



TENNESSEE'S TRADE WITH CHINA

▶ EIGHT QUESTIONS

by Steven G. Livingston

How rapidly is the Chinese market growing?

Over the past 10 years, Tennessee exports to China have increased more than sevenfold. The Chinese market has grown roughly nine times as fast as the total world market. As you can see from the chart, most of this tremendous growth actually came in the first part of the past decade. The Chinese market didn't fare any better than anywhere else during the recent global slowdown.

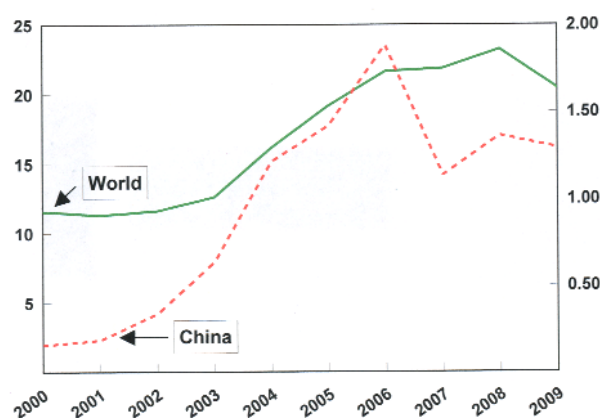
But as remarkable as China's 727% growth has been, it has not been the state's fastest growing market over this period. Even ignoring the strange case of Luxembourg (where exports increased by 13 times, more than \$400 million, just between 2008 and 2009), Vietnam, Nigeria, and Pakistan have all grown more rapidly than China. However, the largest of these, Vietnam, amounts to about 5% of the Tennessee exports that go to China. So among the sizable markets, no other approaches the growth rate of China.

How does Tennessee compare to other American states?

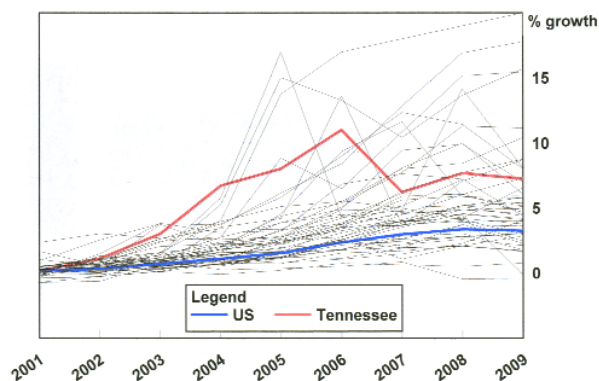
Most states have substantially increased their exports to China over the past decade, but Tennessee more than most. In 2000, it ranked 22nd among the states in the value of its exports to China. By 2009, it had risen to 14th. Its 10-year growth rate was the 11th best of the 50 states. The chart shows Tennessee's performance against the paths of all the states. During this same period, total American exports to China gained 328%, less than half of Tennessee's growth.

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Tennessee Export Growth (in \$billions)



American Export Growth to China: Tennessee Among the 50 States





CHINA

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Has the composition of Tennessee's exports to China changed in recent years?

Over the past decade, there has actually been quite a bit of churn in the products the state ships to China. The one constant is that China buys raw and intermediate goods. The state's largest exports have consistently been in these goods. The most important have been materials for apparels: artificial filament tow and cotton. The former has been among the state's top exports all decade long. Cotton shipments grew dramatically by mid-decade but have fallen back since then. Chemicals and plastics form a second sizable cluster of exported goods. Exports of metals, including aluminum, iron, and copper, often as scrap, have been increasing throughout the decade. Medical instrument sales have also grown over the years. (Shipment of orthopedic products, not shown in these charts, has similarly increased.)

But many other products have surged and declined over the years, even though most fall into the broad categories of "electrical machinery" or "industrial machinery." For example, in mid-decade, mobile phone and modem parts were significant exports from Tennessee, whereas today they are virtually nil. Though it looked for much of the decade as if state exports were going to concentrate in a handful of products, this did not turn out to be true. Today the range of exports to China is greater than ever (as one can see by looking at the "other" slice of the pie charts shown here.)

Is Tennessee's export profile to China similar to that of other states?

