



U.S.-China Economic and Security Review Commission

Monthly Summary of U.S.-China Trade Data

April 5, 2013

Highlights of this month's edition

- **Bilateral trade:** Trade declines in February due to Chinese Lunar New Year; U.S. exports to China expand at twice the pace of last year, but U.S. imports from China also up, leading to rising deficit; USTR and Treasury put pressure on new Chinese leadership to widen market access
- **Sector spotlight:** ATP deficit widens further; Congress signs act to limit procurement of Chinese IT products by federal government; WTO negotiations on technology product duties make progress; USCC will hold field hearing on April 25 to assess market access for U.S. agricultural exports to China, as China has become top export market for U.S. agriculture but imports mainly low value-added products
- **China's economy:** Business sentiment high among Chinese banks and manufacturers but property market presents risks; air pollution becomes major issue

The U.S. Balance of Trade with China

Bilateral trade between the United States and China declined by 10 percent month-on-month in February. That was partly owing to slow business during the Chinese Lunar New Year, when most Chinese workers take several weeks of vacation. Nonetheless, seasonal factors aside, important trends are emerging in bilateral trade that may accelerate as business picks up again this spring. One is that the U.S. trade deficit in goods with China continues to widen, increasing by 13 percent so far in 2013 over the same period last year. At this rate, this year will mark the largest trade deficit on record.

Although U.S. exports to China are on the rise, with 9 percent year-on-year growth (nearly double the growth in 2011-2012), the growth in U.S. imports from China has outpaced exports to China by 2.7 percentage points, up from just 2.1 percentage points last year.

Top Exports and Imports

Agricultural products continued to be the top-performing U.S. export to China in February, and have accounted for nearly a quarter of all exports year-to-date. In terms of monthly growth, several top export items contracted in February, the exception being transportation equipment, which grew by 29 percent. On the import side, computer and electronic products accounted for over a third of U.S. imports from China, but grew much slower than other top export items, suggesting that the recent surge in Chinese exports to the United States is driven by other lower value-added products like apparel, leather goods, and miscellaneous manufactures. Those same products had declined in January. Overall, the composition of Chinese exports to the United States continues to fluctuate between higher and lower value-added products.

Top Exports and Imports through February 2013
(in US\$ millions)

U.S. Top-Five Exports to China				U.S. Top-Five Imports from China			
	Exports	Share of total (%)	Change over Feb'12 (%)		Imports	Share of total (%)	Change over Feb'12 (%)
<i>Monthly (February 2013)</i>				<i>Monthly (February 2013)</i>			
Agricultural Products	2,129.4	22.9%	2.6%	Computer and Electronic Products	10,767.8	32.9%	4.2%
Transportation Equipment	1,429.5	15.4%	29.4%	Miscellaneous Manufactures	2,705.2	8.3%	21.1%
Chemicals	1,045.3	11.2%	-0.8%	Apparel and Accessories	2,574.8	7.9%	27.9%
Computer and Electronic Products	929.4	10.0%	-3.5%	Electrical Equipment, Appliances, and Components	2,485.2	7.6%	37.7%
Waste and Scrap	801.1	8.6%	-8.4%	Leather and Allied Products	2,236.8	6.8%	27.9%
Other	2,967.9	31.9%		Other	11,945.2	36.5%	
Total	9,302.6	100.0%		Total	32,715.0	100.0%	
<i>Year-to-date (thru February 2013)</i>				<i>Year-to-date (thru February 2013)</i>			
Agricultural Products	4,428.2	23.7%		Computer and Electronic Products	23,907.0	34.2%	
Transportation Equipment	2,651.0	14.2%		Miscellaneous Manufactures	5,716.4	8.2%	
Computer and Electronic Products	2,023.4	10.8%		Apparel and Accessories	5,386.3	7.7%	
Chemicals	2,006.5	10.7%		Electrical Equipment, Appliances, and Components	5,104.2	7.3%	
Waste and Scrap	1,510.6	8.1%		Leather and Allied Products	4,642.9	6.6%	
Other	6,067.5	32.5%		Other	25,130.1	36.0%	
Total	18,687.1	100.0%		Total	69,887.0	100.0%	

Source: U.S. Census Bureau, NAICS database (Washington, DC: U.S. Department of Commerce, Foreign Trade Division, April 2013). http://censtats.census.gov/cgi-bin/naic3_6/naicCty.pl.

USTR and Treasury Adopt More Aggressive Stance on China

In late March, Acting U.S. Trade Representative Demetrios Marantis and new Treasury Secretary Jack Lew spoke openly about problems related to trade with China. Marantis, testifying at a Senate Finance Committee Hearing on "The President's 2013 Trade Agenda", commended U.S. efforts to form a Transpacific Partnership with several Asian economies to facilitate trade from which China would be excluded. He commended Japan for recently deciding to join the negotiations. At the same time, he voiced concern about China, stating:

I continue to be concerned that China's currency manipulation costs U.S. jobs; so does China's failure to end the wholesale theft of U.S. patents, copyrights, trademarks and trade secrets. And China has pioneered a practice, now copied by India and others, of requiring U.S. companies to transfer technology to domestic companies in order to gain access to its markets. We need to be on the offense, and fight these unfair practices. We need to enforce existing agreements and develop novel approaches and new agreements. We need to work with like-minded countries to push back against the theft of intellectual property.¹

Marantis's concerns were echoed by Lew, who visited China in late March for the first time as Treasury Secretary. Lew met with Premier Li Keqiang, and said after that he was impressed by China's commitment to reform and its focus on domestic economic issues.

¹ Testimony of Demetrios Marantis before the Senate Finance Committee Hearing on "The President's 2013 Trade Agenda," March 28, 2013.

Nonetheless, he stated that issues like cyber-security and intellectual property would need to be dealt with by the two countries.²

Notably, just a week after Lew's visit, a Chinese researcher with ties to a Chinese university was arrested on charges of economic espionage in the United States. Zhao Huajin, who was working at the Medical College of Wisconsin, was charged with stealing a possible cancer-fighting compound and research data in order to benefit Zhejiang University, his future employer. If convicted, Zhao faces up to 15 years in prison and a \$500,000 fine. The FBI is supporting the Medical College of Wisconsin in the case.³

Sector Spotlight

Advanced Technology Product Trade

The U.S. trade deficit with China in advanced technology products has increased by \$1.5 billion over the same period last year. The bulk of the deficit continues to be in the information & communications sector. Excluding that sector, the United States has actually registered a small surplus with China in ATP products, albeit with a very small volume of overall trade.

