Indiana's Global Exports

Report for 2007

A Report for the
Indiana Economic Development Corporation

Produced by the
Kelley School of Business
at Indiana University

September 2007

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Indiana's Global Exports: Report for 2007

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Printed by

Duke Energy Economic Development

Support comes from

- *Indiana Economic Development Corporation*
- *Indiana University Center for International Business Education and Research*

KELLEY SCHOOL OF BUSINESS
INDIANA UNIVERSITY
Indiana Business Research Center

INDIANA
ECONOMIC DEVELOPMENT CORPORATION

Prepared by the Indiana Business Research Center and Kelley School of Business at Indiana University, with support from the Indiana Economic Development Corporation and CIBER. All the data used in this report, unless specified otherwise, were distributed by WISER (World Institute for Strategic Economic Research) Trade. WISER was chosen by the U.S. Census Bureau to be one of the first business and industry data centers to focus on foreign trade statistics. Direct questions to the Indiana Business Research Center: ibrc@iupui.edu or 317-274-2979.

Executive Summary

Indiana exported $22.6 billion in goods in 2006, an increase of 5.3 percent over the 2005 export total and less than half the growth rate of the previous year (2005 exports were 12.4 percent higher than in 2004). In the first six months of 2007, however, Indiana exported $12.9 billion worth of goods, a year-over-year increase of 10.6 percent.[1]

Exports for the United States increased by 14.7 percent in 2006. For the first six months of 2007, U.S exports increased by 10.6 percent—keeping pace with the growth in exports from 2004 to 2005. Because Indiana's rate of export growth was below the national average, Indiana's rank in export sales slipped from 11th in 2005 to 13th in 2006.

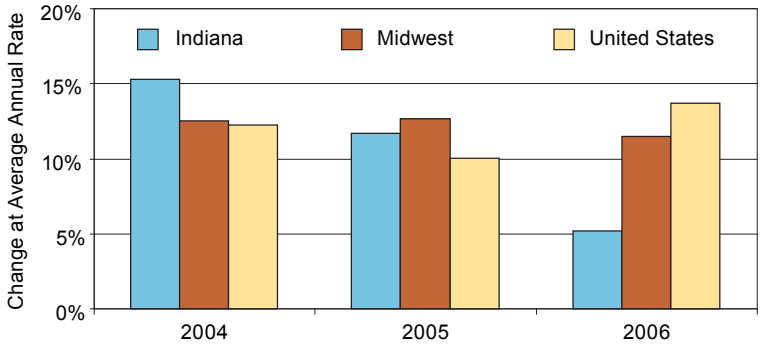
For the nation overall, 2006 was a good year for exports. All but four states increased export sales and over half experienced an increase in the rate of export growth. For the last three years, export growth has been fairly consistent for the Midwest region and for the nation. After suffering from the losses associated with hurricanes Katrina and Rita in 2005, Louisiana bounced back in 2006. Louisiana exports were $3.6 billion greater in 2006 than they were in 2004.

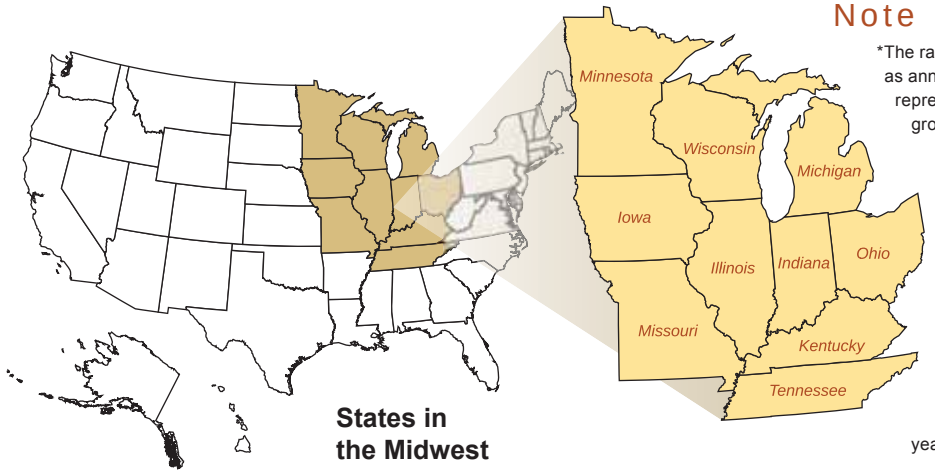
Indiana was one of a few states that did not follow the national and regional trends. The accompanying chart shows that Indiana's export growth eased a bit in 2005 and its exports grew even more slowly in 2006.

Except for Mexico and France, Indiana's export sales increased to every country on its list of top 10 trading partners. China had the greatest percentage increase. The United Kingdom had the greatest increase in dollar terms and ranked second in percentage increase from 2005 to 2006. Canada ranked second in terms of dollar increases from 2005 to 2006. Canada has long been Indiana's predominant trading partner, but its share of Indiana's total exports has been on a downward trend. Since the late 1990s, Canada's share of Indiana's exports has fallen 5 percentage points.

Vehicles and machinery remain Indiana's top two export commodities, and both have had an expansion in their export sales in recent years. The rapid growth of pharmaceutical product exports—a 24.9 percent change at an average annual rate since 2001—has moved this commodity from the fifth largest export commodity for the state to the fourth spot. The exports of optical and medical instruments have also registered a healthy annual average growth rate of 10.3 percent between 2001 and 2006.

Annual Increase in Indiana, Midwestern and U.S. Exports, 2004–2006





States in the Midwest

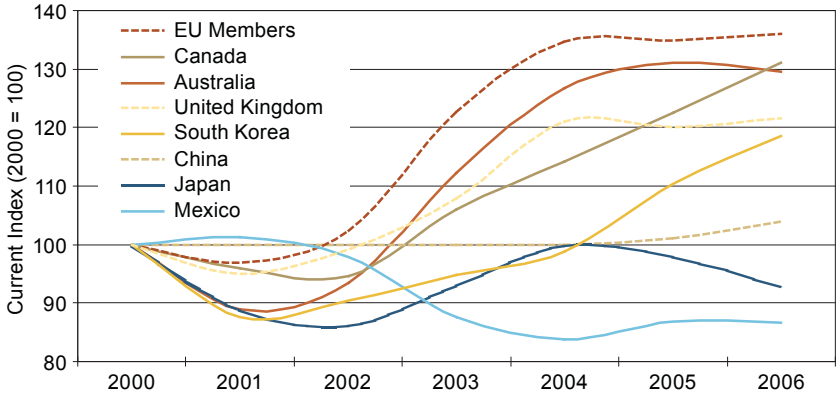
Note

*The rate of change in economic data are calculated as annual averages—"average annual rate"—and represented as percentages. Except where noted, growth rates or rates of change are computed using an exponential growth rate method. The rate of change between two points in time is calculated from the equation $r = \ln(X_{t+1}/X_t)/n$ where X_{t+1} and X_t are the last and first observations in the period, n is the number of years in the period, and ln is the natural logarithm operator. It does not take into account the intermediate values of the series. It does not correspond to the percentage change measured at a one-year interval, which is given by $(X_{t+1} - X_t)/X_t$.

1. Measured by percentage change at a one-year interval.

Indiana's economy is inextricably linked with the global economy. This report on Indiana's global exports is prepared annually for the Indiana Economic Development Corporation. The report tracks the industry mix and the destinations of Indiana's exports to help understand the importance of exports as sources of employment and economic growth in Indiana. It also examines whether there are discernable trends for future export growth in the global marketplace.

Chart 1: Cost of Foreign Exchange for Indiana's Top Trading Partners, 2000–2006



Note: Annual series indexed to 2000
Source: Federal Reserve

First, the report highlights global economic growth and attempts to assess whether there are favorable conditions for Indiana's exporters. Second, the report discusses recent U.S. and Indiana export trends. Third, Indiana's export destinations are examined. Finally, Indiana's principal export industries are surveyed.

Trade Outlook

World economic growth continued its healthy pace in 2006 and U.S. exports followed suit, growing 14.7 percent from 2005. While Indiana's exports did not increase at the average U.S. rate, the reports for the first half of 2007 seem to indicate that exports from Indiana may have rebounded. If the second half of 2007 matches the performance of the first half, 2007 will prove to be a banner year for Indiana exports. At the current rate, the value of exports in 2007 will exceed last year's value by about $3 billion.

Table 1: Real GDP, Actual 2006 and Forecast 2007 and 2008

Nation	Percent Change from Previous Year		
	2006	2007	2008
Australia	2.4	3.3	3.3
Brazil*	3.7	4.4	4.5
Canada	2.7	2.5	3.0
China*	10.7	10.4	10.4
France	2.1	2.2	2.2
Germany	3.0	2.9	2.2
Japan	2.2	2.4	2.1
Korea	5.0	4.3	4.8
Mexico	4.8	3.4	3.7
Netherlands	2.9	2.9	2.9
United Kingdom	2.8	2.7	2.5
United States	3.3	2.1	2.5
Euro Area	2.8	2.7	2.3

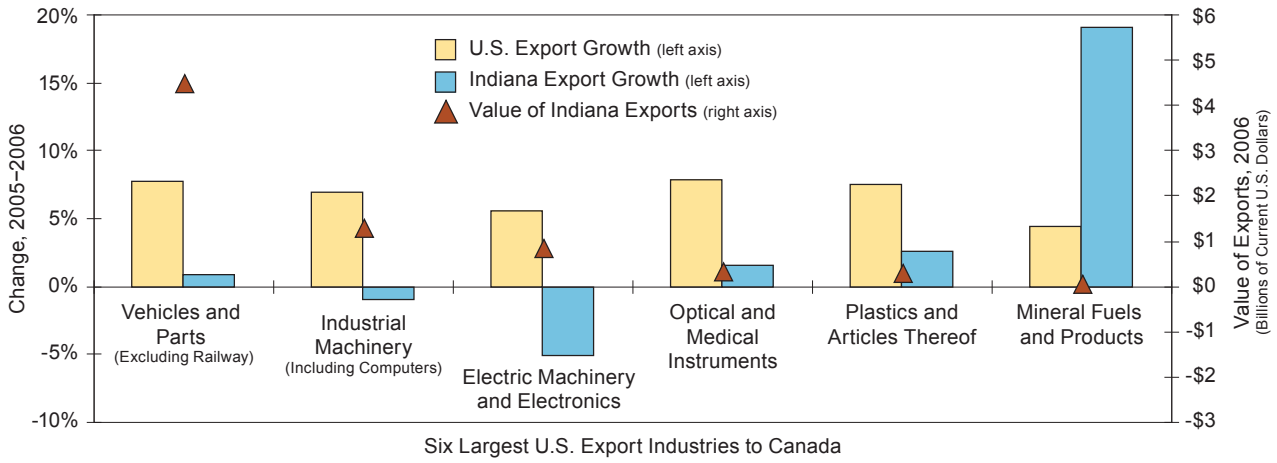
*Nonmember growth estimates by OECD

Table 1 presents the Organization for Economic Cooperation and Development's (OECD) economic growth forecasts for Indiana's leading export destinations. (The OECD forecasts growth for member countries and also for other large economies such as China and Brazil.) While the International Monetary Fund (IMF) forecasts world economic growth to be 4.9 percent for 2007 and 2008, its forecast for advanced economies—Indiana's primary trading partners—is about half that.

The economic growth of Indiana's principal trading partners was relatively strong in 2006, yet the state's export growth did not increase at the pace seen in 2004 and 2005. Given the expected 2007 slowdown in these trading partners' economic growth, one would expect disappointing export performance in 2007. Nonetheless, Indiana's exports have remained robust in the opening months of 2007.