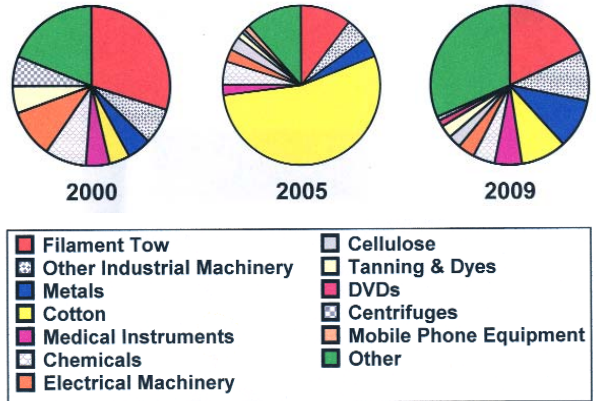
The short answer is no. Of the top 10 American exported goods, Tennessee exports only four (and two just barely) at the national average or higher. Tennessee sends virtually no soybeans or electronic circuitry (and processors) to China. These are two of the country's biggest exports to that market. Tennessee's economic connections to China are quite different than those of the entire United States.

Which Tennessee exports are most reliant on the Chinese market?

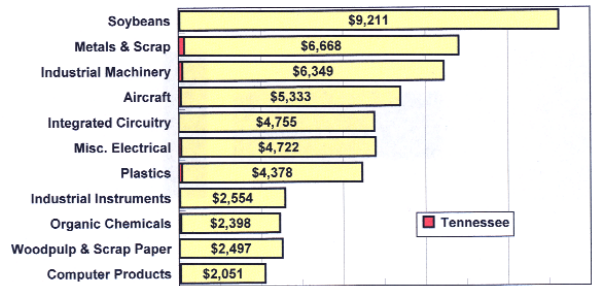
A surprising number of Tennessee goods rely on China. For 15 of the top 100 products exported by the state, 20% or more of the shipments are to China. As you can see from the chart, these products are concentrated in metals and chemicals. But sections of the computer and industrial machinery sectors are increasingly reliant on China as well.

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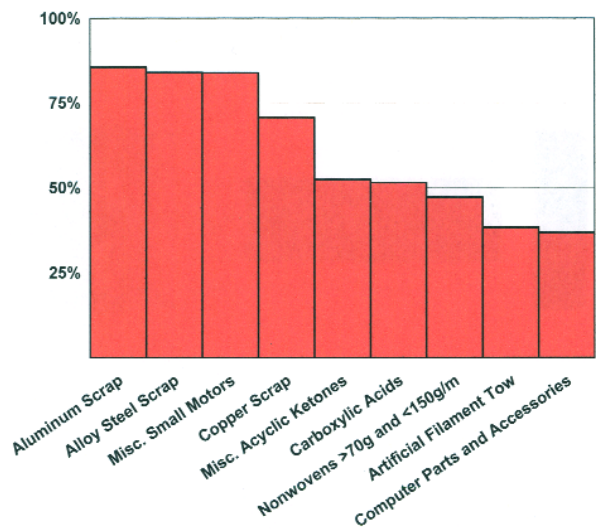
The Evolving Export Mix



America's Top Exports to China, 2009 (in \$billions)



China Intensive Exports



4th Quarter 2009

TRANSPORTATION AND CHEMICAL EXPORTS BOTH GREW BY MORE THAN \$200 MILLION FOR THE QUARTER.



Tennessee's Largest Export Sectors

	Exports	Change from Last Year	Change from Last Quarter
Transportation Equipment	\$1,229,758,008	22.3%	39.9%
Chemicals	\$907,043,310	28.2%	7.8%
Computer and Electronic Products	\$885,797,046	7.5%	12.1%
Miscellaneous Manufactured Goods	\$683,639,117	-6.6%	5.7%
Nonelectrical Machinery	\$494,581,439	6.6%	26.8%
Agricultural Products	\$171,245,137	-25.6%	40.6%