U.S. Trade with China in Advanced Technology Products (ATP) through February 2013
(in US\$ millions)

	Monthly			Cumulative year-to-date			
	Exports	Imports	Balance Feb'13	Exports	Imports	YTD Balance Feb'13	YTD Balance Feb'12
TOTAL	1,649	9,562	-7,913	3,355	21,344	-17,989	-16,567
(01) Biotechnology	28	6	22	58	12	46	21
(02) Life Science	152	148	4	355	337	18	4
(03) Opto-Electronics	15	286	-271	33	628	-595	-1,344
(04) Information & Communications	273	8,752	-8,479	609	19,542	-18,933	-16,317
(05) Electronics	334	232	102	670	514	156	109
(06) Flexible Manufacturing	83	60	23	213	135	78	82
(07) Advanced Materials	21	12	9	39	28	11	4
(08) Aerospace	569	54	515	1,200	126	1,074	884
(09) Weapons	0	12	-12	0	22	-22	-16
(10) Nuclear Technology	175	0	175	178	0	178	7

Source: U.S. Census Bureau, *U.S. Trade with China in Advanced Technology Products - Monthly and Cumulative Data* (Washington, DC: U.S. Department of Commerce, Foreign Trade Division, April 2013).
<http://www.census.gov/foreign-trade/statistics/product/atp/2012/11/ctryatp/atp5700.html>.

² Jia Lyun Yang, "For China, Overhauling Nation's Economy is the Big Focus," *Washington Post*, March 21, 2013. Retrieved from http://www.washingtonpost.com/business/economy/the-most-important-project-in-china-right-now/2013/03/21/0a80080e-9239-11e2-bdea-e32ad90da239_story.html.

³ Bruce Vielmetti, "Medical College of Wisconsin Researcher Charged with Economic Espionage," *Journal Sentinel*, April 1, 2013. Retrieved from <http://www.jsonline.com/news/crime/medical-college-researcher-charged-with-stealing-anticancer-compound-ls9cnn4-200958961.html>.

Debate over High-Tech Products Heats Up

The importance of IT products in China's ATP exports helped fuel a debate on the Hill in March about a new U.S. law restricting government purchases of IT systems from entities owned, directed, or subsidized by the Chinese government. In the future, the Departments of Commerce, Justice, and Science (CJS) can only procure such products after consulting with the FBI. Rep. Frank Wolf (R-VA) was the original author of the China procurement language, and Senate Democrats informally signed off on the law when the Senate approved the CJS appropriations bill last autumn. It was formalized in March this year in an expanded CJS appropriations bill proposed by the House and subsequently signed into law. Later this year, the procurement restrictions could be expanded to include all government agencies.⁴

The appropriations bill has sparked heated debates. Many in Congress feel that the bill is especially warranted now given the recent revelations of cyber-security threats posed by China. The fear is that high-technology products made by Chinese government controlled companies could be used to either extract information or shut down operations remotely. However, U.S. business groups expressed concern about the bill. They argued that there is no proof of Chinese companies installing "back doors" in equipment. They are also concerned that China may retaliate if the United States enacts a law explicitly targeting China; China's Ministry of Commerce (MOFCOM) has already forcefully condemned the purchasing restrictions.⁵

The Chinese government could challenge the law at the WTO because the language of the bill specifies systems being sourced from China. Any such challenge might be complicated by the fact that, unlike the U.S., China is not a signatory to the WTO's government procurement agreement (GPA). Furthermore, the GPA contains a national security exemption.

The debate over procurement of Chinese IT products coincided in March with other bilateral disputes over high-tech products. In China, the state-run media appeared to run a coordinated smear campaign against Apple, accusing the U.S. tech giant of offering poor after-sales service to Chinese consumers. Apple moved quickly to issue a public apology and also quietly proceeded to self-censor the content provided on its new online bookstore app in China. Many analysts observed parallels to Beijing's smear campaign against Google back in 2009, which many viewed as a blatant attempt to limit market entry for a U.S. tech firm by actively influencing consumer sentiment.⁶

Back in Washington, the USTR and the Commerce Department encouraged U.S. industry groups to consider how to respond to China's policies for promoting seven Strategic Emerging Industries (SEIs), and to explain how those policies were affecting their operations in China. The meeting, held on March 15, was to lay the groundwork for the 2013 meeting of the Joint Commission on Commerce and Trade (JCCT), the key forum in

⁴ "Business Worried by China Procurement Provisions in Funding Measure," *Inside U.S.-China Trade*, April 3, 2013. Retrieved from <http://chinatradeextra.com/Inside-US-China-Trade/Inside-US-China-Trade-04/03/2013/business-worried-by-china-procurement-provisions-in-funding-measure/menu-id-227.html>.

⁵ Ibid.

⁶ "The Coming Tech Storm? China, Apple, and Google," *The Diplomat*, March 30, 2013. Retrieved from http://thediplomat.com/pacific-money/2013/03/30/the-coming-tech-storm-china-apple-and-google/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+the-diplomat+%28The+Diplomat+RSS%29; "Apple Removes China App Over 'Illegal Content,'" *Financial Times*, April 4, 2013. Retrieved from <http://link.ft.com/r/DHGUVV/XBZBKP/EAXR0/KQWDCQ/SUM25N/HK/t?a1=2013&a2=4&a3=4>

which U.S. and Chinese officials discuss detailed market access issues. Part of the impetus for USTR and Commerce to address SEIs came from a report published by the U.S.-China Business Council in early March, which warns that access to SEI incentives “may be conditioned on the possession of intellectual property developed and / or owned in China, and would not permit companies to qualify based on possession and use of intellectual property developed and / or owned in other locations.” The report also noted concerns about the decentralized and uncoordinated nature of SEI policy implementation, which forces U.S. companies to engage with a wide range of Chinese stakeholders at the central and local level in order to gauge the impact of the policies. William Zarit, a counselor for commercial affairs at the American Embassy in Beijing, added further fuel to the USCBC report, stating at an event at Georgetown University that the SEIs would blatantly limit U.S. participation.⁷

On a more positive note, China in late March became more proactive in the negotiations for an expansion of the WTO Information Technology Agreement, first signed in 1996 to eliminate duties on IT products. That helped the core group of countries make progress on defining the agreement’s ultimate product coverage. Twenty-two controversial products were removed from a consolidated list of products that would be included in the ITA. China proposed 50 items it wants included in the final ITA deal, and those have been incorporated into the general consolidated list. The proposal covers traditional high-tech goods like AV products, which are sensitive for Korea, Japan, and the United States. China’s list is much more whittled down than that of some other negotiating partners; the United States, for instance, wants over 200 products on the list. China’s proposal may reflect pragmatism, as Chinese negotiators want to broker a deal ahead of the Ministers’ meeting in December of this year. At the same time, China’s shorter list would make the expanded ITA less meaningful, as it leaves out key products, such as medical devices, copper and fiber optic cables, and home appliances, in which China has a strategic interest in protecting its market.⁸

The Agriculture Sector

In 2010, China became the leading destination for U.S. food and agriculture products. Agriculture and food was the top-performing U.S. export to China in 2012, accounting for about one-fifth of total exports. In recognition of the growing importance of this sector for bilateral trade, the U.S.-China Economic and Security Review Commission will hold a hearing on April 25 at Iowa State University to examine the implications of China’s agricultural development for U.S. producers.