Foreign exchange can have a major effect on exports. A declining dollar value is generally thought to boost export sales. Except for Mexico and Japan, the cost of foreign exchange in U.S. dollars has increased for most of the U.S. trading partners since 2001. The yuan, China's currency, remains stubbornly stable relative to the U.S. dollar, as **Chart 1** shows.

Chart 2: Comparing U.S. and Indiana Exports to Canada by Industry, 2006

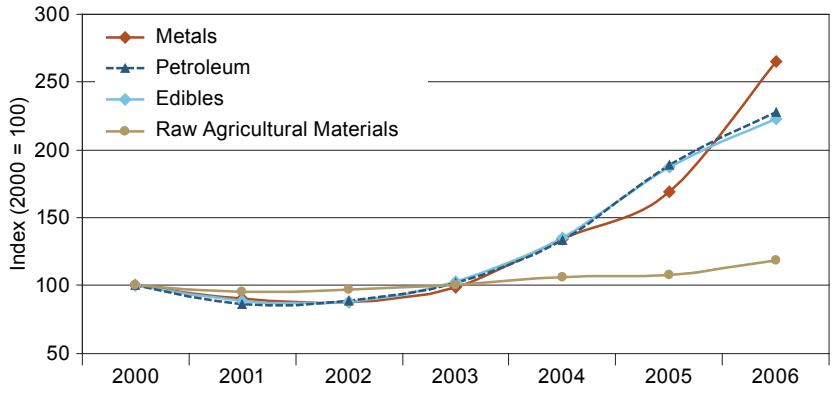


One would have expected continued robust export growth in 2006 as a result of the weakening dollar, and for the United States as a whole, exports did increase substantially; however, Indiana's increase in exports did not mirror the rest of the United States. Despite the weakening U.S. dollar vis-à-vis the Canadian dollar, Indiana's exports to Canada—Indiana's largest export market—softened. Vehicle exports to Canada went from a robust increase of 13.6 percent from 2004 to 2005, to an anemic 0.9 percent from 2005 to 2006. Export growth of industrial machinery from Indiana to Canada has also been disappointing. From 2004 to 2005, exports increased a mere 2.1 percent and then fell 1.0 percent from 2005 to 2006—even while exports from the United States to Canada for industrial machinery increased by 12.8 and 7.1 percent, respectively. Based on the results for the first half of 2007, Indiana exports for this industry will also be relatively weak.

Chart 2 shows the latest annual change in the top six export categories from the United States and Indiana to Canada. While there was a large upswing in exports of mineral fuels and products from 2005 to 2006 for Indiana, that export category represents an extremely small dollar value, as shown by the triangles (right axis).

While the weakening dollar should help Indiana exporters, Indiana manufacturers have recently encountered, and will continue to encounter, a large, offsetting impediment to robust business profitability. The buoyant world economy, led largely by China's feverish growth, has dramatically increased the cost of inputs. **Chart 3** shows the trends in commodity prices since 2000. Except for raw agricultural materials, raw material prices from oil to copper have more than doubled since the economic downturn in 2001 and 2002. While a weakening dollar makes U.S. goods cheaper in world markets, the rising cost of inputs will tend to put a profit squeeze on producers.

Chart 3: World Primary Commodity Prices



Pushed by the rapidly growing Chinese economy, the world economy will grow strongly in 2007 and 2008, even while many advanced economies perform below their economic potential. The net effect of a weakening U.S. dollar is difficult to predict, given that a weak dollar makes many commodities and intermediate inputs more costly and the manufacture of many products more expensive.

As Chart 4 shows, Indiana exports have been on a steady growth trend from 1996 to 2006, with the relative weakness in 2001 and 2002 attributed to the economic slowdown in most advanced countries. Indiana exports doubled in current dollar value, from $11.0 billion to $22.6 billion, in this time period.

The rate of increase for Indiana exports from 2005 to 2006 has, however, softened. Exports rose 5.3 percent from 2005 to 2006, well off the pace from 2004 to 2005. The rate of export growth may have eased, but the longer trend for Indiana is that export growth by industry has greatly exceeded the rate of output growth by industry. The only exception is the computers and electronics industry, as shown in **Chart 5**.

Chart 6 shows annual change in exports for Indiana, the Midwestern states and the United States. Indiana exports recovered from the 2001 recession more quickly than the Midwestern neighbors or the nation as a whole. In 2006, however, this better-than-average performance was reversed. Much of the softening in Indiana exports can be attributed to deceleration of exports to Canada, Indiana's largest export destination.

Chart 4: Indiana Exports, 1996–2006

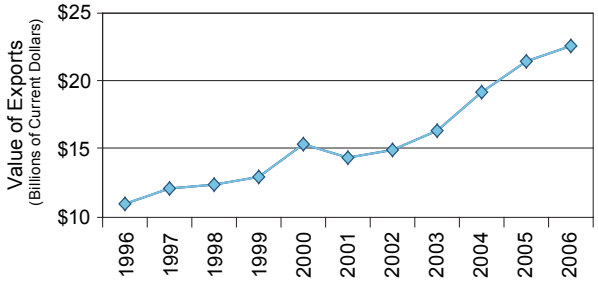


Chart 6: Annual Change in Indiana, Midwestern and U.S. Exports

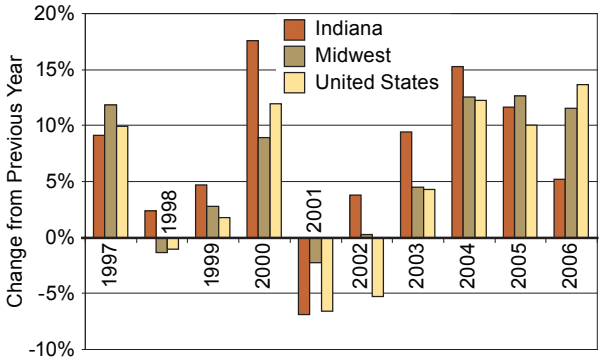
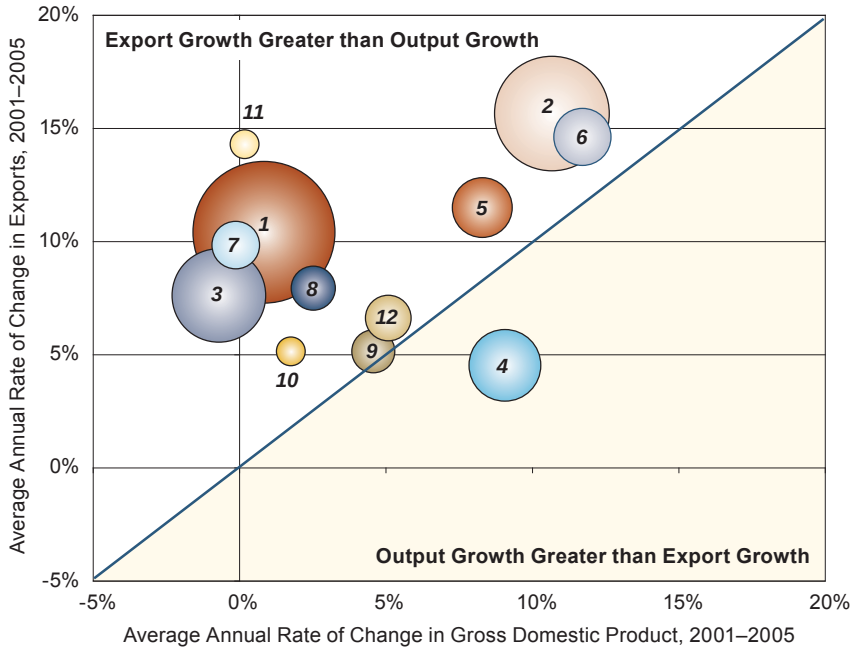


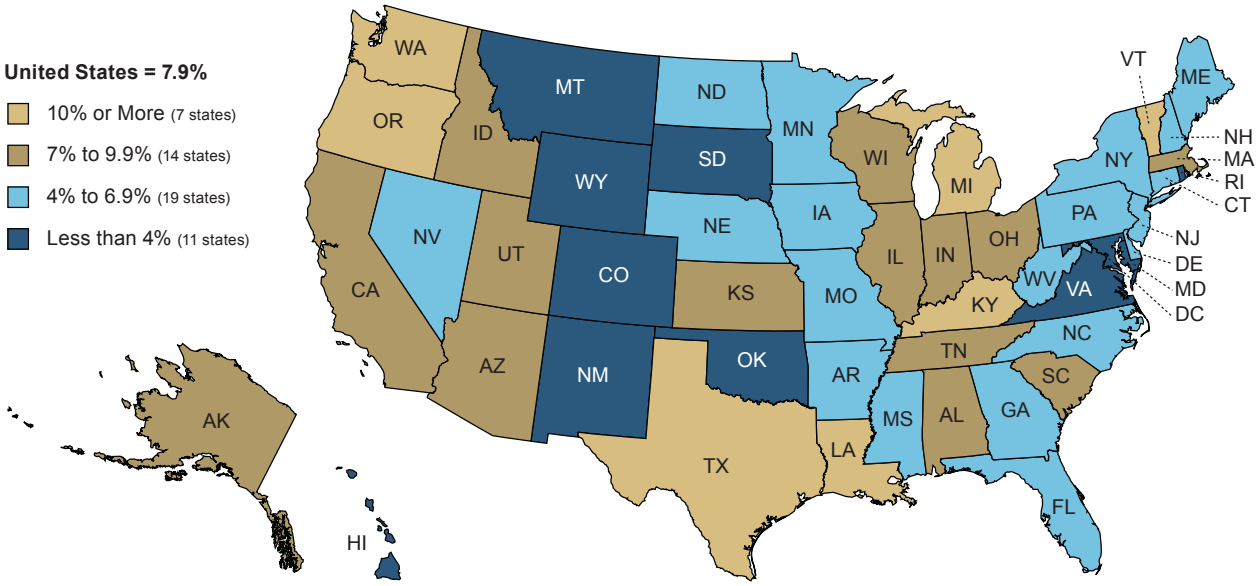
Chart 5: Comparing Indiana's Growth in Exports and GDP by Industry, 2001–2005

1. Transportation Equipment
2. Chemicals
3. Machinery (Except Electrical)
4. Computers and Electronics
5. Primary Metal Manufacturing
6. Miscellaneous Manufacturing
7. Electrical Equipment and Appliances
8. Plastics and Rubber
9. Fabricated Metal Products
10. Food and Kindred Products
11. Printing and Publishing
12. Other



Notes: Size of bubble reflects the relative dollar value of 2005 exports for that industry. Industry classifications based on NAICS codes
Sources: WISERTrade and Bureau of Economic Analysis

Figure 1: State Export Dependency: Export Sales to Gross Domestic Product by State, 2006



The deceleration in export growth may have a profound effect on Indiana, a state that is relatively dependent on selling manufactures abroad. Indiana ranks 11th among the 50 states in terms of the ratio of exports to gross domestic product (GDP). While GDP—the sum of all value-added components like wages and profits—is not conceptually the same as sales (because sales includes the price of intermediate inputs as well as value added), the ratio can provide a rough measure of the relative dependence a state has on exports. **Figure 1** shows how Indiana's exports-to-GDP ratio of 9.1 percent compares with the rest of the country. It should come as no surprise that Washington, a state that manufactures and exports large-ticket products (such as commercial aircraft), ranks number one in terms of the export-to-GDP ratio.