4th Quarter 2009

Fastest-Changing Export Destinations

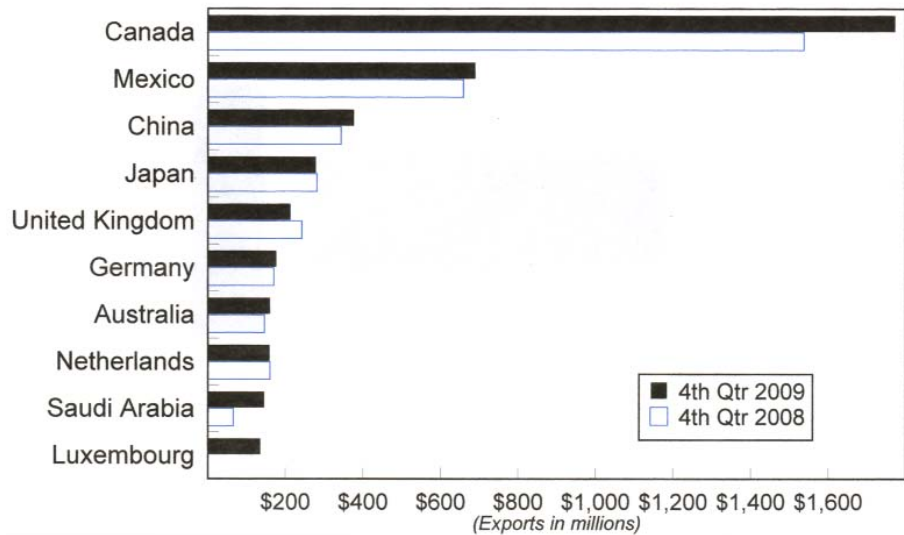
	Value of Exports	Gain	Decline
COUNTRIES WITH THE GREATEST GROWTH			
Luxembourg	\$138,093,772	9,379.7%	
Nigeria	\$22,828,707	197.7%	
Saudi Arabia	\$147,514,968	122.9%	
Singapore	\$119,346,696	73.9%	
Afghanistan	\$14,217,856	73.8%	
COUNTRIES WITH THE GREATEST DECLINE			
Bangladesh	\$2,283,040		-79.0%
Iraq	\$7,352,681		-75.2%
Portugal	\$2,895,129		-69.4%
Nicaragua	\$2,408,879		-58.5%
Qatar	\$5,270,875		-53.4%

(Among countries averaging more than \$3 million in sales per quarter)



■ 4th Quarter 2009
□ 4th Quarter 2008

Tennessee's Leading Trade Partners



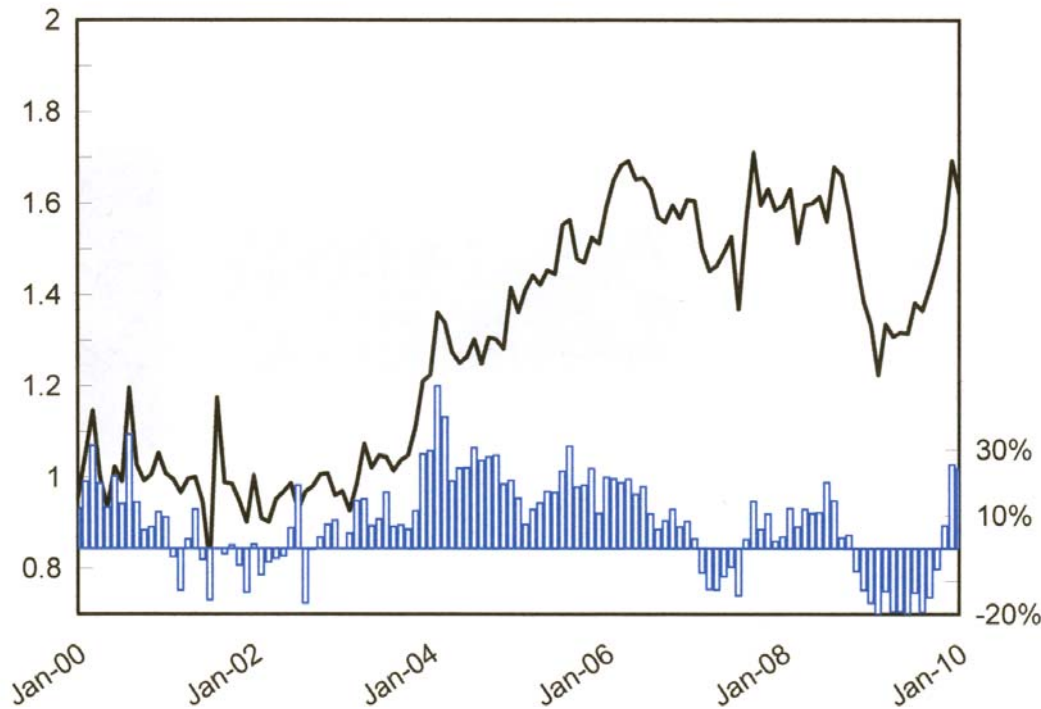
MEDICAL INSTRUMENTS ACCOUNT FOR LUXEMBOURG'S STUNNING GROWTH.