There are important supply and demand drivers that point to increasing bilateral trade. China’s population of 1.3 billion is becoming wealthier, and just over half now lives in cities. That tends to promote more protein-based diets – per-capita consumption of meat has already quadrupled since the 1980s, and China today consumes half of the world’s pork. A rising middle class is also raising demand for higher value-added goods and services in the food sector, creating opportunities for both exporters and investors from the United States. On the supply side, in turn, productivity per unit labor in China’s rural sector is far lower

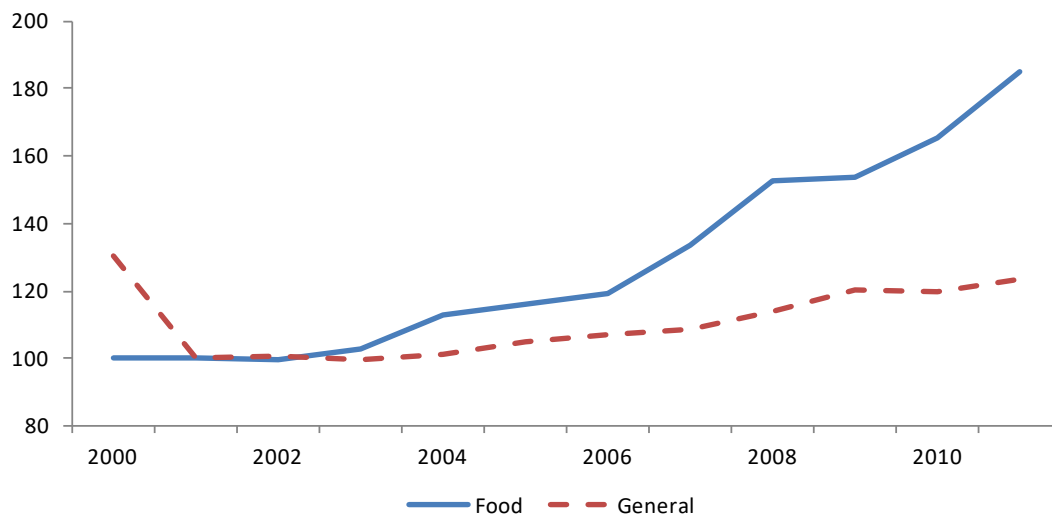
⁷ “Administration, Business Focus on Strategic Emerging Industries in China,” *Inside US-China Trade*, March 20, 2013. Retrieved from <http://chinatradeextra.com/Inside-US-China-Trade/Inside-US-China-Trade-03/20/2013/administration-business-focus-on-strategic-emerging-industries-in-china/menu-id-227.html>.

⁸ “ITA Negotiators Make Progress on List, China Tables Concrete Demands,” *Inside US-China Trade*, March 22, 2013. Retrieved from <http://chinatradeextra.com/201303222428755/China-Trade-Extra-General/Daily-News/ita-negotiators-make-progress-on-list-china-tables-concrete-demands/menu-id-428.html>.

than in the country's manufacturing sector, and decades away from attaining U.S. levels. China's arable land and potable water per capita are far below the world average.

The rise in China's food prices over the past decade, compared to underlying inflation, illustrate the government's concerns about food security. Price swings have been especially drastic in the pork sector, which has become a staple good for many urban consumers in China.

*China's Average Consumer and Food Price indices
(2000 = 100)*



Source: FAO

In March, the public health risks caused by China's burgeoning meat industry also became more apparent than ever, casting further doubt on the country's ability to guarantee a stable and safe supply of food to its vast population. First, roughly 16,000 pig carcasses were found rotting in the Huangpu River, the largest river that runs into Shanghai and provides drinking water to the city's 23 million residents. Apparently, many pigs had died due to cold weather, fluctuating temperatures, and minor viruses, though the Chinese government ruled out any major swine epidemic. The pigs likely ended up in the river due to a practice of "pig dumping" following policy campaigns to stop the illicit trade of pork products harvested from diseased pigs that were illegally sold.⁹ Just weeks after this incident, a new lethal strain of bird flu, H7N9, broke out. By early April, it had claimed two lives in the vicinity of Shanghai. The Shanghai Animal Disease Prevention and Control Center said it found no evidence that the thousands of pig carcasses pulled from the Huangpu River in Shanghai were linked to the bird flu outbreak. However, evidence did surface that one of the victims had worked in the poultry sector culling chickens, and likely contracted the disease through this source.¹⁰

The pig carcass and bird flu incidents illustrated two underlying dilemmas facing China's agriculture sector – lax food safety regulation, and the government's ill-advised effort to

⁹ "Number of Dead Pigs from China Waters Rises to 12,566," *MSN News*, March 17, 2013. Retrieved from <http://news.msn.com/world/number-of-dead-pigs-from-china-waters-rises-to-12566-1>.

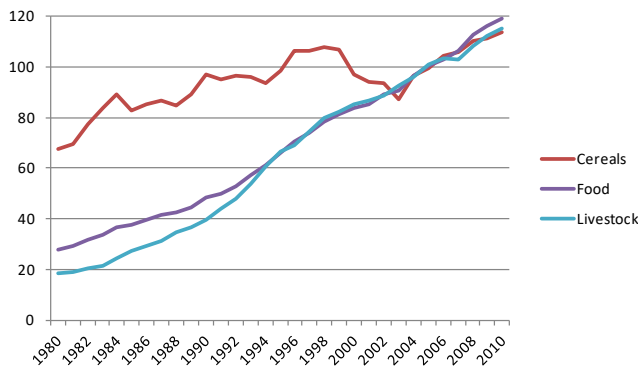
¹⁰ Jethro Mullen and Jason Hanna, "Report: Third Man in China Dies from Unusual Bird Flu Strain," *CNN*, April 3, 2013. Retrieved from <http://www.cnn.com/2013/04/03/world/asia/china-bird-flu/index.html>.

ramp up domestic meat production. The Chinese government in 2009 introduced a comprehensive Food Safety Law to establish a modern framework for food safety regulation in the government and judiciary, improving regulatory efficiency by handing more oversight power to the Ministry of Health and creating an intra-ministerial working group. The Law also specified guidelines for hazard analysis and risk management, in order to better track food safety “from farm to plate.” However, due to weak rule of law in China and the government’s concerns over social stability, the Law has done little to hold producers and officials accountable. At the same time, unchecked expansion of meat production in China implies its own set of risks. While some meat producers in China employ modern and hygienic production methods, the majority still consists of small and medium-sized producers, and some even sell their products on the black market. China is estimated to have some 450,000 food producers, of whom 350,000 are small operations that employ less than 10 employees.