Chart 7 compares Indiana's 2006 export sales and the exports-to-GDP ratio with its broadly defined Midwestern neighbors: Illinois, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio, Tennessee and Wisconsin. In terms of export sales, Indiana is in the middle tier. Larger states, Michigan, Illinois and Ohio, had higher export sales than Indiana, but of those three, only Michigan is more export dependent. Kentucky and Tennessee are the only other neighbor states that are more export dependent according to this rough measure of export reliance.

That Illinois, Michigan and Ohio have a greater volume of export sales should come as no surprise. Generally speaking, those states with the greatest population have the greatest export sales, just as they also tend to have the greater economic output. That said, population size is not related to export orientation. **Figure 2** shows the value of exports by state.

Chart 7: Midwestern States Export Dependency Total Exports and Export-to-GDP Ratio, 2006

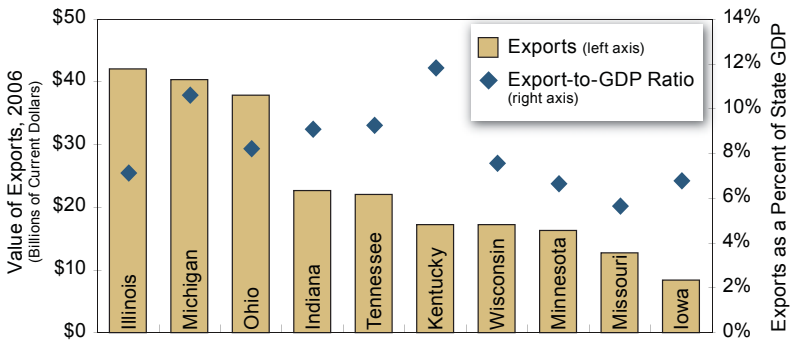


Chart 8 shows the percentage of manufacturing employment that is dependent upon exports in Indiana and the Midwest. While these data are somewhat dated (the Census Bureau recently released these data for 2003) it does provide a sense of how many manufacturing jobs are export-driven.

Chart 9 provides greater industry detail for Indiana. It shows that over 27,000 jobs in the manufacture of transportation equipment are supported by export sales.[1] One can also surmise that the number of jobs is not necessarily tied to the dollar value of export sales. For example, a relatively small dollar value of exports in primary metal and fabricated metal products drives a large number of jobs in these two industries.

As noted above, 2006 was not a banner year for Indiana in terms of export growth. Even when the growth rates for 2005 and 2006 are averaged, Indiana still falls below

Figure 2: Value of Exports by State in Current Dollars, 2006

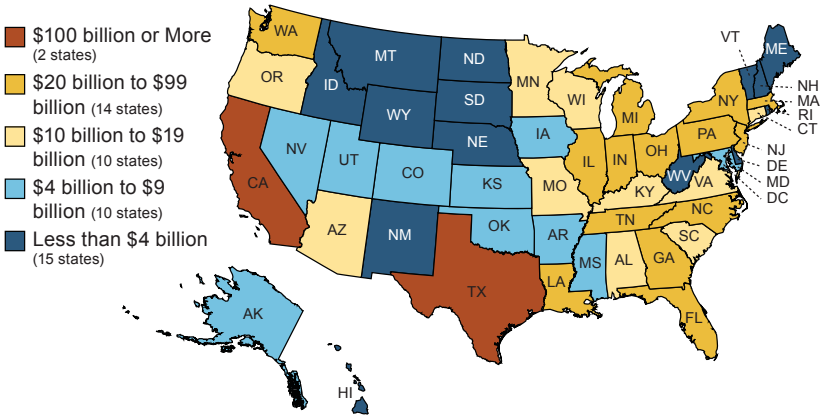
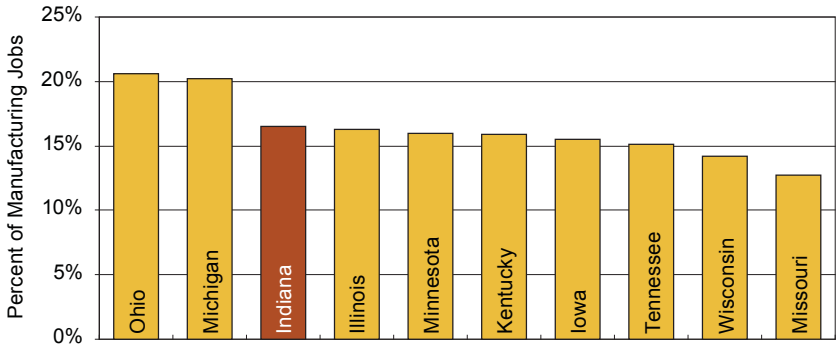
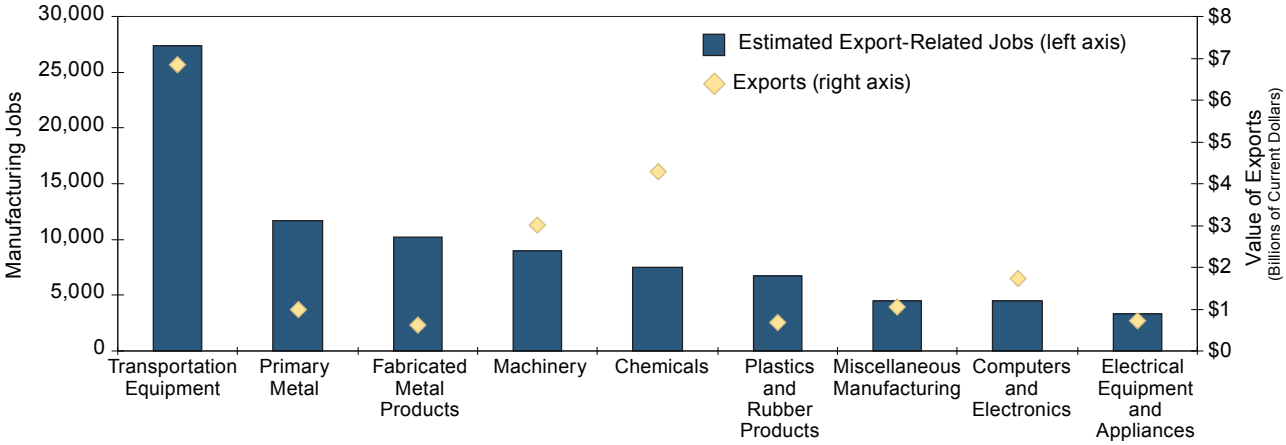


Chart 8: Manufacturing Employment Devoted to Exports, 2003



Source: U.S. Census Bureau

Chart 9: Indiana Export-Related Employment in Manufacturing, 2005



Note: Employment and exports are defined by NAICS industry codes
Sources: WISERTrade (exports 2005), International Trade Administration and the U.S. Census Bureau (percentage of export-related employment by industry for 2003) and Bureau of Economic Analysis (employment by industry 2005)

the national average, as **Figure 3** shows. This more recent trend is evident when compared to the other Midwestern states as well.

Chart 10 compares the rates of export increase and the relative dollar value of exports in the Midwestern states. The horizontal axis shows the average annual rate for export growth from 2001 to 2006. The vertical axis plots the change in exports from 2005 to 2006. The bubble size shows the relative value of exports in 2006. The diagonal line divides the chart into halves. Above the line, the most recent year's growth exceeds the 2001 to 2006 trend, or, in other words, exports were accelerating in 2006. Below the line, the most recent year's growth is below trend, or, in other words, exports were decelerating in 2006. Indiana is the only Midwestern state with decelerating export growth.

Chart 11 compares Indiana's export growth from 2001 to 2006 with the leading Midwestern states and the United States. The graph uses an index based in 2001—the year the most recent recession officially started. While Indiana exports have done better than the nation since 2001, on average, export growth has not been as robust as its more dynamic peer states. Moreover, Indiana's rate of growth between 2005 and 2006 slowed while the more dynamic peers kept up their pace.

Figure 3: Average Annual Rate of Change in Exports, 2004–2006

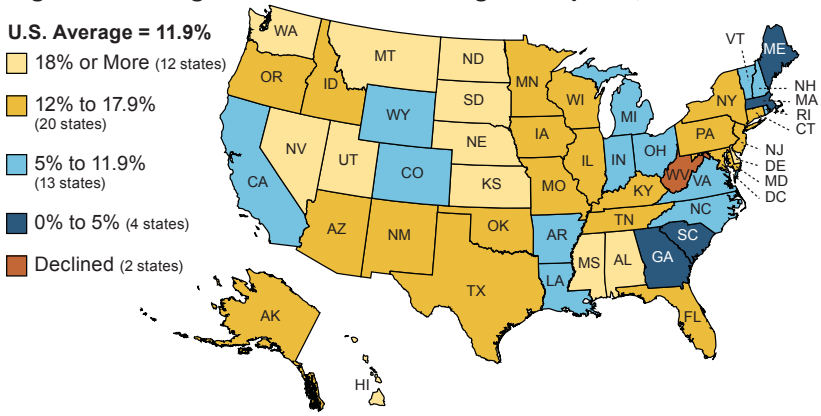
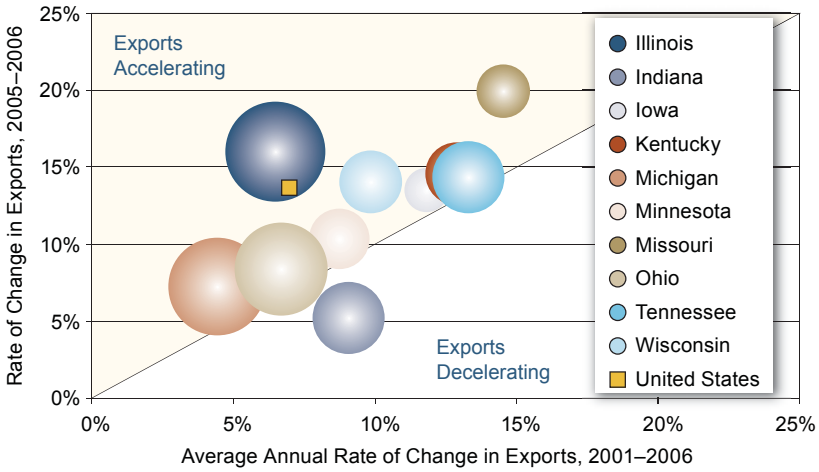
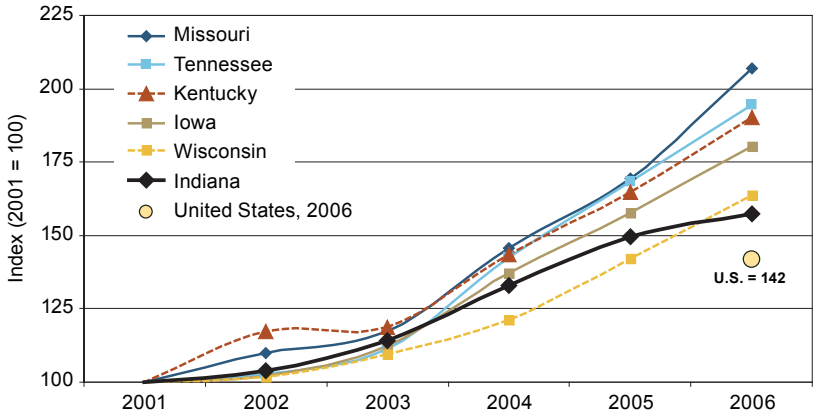


Chart 10: Export Trends in the Midwest



Note: Size of the bubble reflects the relative value of exports in 2006.