Tennessee Monthly Exports

Exports in \$ Billions

Nominal Growth Rate (%)



4th Quarter 2009

What's Hot and What's Not*

	Value of Exports	Growth	Decline
SECTORS WITH THE GREATEST GROWTH			
Bleached Paper and Paperboard > 150 g/m	\$20,380,733	5,045.2%	
Photovoltaic Cells and Modules	\$28,342,570	1,478.7%	
Antisera and Other Blood Fractions	\$28,065,416	446.1%	
Amplified Music Instruments	\$14,923,735	345.6%	
Spark-Ignition Piston Engines > 1000 cc	\$80,499,493	333.3%	
SECTORS WITH THE GREATEST DECLINE			
Potato Chips	\$1,412,939		-91.2%
Miscellaneous Titanium Articles	\$5,165,424		-76.2%
Digital Printers	\$10,726,552		-72.8%
Excavators	\$6,981,349		-68.8%
Printer and Copier Parts	\$7,145,087		-67.7%

**THE BEST (PAPER)
AND THE WORST
(POTATO CHIPS)
BOTH INVOLVED
EAST ASIA.**

*Among Tennessee's top 100 exported goods. Aircraft exports were recorded this year and so are not included.

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▶ SIZABLE INCREASES IN AUTOMOTIVE AND CHEMICAL EXPORTS ARE THE REASON FOR THE STATE'S SUPERIOR PERFORMANCE.

The steep drop in exports has ended, and the recovery has begun. Tennessee exports rose 7% last quarter, to \$5.98 billion. This brings the state back to the level of its 2007 exports. In this respect, Tennessee is a bit ahead of the curve. National exports still fell a bit this past quarter, and they remain about 8% lower than they were in 2007. Sizable increases in automotive and chemical exports are the reason for the state's superior performance.

The revival of automotive exports is perhaps the biggest story of the quarter. The largest destination for these goods remains Canada, and its imports of cars grew by \$50 million, trucks by \$8 million, and internal combustion engines an astounding \$70 million. (Shipments of the latter were virtually zero in 2008.) However, it was a dramatic return of the Middle Eastern market that really accounts for most of the gains in this industry. Car and SUV sales to Saudi Arabia grew by \$85 million (to \$117 million), enough to make that nation the state's third fastest growing market for the quarter. Car sales also expanded in Kuwait, although they declined in Oman and the U.A.E. The Tennessee auto industry's third big foreign destination, Mexico, was not quite as dynamic but at least held its own. Increased shipments of auto parts and aluminum plating were just about balanced by declines in car and compression engine exports.

The chemical sector turned in numbers very similar to that of the automotive sector, also growing by about \$200 million for the quarter (to \$907 million). About one-third of this growth was in Canada, where chemical shipments went from \$77 to \$136 million. The second biggest gain was racked up in the United Kingdom, where Tennessee chemical exports grew by \$36 million. A significant portion of the latter gains were in radioactive chemicals. Chemical exports grew at least modestly to a number of other countries and across a number of specific chemicals. Chemical coloring agents and cellulose-related exports, in particular, had a very good quarter. The former grew by 44%, while the latter increased by 17% over the fourth quarter of 2008.

The state's third-largest export sector, the computer industry, also saw its shipments increase, albeit at a more modest rate. Its quarterly exports stood at \$885 million, about a fifth of which were laptop computers. There was quite a bit of churn, though, as it took some big gains in Canada, Colombia, Germany, Luxembourg, and Singapore to overcome sizable losses in Brazil, Mexico, and the U.K. Computer industry firms saw their sales to seven different countries rise or fall more than \$10 million for the quarter.