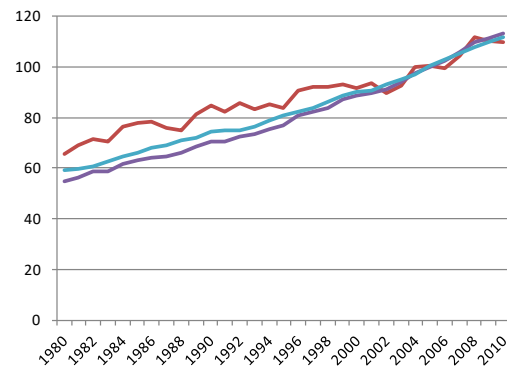
China’s swine population totaled 475 million last year, the largest in the world, and China is the world’s leading pork producer, as well as the second-largest poultry producer.¹¹ Indeed, the expansion of meat production in China accounts for the bulk of production gains in China’s agriculture sector since the 1980s.

Net Production Index for Agriculture Goods: China vs. the World
(2004-2006 = 100)

China



The World



Source: FAO

China’s emphasis on domestic meat production has also strongly influenced its consumption of grains. Beijing maintains a 95 percent self-sufficiency mandate for its staple crops – corn, rice, and wheat – ostensibly to provide food security to its people. And yet, corn has displaced rice as the leading source of acreage in China, and most of that corn is used to feed pigs and poultry rather than humans. Increasingly, China is unable to feed its booming population of livestock, leading it to import massive amounts of soybeans from the United States and Latin America beginning in the late 1990s. Soy thus stands in stark contrast to other staple grains, as China imports nearly four times the amount it imports.

¹¹ Jethro Mullen and Jason Hanna, “Report: Third Man in China Dies from Unusual Bird Flu Strain,” *CNN*, April 3, 2013. Retrieved from <http://www.cnn.com/2013/04/03/world/asia/china-bird-flu/index.html>.

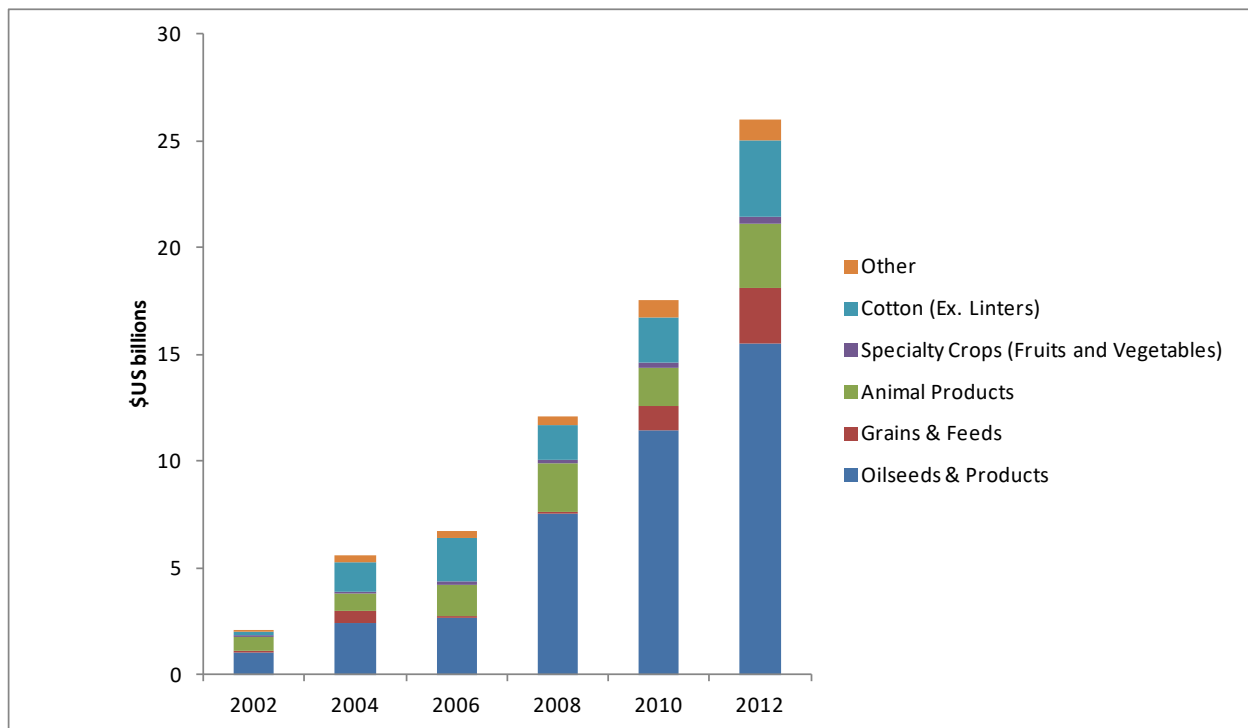
Ratio of Imports to Production for China's Main Grain Products

	2002/03	2004/05	2006/07	2008/09	2010/11	2012/13
Maize	0.04	0.04	0.03	0.03	0.03	0.03
Soybeans	1.39	1.62	1.93	2.79	3.64	n.a.
Wheat	0.02	0.10	0.02	0.02	0.02	0.03
Rice	0.01	0.01	0.01	0.01	0.01	0.01

Source: FAO-CBS. Retrieved from <http://statistics.amis-outlook.org/data/index.html#>.

China's insistence on domestic meat production has also impacted its trade with the United States. Soybeans accounted for three-fifths of U.S. agricultural exports to China in 2012, while meat accounted for just 10 percent.