Chart 11: Export Index for Selected Midwestern States, 2001–2006



Indiana Export Destinations

Canada has long been Indiana's leading export sales market. Ever since 2000, when Mexico overtook the United Kingdom in export sales, Mexico has been consistently in the number two spot. **Table 2** summarizes Indiana's exports to top country destinations in 2006. In addition to

Table 2: Indiana's Top 10 Export Destinations—Value and Average Annual Rate of Change

Export Destination	Value of Exports (Millions of Current Dollars)			Average Annual Rate of Change		
	2006	2005	2004	2005–2006	2001–2006	1996–2006
World Total	$22,619.7	$21,475.9	$19,109.4	5.2	9.1	7.2
Canada	$9,841.7	$9,550.4	$8,534.5	3.0	9.2	5.9
Mexico	$2,428.4	$2,618.1	$2,543.0	-7.5	6.3	20.1
United Kingdom	$1,889.7	$1,516.1	$1,281.8	22.0	13.9	11.2
France	$1,378.2	$1,467.1	$1,177.9	-6.2	14.5	18.5
Japan	$830.9	$768.7	$720.3	7.8	3.4	0.7
Germany	$733.5	$691.4	$578.9	5.9	5.6	7.3
China	$559.2	$418.0	$294.4	29.1	20.5	12.8
Netherlands	$472.9	$426.8	$368.9	10.2	8.6	5.0
Australia	$397.4	$334.1	$267.4	17.4	10.5	7.2
Republic of Korea	$325.8	$303.3	$245.5	7.2	7.8	4.9

the current-dollar value of exports to the top 10 destinations, the table presents the growth in exports over three time periods.

The top 10 destinations comprised 83.4 percent of Indiana's export sales in 2006. **Chart 12** presents a picture of **Table 2**. Canada's bubble clearly dominates the graph and, unfortunately, the bubble is below the diagonal line. While Canada's value of imports from Indiana did not decrease from 2005 to 2006, Canada's rate of growth did decelerate. Other notable destination countries with particularly strong upswings in export sales are China and Australia. **Chart 13** presents a similar story.

Indiana exported goods to 196 countries in 2006, but only 22 had export sales greater than $100 million. **Figure 4** presents those destination countries receiving Indiana exports of more than $100 million. These 22 countries accounted for 92.8 percent of all Indiana exports. The longer run changes in the global economy are

Chart 12: Export Trends for Indiana's Top Ten Destinations

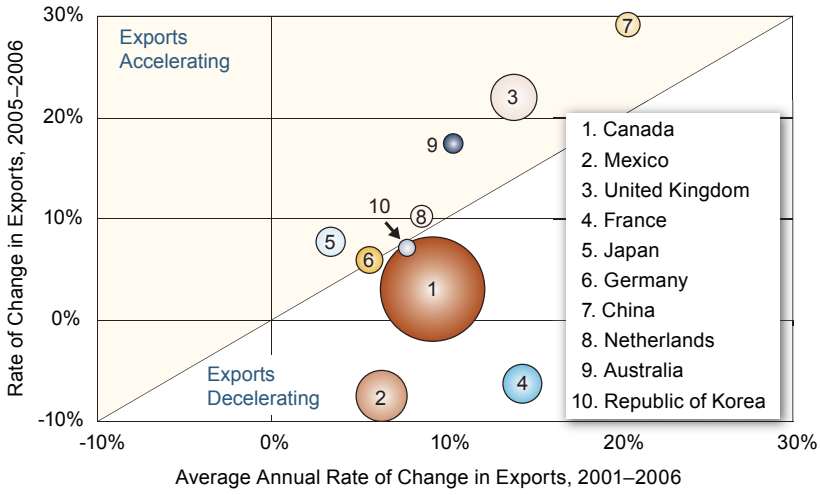


Chart 13: Annual Change in Exports for Indiana's Top 10 Export Destinations

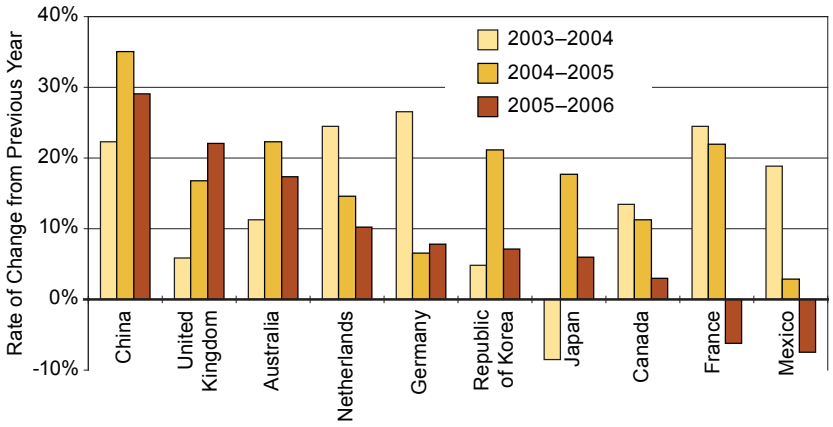
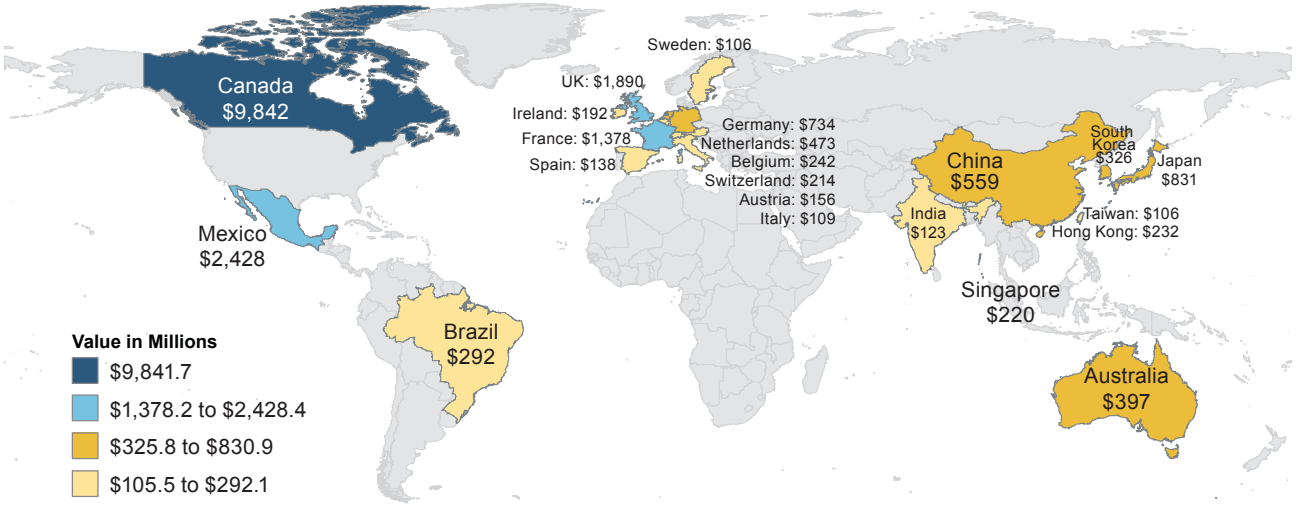


Figure 4: Destinations For Indiana Exports Exceeding $100 Million, 2006



evident in the export statistics for Indiana in the smaller export destinations. The strong growth in exports to the U.K. and France notwithstanding, exports to several European countries declined from 1996 to 2006, while exports to several Asian countries continued to expand. For example, exports to Hong Kong exceeded the $100 million mark in 1997 and in 2006, Indiana exports to Hong Kong totaled $232 million. India also joined the $100 million club in 2005. Since 1996, exports from Indiana to China increased four-fold.

Figure 5 presents Indiana export growth rates from 2003 to 2006 across the globe for countries that receive more than $500,000 in sales. The smaller countries tend to have the greatest growth rates, with some rates in the triple digits. The average annual rate from 2003 to 2006 for all partners was 10.7 percent. This more moderate average is a function of Canada's 9.2 percent rate of change and the fact that Canada accounted for 43.5 percent of Indiana exports in 2006. Mexico, at number two in export sales with a 10.7 percent share of Indiana exports, also pulled the average

Figure 5: Indiana Export Growth by Destination, 2003–2006

Countries with Indiana Export Purchases Greater than $500,000 in 2006

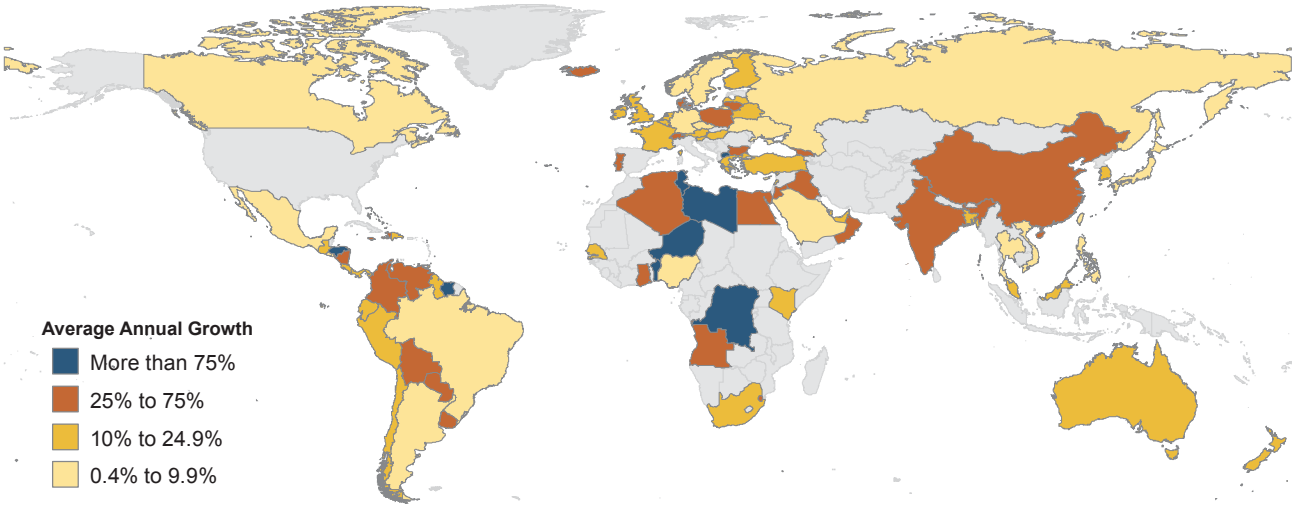


Chart 14: Top Indiana Export Destinations, 2006

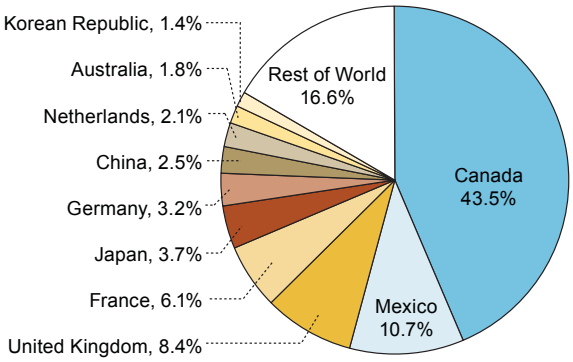


Chart 15: Indiana Export Index for Top Six Destinations, 2001–2006

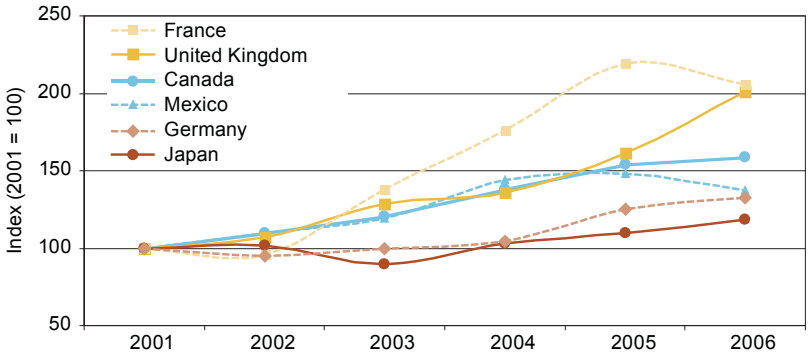


Table 3: Indiana's Largest Positive and Negative Changes in Exports by Industry for 10 Largest Export Destinations, 2006*

Export Destination	Vehicles and Parts	Electric Machinery	Industrial Machinery	Optical and Medical Instruments	Organic Chemicals	Pharmaceutical Products
World Total	$137	$57	$105	$137	-$104	$262
Canada	$40	-$44	-$13			$53
Mexico	-$95	$38	-$128		$14	$10
United Kingdom		$10	$65	-$40	$87	$218
France			$16	-$11	-$147	$20
Japan	$10			$24	-$10	$16
Germany			$16			$12
China		$36	$34	$10		
Netherlands	-$14					$42
Australia	$14			$12		
Republic of Korea				$10		

*Country by industry changes of $10 million or more for Indiana's top 10 leading export markets. Values in millions.

down. **Chart 14** shows how the top 10 countries compare with respect to their share of Indiana's exports.

