known Sunward (together dubbed the

Three Musketeers by local media) are based, have long sought to take the construction gear crown from Xuzhou, where Xugong is headquartered. Not only did Sany and Zoomlion enter the global top ten, they did so at 7th and 9th place, respectively, leapfrogging Xugong in 10th.

Sany in particular has led domestic construction-equipment manufacturers in overseas expansion. It now boasts production bases in other emerging markets such as Brazil, but also in developed countries such as Germany, where it became the first Chinese equipment firm to manufacture in the heartland of European engineering.

A new front

China is becoming more competitive on more fronts. At the same time, it is shedding its reliance on the West by increasingly engaging with other emerging markets. Competition from China promises to look very different in the coming decade as Chinese companies take over the reins from foreign companies in driving their country's export success.

The entry of Chinese brands into the global commercial landscape has begun, particularly in increasingly important non-OECD countries, which accounted for 36% of the world's imports in 2010—a share that has risen from 25% in 2001. Capital goods, rather than consumer goods, are leading the way.

The emergence of Chinese companies higher up the technology ladder is a welcome development. In the past, competition from China in low-end exports has helped to produce a disinflationary effect on importing countries. That the country's higher-end exports are seeing successes in emerging markets (where price is important) suggests that Chinese companies are able to produce such goods cheaply as well. In turn, competitive prices from China force rival manufacturers to look constantly for ways to add value and stay ahead of the curve.

Yet, despite rapid progress on the technology front, Chinese companies have ground to cover before catching up with the West. Underneath the veneer of a seemingly unstoppable manufacturing juggernaut lies a frail foundation. As this report went to publication, a tragic accident claiming 39 lives on China's gleaming new high-speed rail network hit international headlines.



Heavy duty

China's next wave of exports

The crash raises the question of whether China's government wants too much too soon when it comes to seeing industry scale the technology ladder. It has invested vast sums of money in expensive projects that may not necessarily have the requisite supporting "soft" infrastructure in terms of regulation, human capital and experience in managing complex, risky systems.

China is producing more engineering graduates each year than any other country in the world, yet nearly 80% of its population has not finished secondary school. In green industries, where the government aspires to be a global leader, massive subsidies have kick-started production of everything from wind turbines to light-emitting diodes (LEDs). Yet, many wind farms sit idle, unconnected to the grid. Plenty of expensive LED-producing equipment has been imported but there is a shortage of skilled engineers to run the machines.

The government would do well to accept a more realistic timeframe for China to become a high-tech power. By adopting numerical targets for patent grants, for instance, the government is essentially forcing the pace of innovation. China may have seen a tenfold increase in patent grants over the last decade and is catching up with the US in patent numbers, but the comparability of these patents in terms of content and quality is still low. A greater focus on other areas, such as education reform, will allow for more organic technological progress with sturdier foundations.

This does not mean that Chinese companies do not possess genuine innovative strengths. They may not be generating ground-breaking research yet, but they have demonstrated a remarkable ability to assimilate technology, adapt products and processes, and to do so quickly and cheaply. This in itself is a considerable achievement, and is the reason that China's heavy equipment manufacturers have emerged from an antiquated remnant of Soviet-era economics to taking on the world's leading engineering firms today.



Access analysis on over 200 countries worldwide with the Economist Intelligence Unit

The analysis and content in our reports is derived from our extensive economic, financial, political and business risk analysis of over 203 countries worldwide.

You may gain access to this information by signing up, free of charge, at www.eiu.com.

Click on the country name to go straight to the latest analysis of that country:

G8 Countries

- Canada
- Germany
- Japan
- United Kingdom
- France
- Italy
- Russia
- United States of America

BRIC Countries

- Brazil
- Russia
- India
- China

CIVETS Countries

- Colombia
- Vietnam
- Turkey
- Indonesia
- Egypt
- South Africa

Or [view the list of all the countries](#).

Further reports are available from Economist Intelligence Unit and can be downloaded at www.eiu.com.

Should you wish to speak to a sales representative please telephone us:

Americas: +1 212 698 9717

Asia: +852 2585 3888

Europe, Middle East & Africa: +44 (0)20 7576 8181