*U.S. Food and Agriculture Exports to China
(\$US billions)*

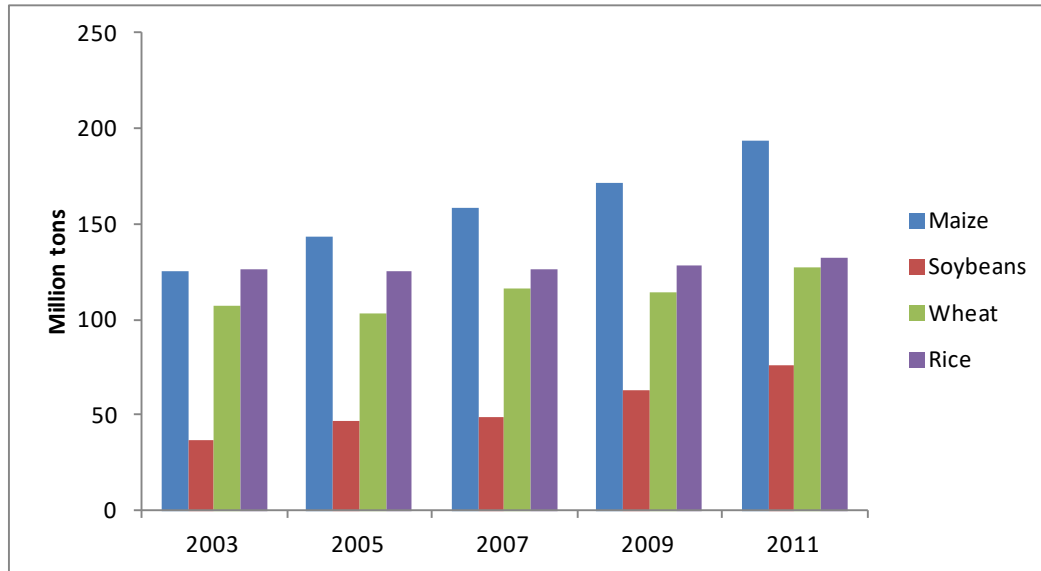


Source: USDA.

It is likely that corn will follow in the footsteps of soy and become a major new import commodity for China, as domestic production can no longer keep up with rising demand in the livestock sector. In the marketing year ending September 2012, China bought a record volume of corn from the world market, at 5.23 million tons. According to one Chinese consultancy, China could import as much as 7 million tons of imports as of September this year– feed demand in China continues to soar, even as China struggles with wet weather in corn growing regions, making the corn moldier and hence less suitable for use as feed. At

the same time, U.S. corn is become cheaper again on the Chicago Mercantile Exchange after it went to a record high due to a huge drought last August.¹²

China's Domestic Consumption of Grains
(Million tons)



Source: FAO-CBS. Retrieved from <http://statistics.amis-outlook.org/data/index.html#>.

The underlying concern for U.S. producers continues to be the value-added of the goods sent to China, in both food products and corollary industries. Raw cotton, soy, and corn exports are a boon to some producers, but are usually only processed into animal feed, textile yarn and other goods once they reach the Mainland. Meanwhile, U.S. agrochemical and biotechnology companies continue to struggle with China's lax protection of intellectual property, uncertain approval processes, foreign investment restrictions, and other measures designed to protect Chinese producers in higher value-added sectors.

China's Economy

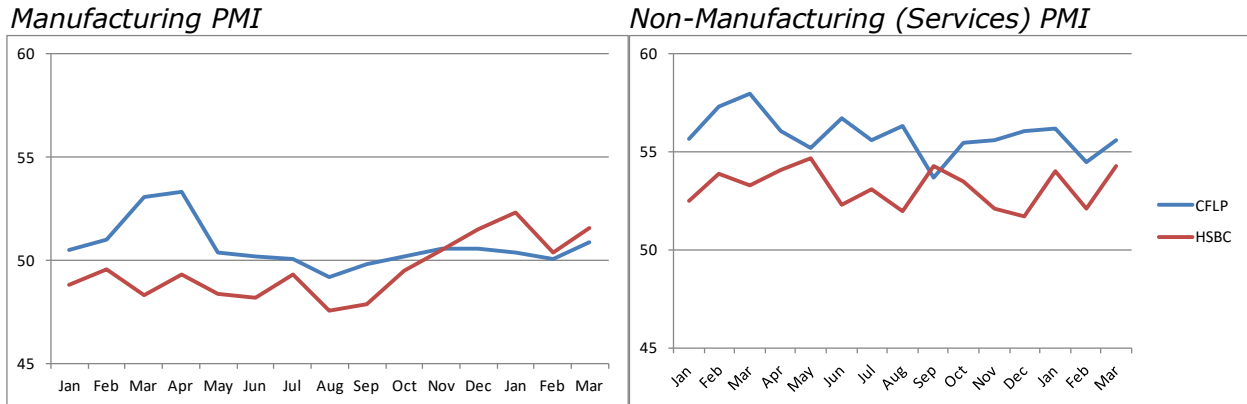
Strong Rebound in Economic Indicators

China's National Bureau of Statistics will publish its GDP figures for the first quarter of 2013 later this month. There are several indications that the economy is continuing a rebound that began in the second half of 2012. Nonetheless, inherent risks remain in China's growth model, particularly in the property sector.

In March, business surveys conducted by the Hong Kong bank HSBC and by the China Federation of Logistics and Purchasing (CFLP), a government entity, showed a marked upward trajectory in both the manufacturing and non-manufacturing sectors. The upward swing was considerable, given the drop in business sentiment in February.

¹² "China May Need Record Corn Imports to Bridge Shortage, Yigu Says," *Bloomberg News*, March 27, 2013. Retrieved from <http://www.bloomberg.com/news/2013-03-27/china-may-need-record-corn-imports-to-bridge-shortage-yigu-says.html>.