Chart 15 presents a long-term profile of Indiana export sales between 2001 and 2006 to Indiana's top six export destinations.

The United Kingdom and France dominate the picture with a doubling in purchases from Indiana between 2001 and 2006. Canada, Japan and Germany also showed consistent increases since 2003, but Mexico's purchases have fluctuated.

Table 3 identifies the largest changes in export sales by industries, both positive and negative, for Indiana's top 10 export destinations in 2006. These changes are reported in millions of dollars. This presentation provides some sense of the role that each of the leading export destinations and each of the leading export industries have in changes in Indiana exports. For example, industrial machinery exports increased by $105 million from 2005 to 2006, even though the largest trading partners registered a decline in purchases of Indiana's industrial machinery goods. It also shows an across-the-board increase in countries purchasing Indiana's pharmaceutical products. The overall increase in optical and medical instruments, on the other hand, appears to stem from smaller dollar-value increases in many of Indiana's smaller trading partners.

Indiana's top three export destinations account for most of the changes in the nature of Indiana's exports. **Charts 16**, **17** and **18** plot these countries' imports of goods from Indiana industries that exported over $200 million in 2006. Exports of vehicles and parts to Canada were flat. Were it not for the robust increase in the sales of iron and steel products (a

$92 million increase from 2005 to 2006) and industries with less than $200 million in sales (the all other commodities group accounted for a $197 million increase from 2005 to 2006), 2006 would have been a disappointing year for export sales to Canada.

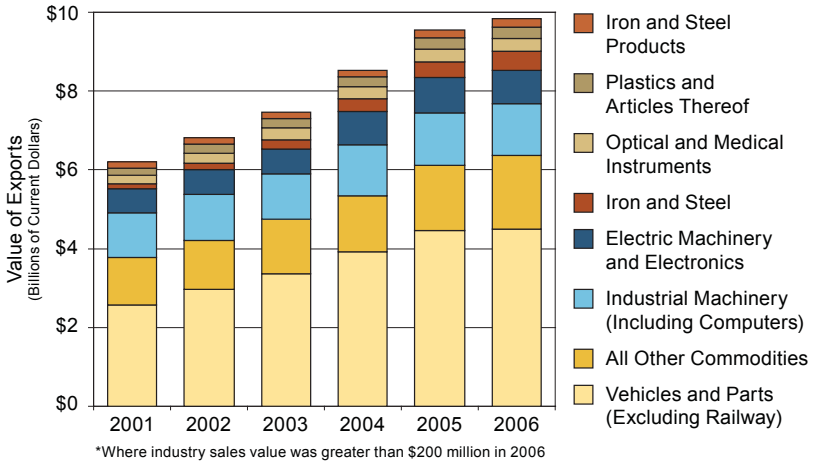
Chart 17 shows that exports to the United Kingdom have increased dramatically, led by an explosion in pharmaceutical purchases (from $89 million in 2001 to $523 million in 2006) and organic chemicals (from $33 million in 2001 to $294 million in 2006). While less impressive, other industries have also increased exports to the United Kingdom from 2001 to 2006.

As seen in **Chart 18**, exports to Mexico have been inconsistent. Mexican purchases of industrial machinery marched steadily upward until 2004, flattened in 2005 and retreated in 2006. Vehicles and parts recovered in 2004, but subsequently declined. Even the all other commodities group is off slightly from its 2005 high. Only electric machinery and electronics can point to 2006 as its high-water mark for Hoosier exports to Mexico.

Notes

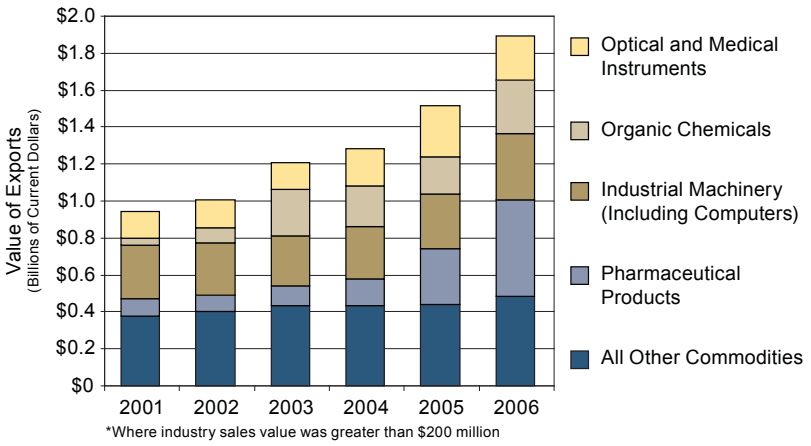
1. 2005 estimates for export-related employment in manufacturing were made using the 2003 Census Bureau data (accessed on the International Trade Administration website). The 2003 percent of employment-by-industry related to exports was applied to the 2005 employment statistics to derive the 2005 number of jobs. Unlike most of the statistics presented in this report (using the International Harmonized System), the employment statistics and the corresponding export statistics are based on the North American Industry Classification System (NAICS).

Chart 16: Indiana Exports to Canada by Industry, 2001–2006*



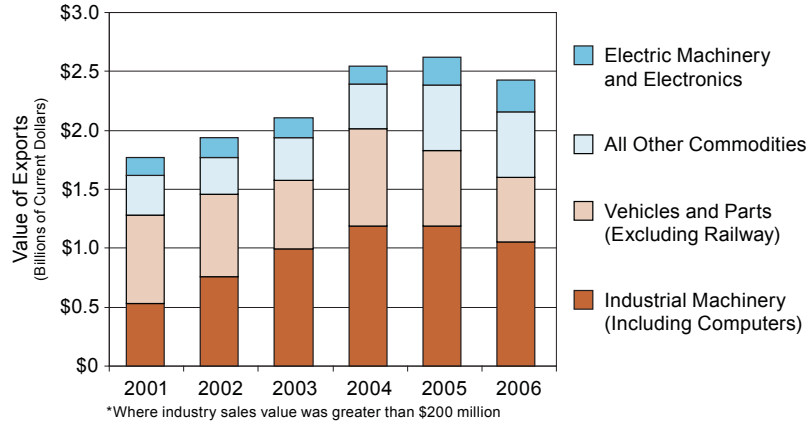
*Where industry sales value was greater than $200 million in 2006

Chart 17: Indiana Exports to the United Kingdom by Industry, 2001–2006*



*Where industry sales value was greater than $200 million

Chart 18: Indiana Exports to Mexico by Industry, 2001–2006*



*Where industry sales value was greater than $200 million

Table 4 presents the top 10 export industries for the state in 2006 and rates of change from 2005 to 2006 and 2001 to 2006. Chart 19 graphically presents this tabular data. While vehicle and part exports, together with industrial machinery, account for the lion's share of Indiana exports, pharmaceutical exports have sustained solid growth over the last five years. Optical and medical instruments and iron and steel products have also registered double-digit growth.

Because of their importance as either the largest or the fastest growing, these Indiana industries deserve special attention.

Vehicles

Figure 6 shows countries with U.S. export purchases greater than $200 million. Meanwhile, within the United States, Michigan is in a league by itself with a 19.4 percent share of U.S. vehicle exports (see

Table 4: Indiana's Top 10 Export Industries

Industries[a]	Exports 2006[b]	Percent Change 2005–2006	Percent Change 2001–2006[c]
Vehicles and Parts (Excluding Railway)	$5,881	2.4	8.2
Industrial Machinery (Including Computers)	$4,258	2.5	6.6
Electric Machinery and Electronics	$1,790	3.2	6.5
Pharmaceutical Products	$1,687	16.9	24.9
Organic Chemicals	$1,484	-6.8	9.8
Optical and Medical Instruments	$1,468	9.8	10.3
Plastics and Articles Thereof	$1,007	10.7	9.9
Iron, Steel and Articles Thereof	$913	15.6	16.4
Miscellaneous Chemical Products	$682	-1.0	9.7
Aluminum and Articles Thereof	$368	25.2	6.2

a. Industries defined by Harmonized System of commodity classification
b. Value of exports in millions
c. Average annual growth rate

Chart 19: Indiana's Top 10 Export Industries

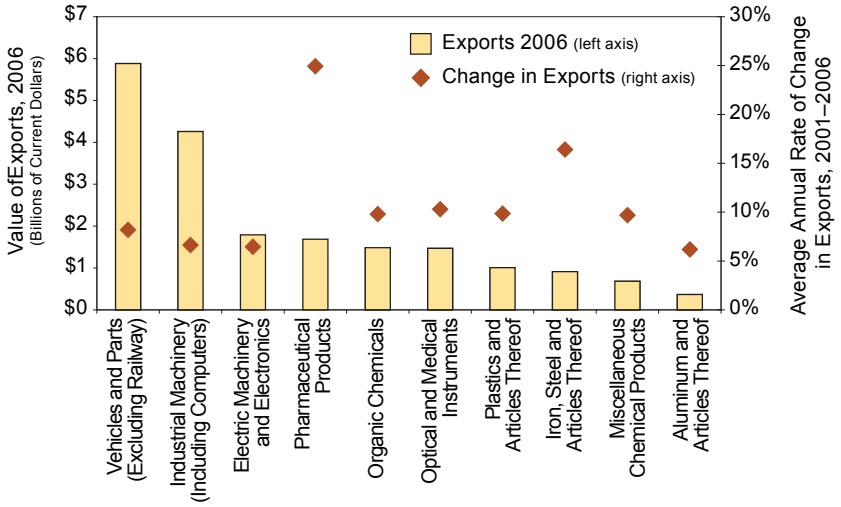


Figure 6: Exports of Vehicles and Parts (Excluding Railway), 2006
Countries with U.S. Export Purchases Greater than $200 Million