Tennessee's medical exports were up about 3%. The state shipped \$483 million of medical instruments and another \$137 million of orthopedics and artificial body parts. Shipments of medical instruments to Luxembourg

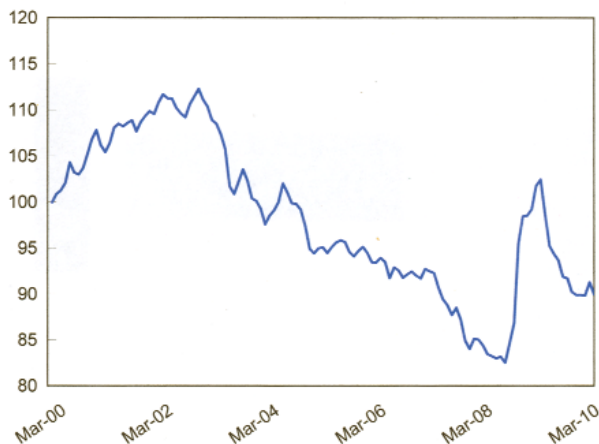
increased from basically zero to \$126 million, making that small country the state's best export market. (But there's much less here than meets the eye; most of these exports were products that had been shipped to other European countries, especially Belgium, in previous years.) Medical products are one of the major components of so-called "miscellaneous manufactured goods." Since the state's overall numbers were down in this sector, we know there was a problem somewhere else! That problem was in the area of toys and games. These products largely go to Canada, and their sales fell by more than \$40 million this past quarter.

Among the state's smaller export sectors, we might note several strong performers. Tennessee software exports gained 82% (to \$74 million). These exports go almost entirely to Canada. Civilian aircraft shipments were up 36%, to \$284 million. Singapore, Nigeria, and China were the sources of this gain. And sales of Jack Daniels were also substantially larger. Whiskey exports grew by 21%. Almost all of that growth came in European markets. The one significant state export that had a rough quarter was cotton. As volatile as always, cotton shipments dropped by more than \$60 million for the quarter, a loss of nearly 40%. Almost all of this loss was in China, where cotton imports from Tennessee fell from \$77 to \$9 million.

All in all, then, not a bad quarter. The early returns for 2010 suggest that it's not a fluke. January exports were up 20% from a year earlier, and February's were up 36%. At this rate, 2010 state exports would grow by nearly \$4 billion from a year ago. An increase of that size still seems unlikely, but after the past two years it's nice to realize it is even a possibility. ■

Tennessee Trade-Weighted Dollar Index

January 2000 = 100



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Which Tennessee exports to China are growing the fastest?

This turns out to be a tricky question to answer. Many state exports to China gyrate wildly, with mini-booms and busts. At any given time, one year's fastest-growing export could collapse the following year. If we ask instead which products are experiencing rapid and *steady* export growth, we get a set of goods such as that shown in this table. We have excluded the metal (and metal scrap) sector as well as artificial filament tow simply because they are discussed elsewhere. They certainly would be included in this list, but it's interesting to see what other goods make the cut as well. As you can see, the list is dominated by medical goods and chemicals.

What is China buying?

Chinese imports have grown by more than 400% over the past decade. In 2009, they broke the \$1 trillion barrier. China is buying a lot! Consistent with Tennessee's experience, the vast majority of their imports remain in intermediate goods used in Chinese assembly or production of finished goods. The top 10 imports as shown in the chart represent almost four-fifths of China's exports.

How much would a stronger yuan help state exporters?

The best answer here might be to consult a psychic! A myriad of factors might affect how a change in the value of the yuan will (or won't) translate into additional exports. These include the effects of a currency revaluation on the values of third currencies, the extent to which Chinese production is sensitive to import prices, and how much trade is relatively insulated from currency changes because it is either priced in dollars or involves shipments within the same company (or foreign affiliates). There is also great debate about the extent to which the currency is undervalued in the first place. Estimates range from 0 to 40%.

In the case of Tennessee, it appears that the maximum impact of currency changes occurs with about an 18-month lag. Based on that lag and trade statistics after 2005, simple models suggest that Tennessee could gain about \$282 million in exports to China per year should the Chinese currency gain 10% in value. However, this calculation is sensitive to a number of assumptions and should be taken as a pretty rough estimate. Nonetheless, it suggests that a revalued currency could substantially help state exporters. ■

Rapidly Growing State Exports		
	2002	2009
Aircraft	\$0	\$58,240,051
Nonwovens	\$72,665	\$40,932,653
Cellulose	\$1,761,315	\$33,757,405
Preparations of Titanium Dioxide	\$8,339,324	\$32,797,996
Electro-Diagnostic Equipment	\$932,310	\$19,196,703
Surgical Catgut	\$0	\$13,140,565
Miscellaneous Polyesters	\$144,035	\$9,409,873
Diagnostic/Lab Reagents	\$849,831	\$7,742,999
Artificial Joints	\$481,852	\$7,442,772
Silica and Quartz Sands	\$164,780	\$5,678,720