*Purchasing Managers' Index through March 2013: HSBC and CFLP PMI compared
(<50 = contraction, >50 = expansion)*



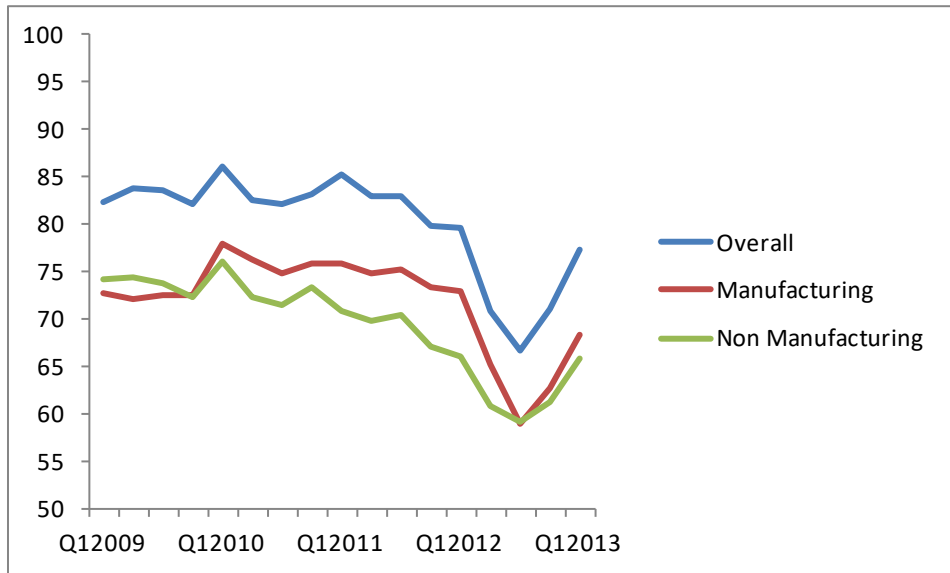
Source: China's National Bureau of Statistics, via CEIC data; HSBC Purchasing Managers' Index. <http://www.hsbc.com/1/2/emerging-markets/em-index/purchasing-managers-index>.

In the manufacturing sector, CFLP data also showed that finished goods inventory and new export orders marked the strongest gains, reaching their highest levels since the middle of last year. Backlog orders and delivery times also expanded at their fastest rates in over a year. Taken together, it appears that demand for Chinese exports is stimulating the improved business sentiment. In the non-manufacturing sector, in turn, HSBC PMI for services recorded its highest level of expansion in ten months, with new business and staffing levels increasing in March. Overall, the employment in the service sector has risen in each survey period since February 2009. Service sector firms were confident about the 12-month business outlook, also at its highest level in ten months.¹³

Positive sentiment among Chinese producers appeared to rub off on Chinese banks. In late March, the People's Bank of China and the National Bureau of Statistics released the latest quarterly survey of over 2,800 banks in China. The data in many ways matches the data appearing on the PMI. Loan demand is up, especially for the manufacturing sector. Further, the confidence of banks in the business climate is the highest it has been since the end of 2010.

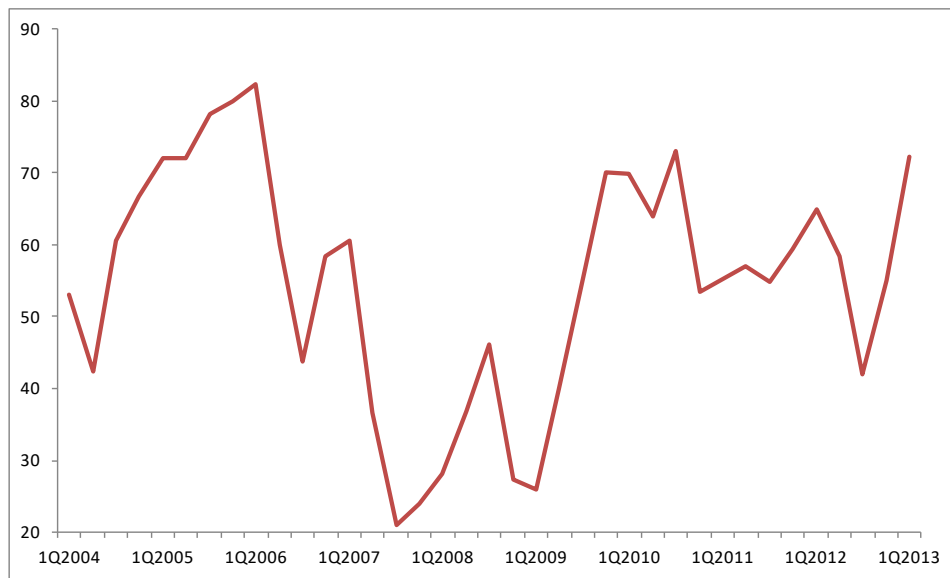
¹³ HSBC Purchasing Managers' Index. <http://www.hsbc.com/1/2/emerging-markets/em-index/purchasing-managers-index>.

Loan Demand Index in China (Quarterly)
 (<50 = contraction, >50 = expansion)



Source: China's National Bureau of Statistics and the People's Bank of China, via CEIC data.

Bankers' Confidence Index in China (Quarterly)
 (<50 = contraction, >50 = expansion)



Source: China's National Bureau of Statistics and the People's Bank of China, via CEIC data.

In spite of these positive indicators, many analysts cautioned that a dark cloud of debt and volatile property markets continues to hang over the economy. Zhang Zhiwei and Wendy Chen, analysts at Japanese financial services company Nomura, argued in a widely read report that the Chinese government must tighten policy to contain financial risks like loan defaults and inefficient investment. But they noted that such prudential measures could

slow overall growth in the second half of the year.¹⁴ China's housing market has been a special concern: China's housing prices may actually have risen by *250 percent in 2004-2009*, not just 113 percent as official figures state. That higher revised figure is comparable to the United States prior to its major crisis – the Case-Shiller housing price index rose by 84 percent in 2001-2006. Zhang and Chen argued that a real estate crash would hit not only property developers, but also local governments that rely on land sales as their main source of revenue, and then the banking system, which lends twice as much to local government financing vehicles as it does to property developers. They predicted a crash as early as next year if policy is not tightened.¹⁵

Indeed, house prices in China jumped 6 percent month-on-month in March, the sharpest increase in two years. Concerns about property prices led the Beijing municipal government to take action on March 30, using a tried and tested measure of banning single-person households from buying more than one residence, requiring minimum down-payment for all buyers of second homes, and enforcing a 20 percent tax on capital gains from property. Other cities moved to issue similar measures.¹⁶

Air Pollution in China

An issue not much discussed by economic analysts in long-run projections for economic growth in China is the potential impact of pollution. In mid-January, the air pollution index for the micro-particulate PM2.5 soared to nearly 1,000 in Beijing, far above the WHO standard of 25. The latest data suggests that particulate pollution in the first months of 2013 has been 30 percent higher than during the same period in 2012. Particulate pollution above 200 is considered dangerously high – as the data gathered by the U.S. embassy in Beijing shows, pollution in Beijing exceeded this level several times during the month of March, and in fact approached the 500 mark in the first week of the month.

Air Pollution Levels in Beijing
(PM 2.5 and AQI 130 particles)



Source: U.S. Embassy

¹⁴ Bettina Wassener, "Manufacturing in China Picks Up in March," *New York Times*, March 21, 2013. Retrieved from <http://www.nytimes.com/2013/03/22/business/global/manufacturing-in-china-picks-up-in-march.html>.