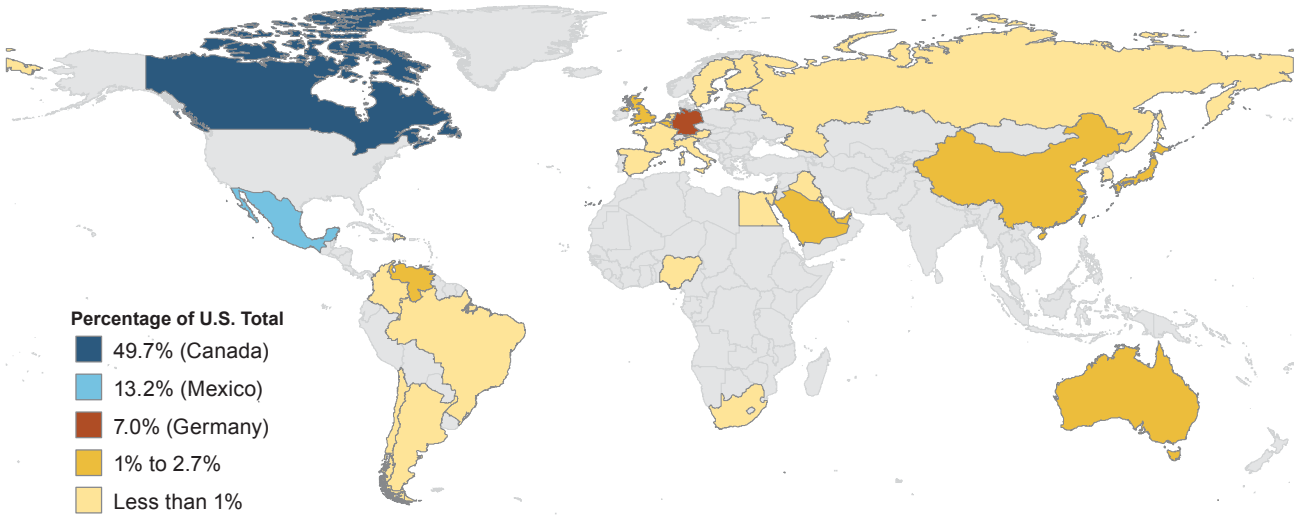


Figure 7: Share of U.S. Vehicle Exports (Excluding Railway), 2006

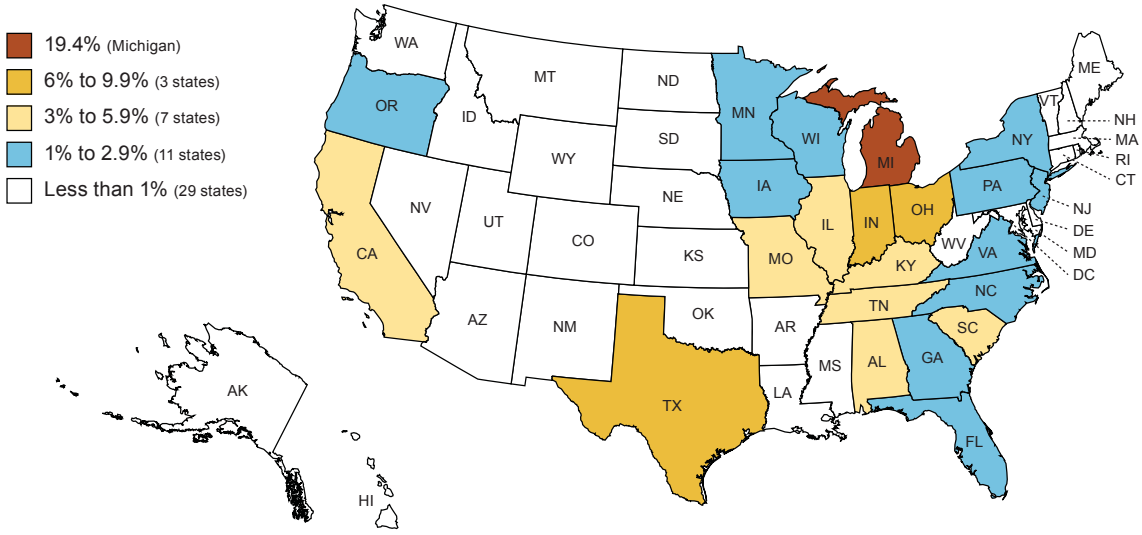
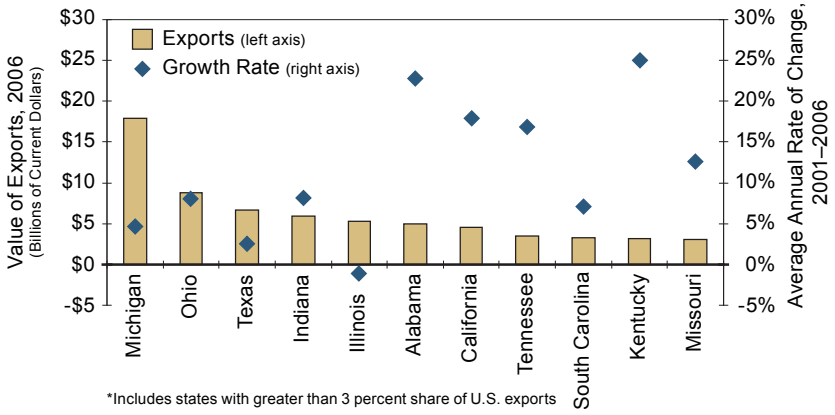


Figure 7). Indiana ranks fourth in terms of U.S. export share of vehicles, with Ohio and Texas as the only other states that have more than 6.0 percent. **Chart 20**, together with the U.S. map, shows some of the shifts in vehicle manufacturing and exports. The traditional "rust belt" states command the larger share of the U.S. export market, but the Southeastern states—and many may consider Kentucky and Tennessee to be "closer" to the southeast than to the Great Lake States—have greater rates of growth.

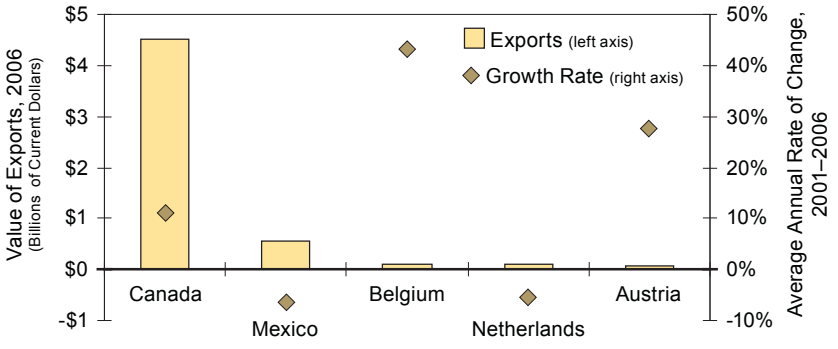
Chart 21 shows how the top five destinations for Indiana's vehicle exports compare. As noted above, Canada is far and away the largest market and has been a consistent export market for Indiana's vehicles and parts. While the Mexican market absorbed over $500 million in Indiana vehicle exports in 2006, the market is not stable, with a drop in Indiana-manufactured purchases since 2001. The other countries

Chart 20: Leading States in the Export of Vehicles and Parts (Excluding Railway), 2001–2006*



*Includes states with greater than 3 percent share of U.S. exports

Chart 21: Indiana's Top Five Export Destinations for Vehicles and Parts (Excluding Railway)



are such small markets that small changes in export volume can result in large changes in growth rates.

While growth opportunities for vehicles and parts may be limited in the near term, based on the recent past, it would appear that pharmaceutical manufactures will play an increasingly important role in the growth of Indiana exports.

Pharmaceuticals

Figure 8 maps the leading pharmaceutical exporting states. California and Massachusetts each have a double-digit share of pharmaceutical exports. With 9.3 percent, Indiana ranks a close third in terms of its share of U.S. pharmaceutical exports (not counting the exports manufactured in Puerto Rico). Not only does Indiana rank in the top three states in pharmaceutical exports, it also has had faster than average growth in exports. Only Delaware and Massachusetts have had a faster rate of export growth, as shown in **Chart 22**.

Chart 23 presents the top five export destinations for Indiana's pharmaceuticals. There is, by all appearances, great strength in the European market for Indiana pharmaceuticals. This fact is also documented by **Figure 9**. The United Kingdom, France and Germany account for an $852 million increase in Indiana exports from 2001 to 2006 in pharmaceuticals alone. There is a note of caution: the demand and sales for these products can collapse almost as quickly as they surge.