¹⁵ Richard Silk, "Economists: China Mirrors U.S. on Eve of Financial Crisis," *Wall Street Journal*, March 18, 2013. Retrieved from <http://blogs.wsj.com/chinarealtime/2013/03/18/economists-china-mirrors-u-s-on-eve-of-financial-crisis>.

¹⁶ "Beijing Curbs Second Home Buying as China Cools Property Market," *Bloomberg News*, March 30, 2013. Retrieved from <http://www.bloomberg.com/news/2013-03-30/beijing-bans-single-person-households-from-buying-second-homes.html>.

This latest increase in pollution is especially frightening when considering the damage that air pollution has already done. In early April, a British medical journal published new data from the World Health Organization, the University of Washington, and other partner institutions on environmental causes of mortality across the world. The results indicated that 1.2 million people died premature deaths in China in 2010 due to outdoor air pollution, accounting for nearly 40 percent of the global total. Put differently, air pollution in China caused a loss equivalent to 25 million healthy years of life. Air pollution was the fourth-leading risk factor for deaths in China, while globally it was just the seventh-leading risk. The results followed a forecast by the Organization for Economic Cooperation and Development (OECD) last month warning that air pollution could overtake dirty water and lack of sanitation as the leading environmental cause of mortality worldwide by 2050, with the brunt of mortalities borne by China and India.¹⁷

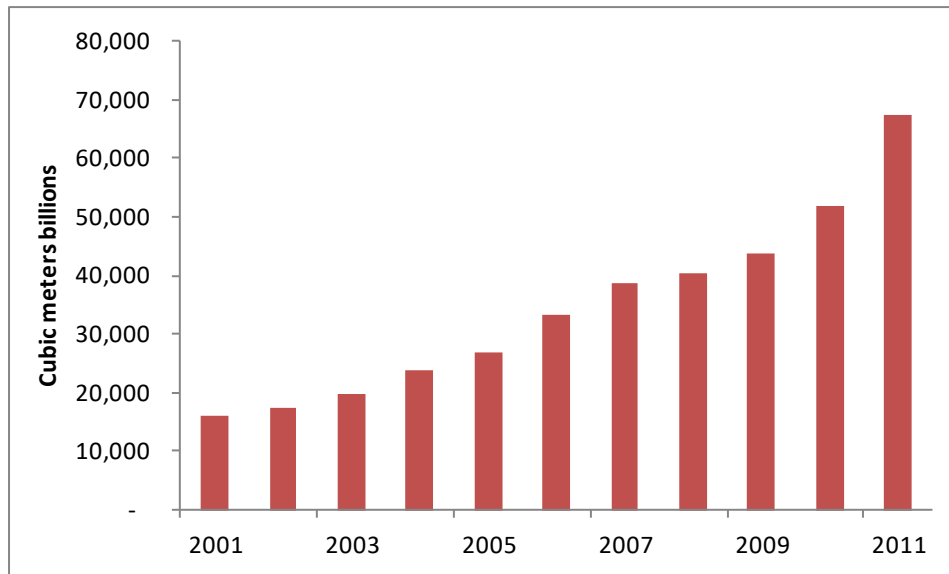
In late March, an official news report stated that environmental degradation caused losses equivalent to \$230 billion – or 3.5 percent of the gross domestic product – in 2010.¹⁸ Data from China’s Ministry of Environmental Protection suggests that China invested RMB 660 billion in pollution treatment in 2011, a nearly tenfold increase (in nominal dollar terms) over 2000, but still just 1.5 percent of GDP. The question is how reliable that data is, and moreover, how the money is being spent, as figures provided by the Ministry of Environmental Protection are not broken down in sufficient detail to determine spending on water, air, and industrial waste. There is more detail only for industrial pollution treatment, which by now accounts for just a quarter of all pollution treatment.

The official figures, which many argue understate the extent of pollution, are already worrying. Industrial waste air emissions grew less during the during global financial crisis in 2007-2009, but in 2010-2011 again expanded at an alarming rate, such that by 2010, China emitted as much industrial waste into the air as in 2001-2003 combined.

¹⁷ “Air Pollution Linked to 1.2 Million Premature Deaths in China,” *The New York Times*, April 1, 2013. Retrieved from http://www.nytimes.com/2013/04/02/world/asia/air-pollution-linked-to-1-2-million-deaths-in-china.html?_r=2&.

¹⁸ “Air Pollution Linked to 1.2 Million Premature Deaths in China,” *The New York Times*, April 1, 2013. Retrieved from http://www.nytimes.com/2013/04/02/world/asia/air-pollution-linked-to-1-2-million-deaths-in-china.html?_r=2&.

Industrial Waste Air Emissions in China
(Cubic meters billions)



Source: China Ministry of Environmental Protection, via CEIC data.

In late February, the Beijing office of Deutsche Bank, a leading German bank, published detailed estimates and recommendations on how to mitigate air pollution in China over the coming decades. Specifically, it set a target to reduce urban average PM2.5 to 35 by 2030. That reduction would mainly require several measures:

- *Less coal consumption and more clean coal technologies.* Reduction in coal consumption growth by half to 2 percent from the current forecast of 4 percent, and a reduction in coal consumption by 22 percent in 2017-2030. It will also require a reduction in coal-related emissions by 70 percent via clean coal technologies.
- *Increase in clean energy.* Increase in the share of gas, nuclear, hydro, wind, and solar in the energy mix from the 2010 level of 10 percent to 18 percent in 2030.
- *Less passenger vehicles and higher fuel standards for cars.* Better fuel standards would reduce emissions per car by more than 80 percent. Under the new forecast, China should have just 250 million cars by 2030, versus the current forecast of 400 million. China currently has 90 million cars.
- *More railways and subways.* At the same time, those who do not drive cars should get better access to public transport by drastically lengthening rail and subway lines: subways should account for a third of all transport in cities by 2030, up from the current 7 percent. Railways should increase from just under 100,000 km today to 255,000 km by 2030.

While some of this will require government spending in infrastructure, and more subsidies to new energies, areas in which the Chinese government has proven its efficiency and ability to combine environmental with economic interests, other measures will be more painful and infringe on more vested interests. Those measures include higher environmental levies on emissions and fees and taxes on new car purchases.

China's rates in this area are currently far below those of environmentally responsible countries like Sweden and Singapore.¹⁹

*Required Changes in China's Energy Consumption Mix to Reduce Air Pollution
Deutsche Bank Estimate*

	Current	New		Change Over		Implied Compound	
		Forecast	2030	Previous Forecast	2030	Annual Growth Rate	2012-2030
Coal	68.4%	52.8%	31.8%	-8.7%	-9.4%	0.9%	-0.6%
Oil	18.6%	20.0%	22.4%	0.5%	0.3%	4.7%	4.5%
Wind	0.7%	2.5%	5.1%	1.3%	1.5%	19.9%	15.0%
Solar	0.0%	0.4%	3.1%	0.2%	1.3%	42.3%	33.8%
Gas	5.0%	12.0%	18.0%	3.5%	3.8%	14.4%	10.7%
Nuclear	0.8%	3.2%	8.0%	1.2%	1.0%	21.0%	16.7%
Hydro	6.5%	9.2%	11.5%	2.0%	1.5%	7.9%	6.6%
Clean energies	13.0%	27.3%	45.7%	8.2%	9.1%	11.9%	9.3%

Source: Adapted from Jun Ma, Michael Tong & Audrey Shi, "Big Bang Measures to Fight Air Pollution," *Deutsche Bank Special Report*, February 28, 2013.

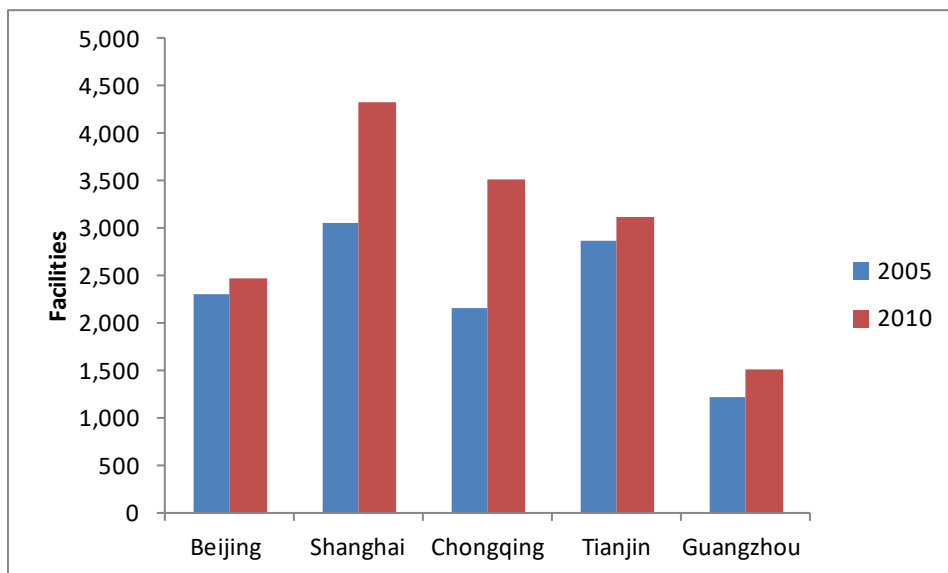
In analyzing this issue, it is important to keep in mind regional variations in China. In terms of investment in air treatment, Beijing has performed very poorly over the past decade, building fewer facilities than other major cities and spending very little on each of them. By contrast, Shanghai increased its facilities by 50 percent to 4,500 units, nearly twice as many as in Beijing, which has an equivalent population size. Not only does Shanghai have more facilities – it spends nearly twice as much per facility.

Guangzhou, which is known to have a more progressive local government, has also led the way with its urban cleanup efforts. In 2009-2010, its municipal government took a comprehensive set of measures to improve the environment, including the construction of 30 new sewage plants, the closure or relocation of 30 chemical plants, and the establishment of checkpoints to monitor vehicle emissions across the city. Guangzhou also ramped up its operational expenditure on air treatment facilities in 2010 to levels far higher than in other major cities, such that the city has fewer but larger plants than elsewhere, likely making them more efficient. The question is how lasting these changes will be, as Guangzhou implemented these cleanup efforts in the lead-up to the 16th Asian Games held in November 2010.²⁰ Beijing, notably, was also very ambitious ahead of the 2008 Olympics, but little has been done since.

¹⁹ Jun Ma, Michael Tong and Audrey Shi, "Big Bang Measures to Fight Air Pollution," *Deutsche Bank China Strategy*, February 28, 2013.

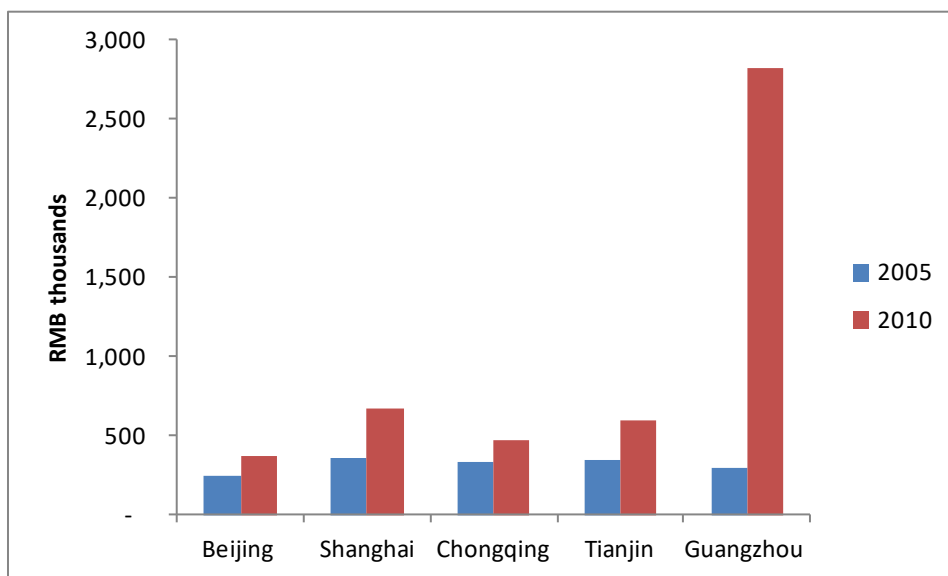
²⁰ Cai Cai, "Guangzhou: Water and Air Improved for 16th Games," *China Daily*, September 21, 2010. Retrieved from http://www.chinadaily.com.cn/china/2010-09/21/content_11331643.htm.

*Number of Facilities for Treatment of Waste Air
Comparison of Major Chinese Cities*



Source: China Ministry of Environmental Protection, via CEIC data.

*Operational Expenditure per Industrial Air Treatment Facility
Comparison of Major Chinese Cities*



Source: China Ministry of Environmental Protection, via CEIC data.

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