Figure 8: Share of U.S. Pharmaceutical Exports, 2006

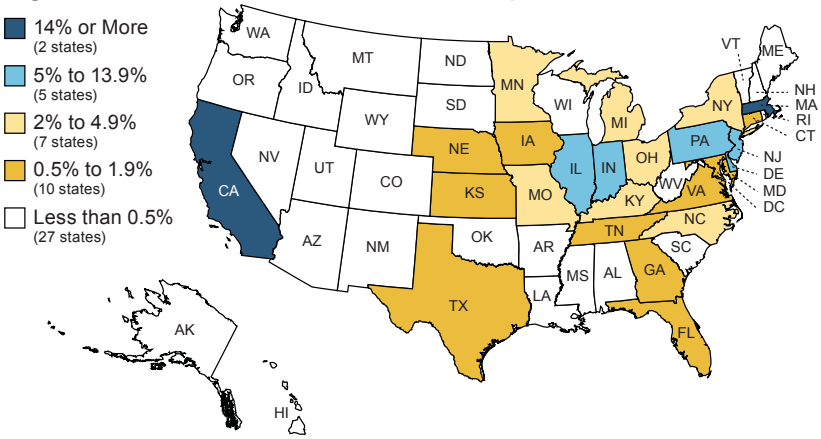


Chart 22: Top Ten Pharmaceutical Exporting States

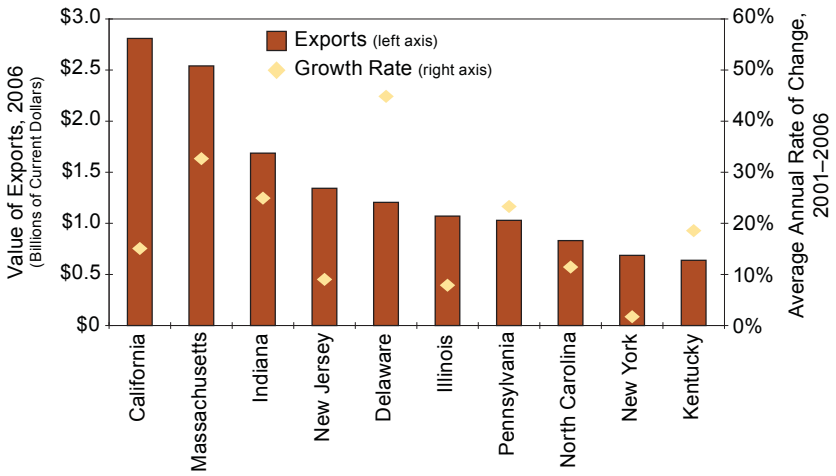


Chart 23: Indiana's Top Five Export Destinations for Pharmaceutical Products

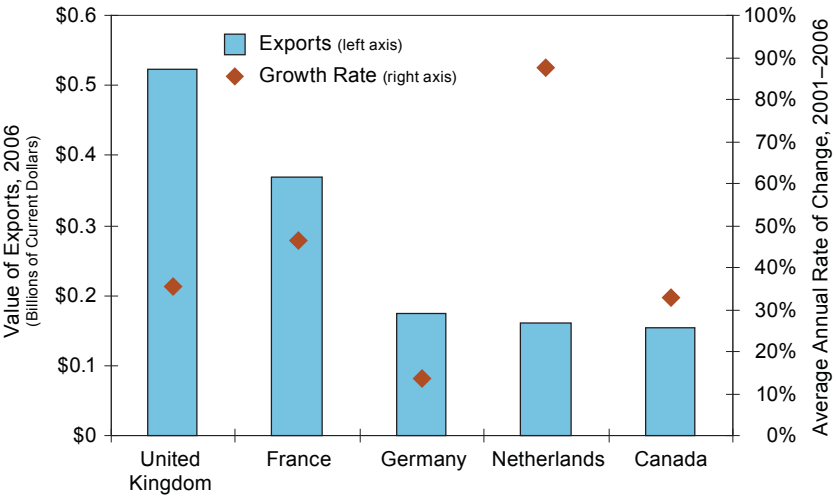
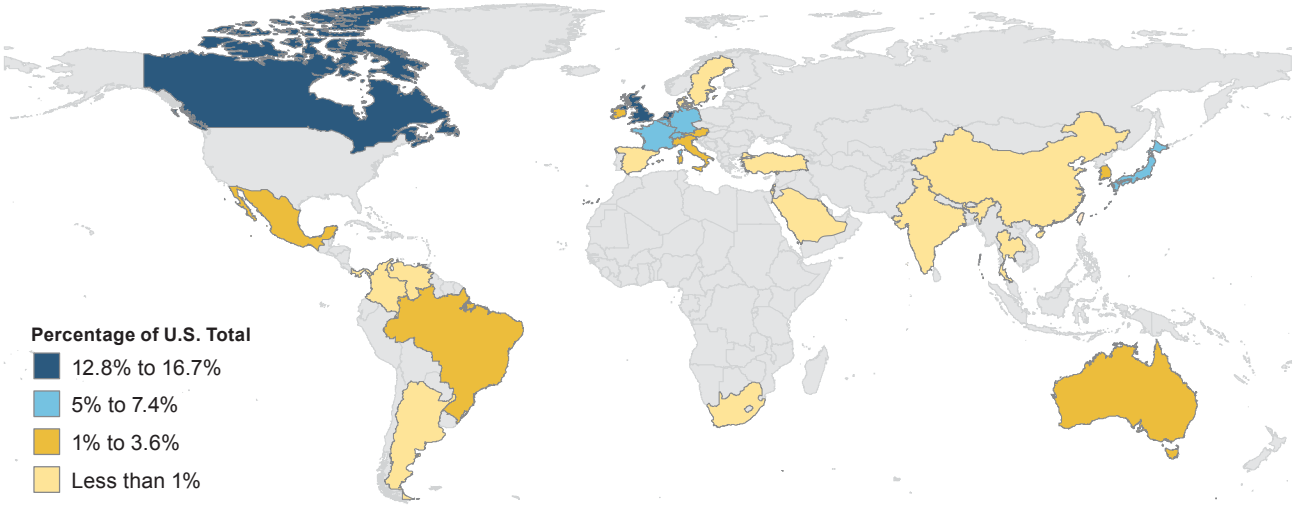


Figure 9: Exports of Pharmaceutical Products
2006 Destination Countries for U.S. Exports of Greater than $50 Million



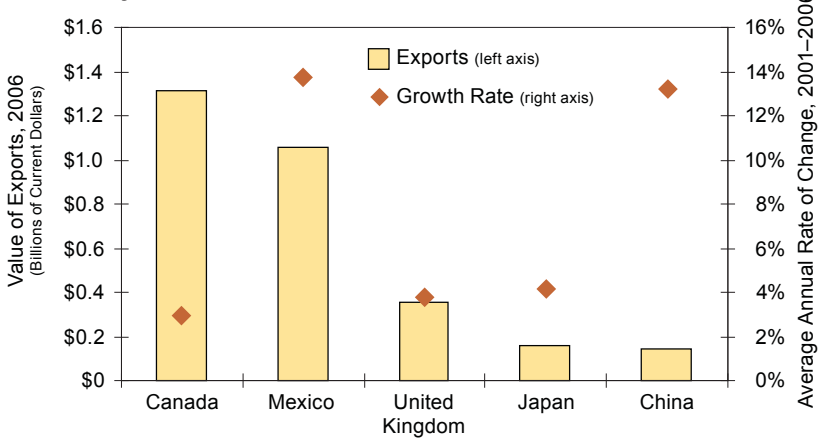
Spain, for example, imported $13 million worth of Indiana pharmaceutical products in 2001. By 2004, that total had reached $159 million. In 2006, the total value of Indiana pharmaceutical exported to Spain returned to $13 million.

Machinery

Chart 24 compares the 2006 value of exports and the 2001–2006 rate of growth in Indiana industrial machinery exports to Canada, Mexico, the United Kingdom, Japan and China. France, which registered a $35 million increase from 2004 to 2005, didn't make the top five in 2006.

China, on the other hand, nearly doubled its purchases of industrial machinery from 2001 to 2006. Likewise, Korea doubled its purchases of Indiana industrial machinery over the same period and, in 2006, surpassed France in the dollar-value of purchases. Last but not least, Mexico was just shy of doubling its purchases of industrial machinery and, by 2004, imported over a billion dollars in industrial machinery from Indiana. Since then, however, Mexican imports of Indiana industrial machinery have been flat.

Chart 24: Indiana's Top Five Export Destinations for Industrial Machinery

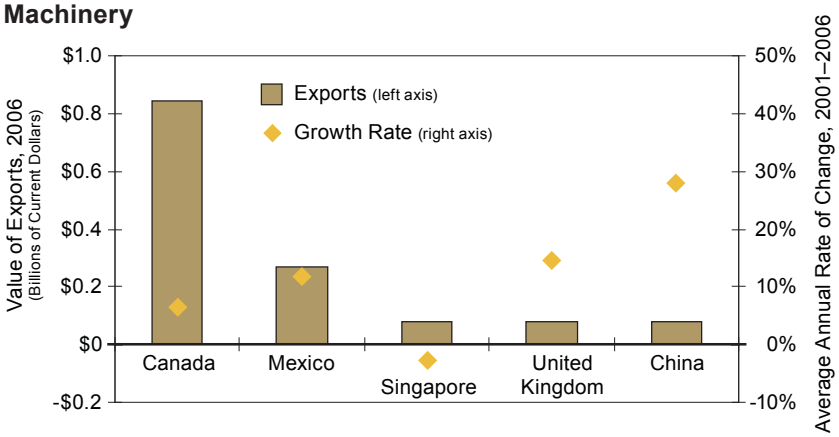


"Since 2004, Mexican imports of Indiana industrial machinery have been flat."

Electrical Machinery

Although it is an important export category for Indiana, the value and growth of electrical machinery exports are not as impressive as for industrial machinery. The top five importers of Indiana's electrical machinery look much like those of industrial machinery, with Singapore substituting for Japan. **Chart 25** shows changes in Indiana electrical machinery exports to Canada, Mexico, Singapore, the United Kingdom and China. While Korea made it into the top five in 2005, China's purchases grew more robustly from 2005 to 2006. Singapore's electrical machinery purchases from Indiana have been erratic for several years and have been on a recent downturn. That said, early indications for 2007 would put Singapore's imports from Indiana on track to exceed its 2001–2005 average.

Chart 25: Indiana's Top Five Export Destinations for Electrical Machinery



Organic Chemicals

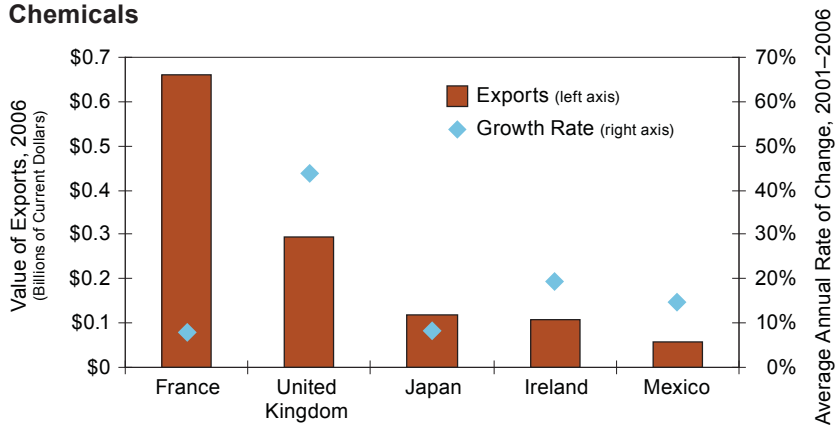
Chart 26 plots the top five export destinations of Indiana's organic chemical production. Brazil didn't make the top five in 2006, having been edged out by Mexico's strong 14.7 percent growth from 2005 to 2006. The other four countries remained on the top five destinations for Indiana organic chemicals. As the graph shows, the 43.7 percent increase in the U.K. purchases is dramatic. In dollar terms, the United Kingdom has increased its imports from Indiana from $33 million in 2001 to $294 million in 2006. While U.K. imports of these commodities have fluctuated somewhat since 2003, the value of imports has been consistently above $200 million. Exports to France have also fluctuated in recent years, with the greatest dollar value purchased by France occurring in 2005.

Optical and Medical Instruments

Chart 27 shows the relative strength of Indiana optical and medical instrument export markets. The top three markets have remained fairly stable over the last few years. Switzerland rocketed into fourth place in 2005 when its imports more than doubled from 2004 and, in 2006, its imports of Indiana optical and medical instruments almost

"The United Kingdom has increased organic chemical imports from Indiana from $33 million in 2001 to $294 million in 2006."

Chart 26: Indiana's Top Five Export Destinations for Organic Chemicals



tripled again. Denmark, Australia, Germany and Mexico, however, are vying consistently for fifth place around the $50 million mark, and all but German purchases have grown at a healthy average annual rate in the double digits.

Plastics

Chart 28 shows the top five markets for Indiana plastic products. Canada, Mexico, China, Japan and Hong Kong represented about 62.5 percent of plastic product exports of just over $1 billion in 2006. With the exception of Canada, their dollar values are relatively small: only Mexico breaks the $100 million threshold. Just the same, the combined growth at an average annual rate from 2001 to 2006 for Mexico, China, Japan and Hong Kong is 18.0 percent. If these trends hold, this industry will be another rising star in the portfolio of Indiana exports.

Iron, Steel and Related Products

Chart 29 presents Indiana's iron, steel and related product exports to Canada, Mexico, the United Kingdom and Japan. As the graph demonstrates, there are few markets of significant size for iron, steel, and iron and steel products. There is evidence of strong growth in the purchases for these Indiana manufactured products, but the small initial volume of exports helps one put these impressive growth rates in context.

Chart 27: Indiana's Top Five Export Destinations for Optical and Medical Instruments

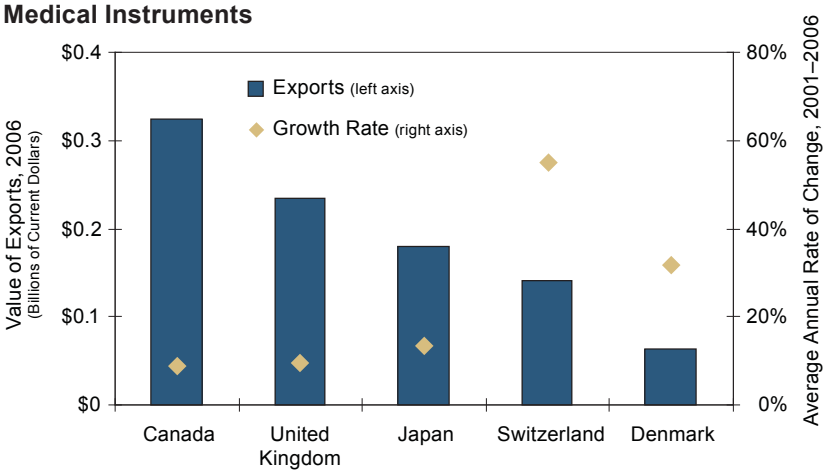


Chart 28: Indiana's Top Five Export Destinations for Plastic Products

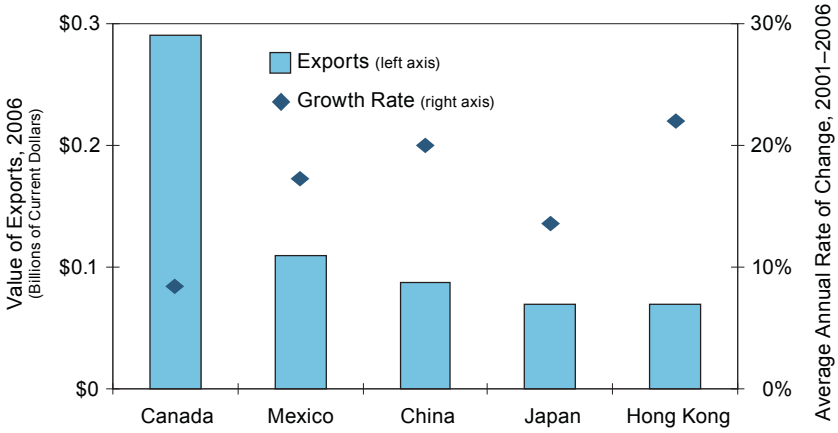
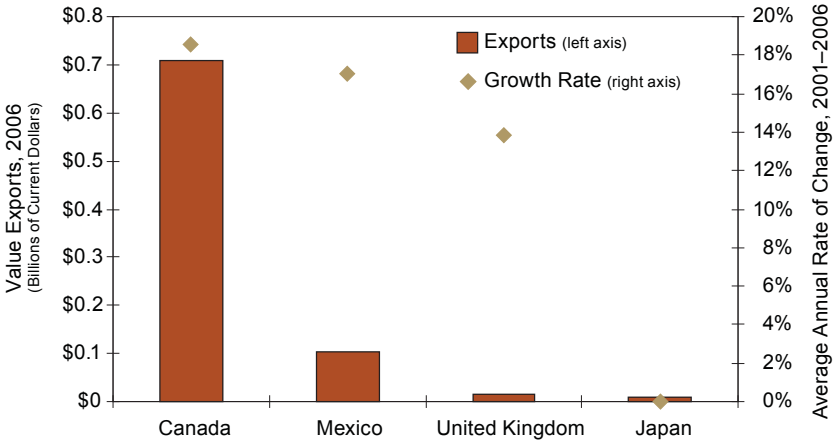


Chart 29: Indiana's Top Four Export Destinations for Iron, Steel and Related Products



Miscellaneous Chemicals

The market for miscellaneous chemicals is broader and deeper than for iron and steel products, as **Chart 30** shows. The top five export destinations—Germany, Canada, the United Kingdom, France and Japan—account for 66.0 percent of Indiana exports of miscellaneous chemicals. From 2001 to 2003, exports for all destinations surged by 42.6 percent, but since 2003, exports have remained flat. Only Canada has significantly increased its Indiana imports of miscellaneous chemicals since 2003. German, French and Japanese purchases have been fairly flat. United Kingdom purchases, while positive for the longer time frame, have been declining from 2003 to 2006 by an average annual rate of 13.8 percent.

There does not appear to be a discernable trend for this industrial group. Japan just edged out Mexico in the rankings for 2006. Japan may also be overtaken by Spain, the Netherlands or even Australia for the number five slot in 2007.

Chart 30: Indiana's Top Five Export Destinations for Miscellaneous Chemical Products

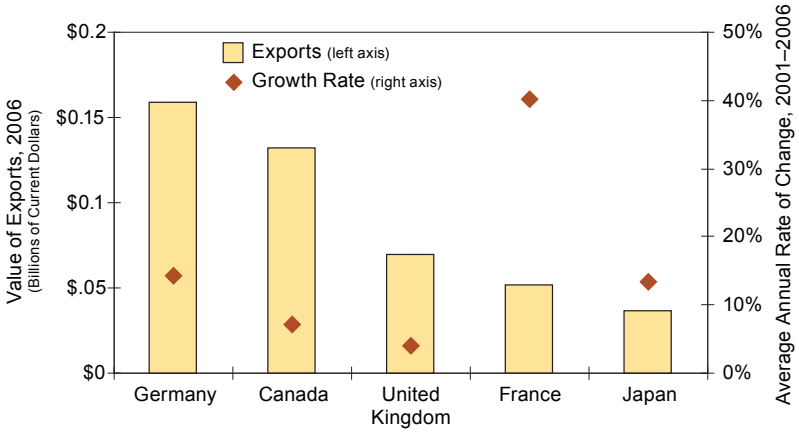
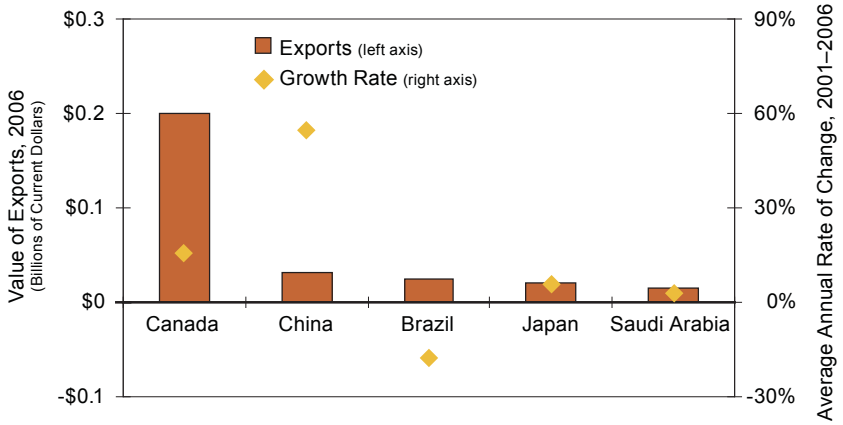


Chart 31: Indiana's Top Five Export Destinations for Aluminum Products



Aluminum Products

Chart 31 plots the top five Indiana exports of aluminum products. Canada, China, Brazil, Japan and Saudi Arabia account for 79.1 percent of all aluminum export products manufactured in Indiana. Like iron and steel products, Canada stands out as the main destination for aluminum with most other counties barely registering. China, despite the high rate of growth in importing Indiana aluminum products since 2001, accounts for a mere $31 million in sales. Except for Canada, the export volumes are so small that dollar-value changes can register as large percentage changes. Until markets like China or Brazil become well established, the Canadian market is the one to watch and will likely be for some time.

"Until markets like China or Brazil become well established, the Canadian market is the one to watch and will likely be for some time."

Appendix A: Indiana Exports for All Commodities

Rank	Description	Annual		January through June		Percent Change*		Commodity as a Percent of Total		Change	
		2005	2006	2006	2007	2005–2006	2006–2007	2005–2006	Jan –Jun 2007	2005–2006	Jan–Jun 2007
	Total: All Commodities	**$21,475.9**	**$22,619.7**	**$11,647.2**	**$12,884.1**	**5.3**	**10.6**			**$1,143.8**	**$1,236.9**
1	Vehicles (Except Railway or Tramway) and Parts, etc.	$5,743.7	$5,881.4	$3,075.6	$3,334.2	2.4	8.4	26.0	25.9	$137.7	$258.6
2	Industrial Machinery (Including Computers)	$4,152.6	$4,258.0	$2,169.3	$2,644.6	2.5	21.9	18.8	20.5	$105.4	$475.3
3	Electric Machinery, etc.; Sound Equipment; TV Equipment; Parts	$1,733.2	$1,789.8	$924.8	$1,001.6	3.3	8.3	7.9	7.8	$56.6	$76.8
4	Pharmaceutical Products	$1,425.3	$1,687.1	$838.3	$897.4	18.4	7.0	7.5	7.0	$261.9	$59.1
5	Organic Chemicals	$1,587.8	$1,484.3	$899.7	$925.5	-6.5	2.9	6.6	7.2	-$103.5	$25.8
6	Optic, Photo etc., Medic or Surgical Instruments, etc	$1,330.9	$1,467.8	$758.7	$763.2	10.3	0.6	6.5	5.9	$136.9	$4.4
7	Plastics and Articles Thereof	$905.3	$1,006.7	$518.9	$502.7	11.2	-3.1	4.5	3.9	$101.4	-$16.2
8	Miscellaneous Chemical Products	$689.1	$682.2	$347.4	$308.1	-1.0	-11.3	3.0	2.4	-$6.9	-$39.3
9	Iron and Steel	$494.5	$611.6	$304.4	$392.8	23.7	29.1	2.7	3.0	$117.1	$88.5
10	Aluminum and Articles Thereof	$286.1	$368.3	$161.5	$217.2	28.7	34.5	1.6	1.7	$82.2	$55.7
11	Articles of Iron or Steel	$287.1	$301.1	$148.3	$156.0	4.9	5.2	1.3	1.2	$14.0	$7.7
12	Printed Books, Newspapers, etc.; Manuscripts, etc.	$210.3	$270.7	$113.5	$130.2	28.7	14.7	1.2	1.0	$60.4	$16.6
13	Furniture; Bedding, etc.; Lamps Nesoi, etc; Prefab Bd	$209.4	$243.9	$118.2	$158.9	16.5	34.4	1.1	1.2	$34.6	$40.7
14	Rubber and Articles Thereof	$206.3	$205.8	$106.3	$114.5	-0.2	7.7	0.9	0.9	-$0.5	$8.2
15	Wood and Articles of Wood; Wood Charcoal	$169.2	$204.4	$101.6	$118.3	20.8	16.4	0.9	0.9	$35.1	$16.7
16	Glass and Glassware	$158.6	$166.2	$88.0	$88.4	4.8	0.5	0.7	0.7	$7.6	$0.5
17	Aircraft, Spacecraft, and Parts Thereof	$213.2	$160.4	$72.6	$81.1	-24.8	11.7	0.7	0.6	-$52.8	$8.5
18	Miscellaneous Articles of Base Metal	$125.6	$138.1	$71.5	$74.8	10.0	4.6	0.6	0.6	$12.6	$3.3
19	Nickel and Articles Thereof	$63.3	$126.3	$62.8	$89.9	99.7	43.3	0.6	0.7	$63.1	$27.2
20	Paper and Paperboard and Articles (Including Paper Pulp Artl)	$116.8	$122.7	$56.4	$65.5	5.0	16.1	0.5	0.5	$5.8	$9.1
21	Special Classification Provisions, Nesoi	$72.9	$110.3	$47.0	$55.5	51.2	18.0	0.5	0.4	$37.3	$8.5
22	Tanning and Dye Ext, etc.; Dye, Paint, Putty, etc.; Inks	$59.3	$82.6	$40.1	$38.1	39.3	-4.9	0.4	0.3	$23.3	-$2.0
23	Albuminoidal Subst; Modified Starch; Glue; Enzymes	$69.3	$82.6	$40.3	$49.4	19.2	22.5	0.4	0.4	$13.3	$9.1
24	Copper and Articles Thereof	$50.3	$79.1	$39.1	$56.3	57.2	44.0	0.3	0.4	$28.8	$17.2
25	Ships, Boats and Floating Structures	$63.6	$77.0	$43.7	$59.0	21.1	35.1	0.3	0.5	$13.4	$15.3
26	Mineral Fuel, Oil, etc.; Bitumin Subst; Mineral Wax	$60.0	$71.3	$40.5	$29.1	18.7	-28.2	0.3	0.2	$11.2	-$11.4
27	Cereals	$49.7	$67.3	$26.8	$35.7	35.4	33.5	0.3	0.3	$17.6	$9.0
28	Inorganic Chemicals; Precious and Rare-Earth Metals and Radioactive Compounds	$55.4	$66.2	$31.9	$39.8	19.4	24.7	0.3	0.3	$10.8	$7.9
29	Base Metals Nesoi; Cermets; Articles Thereof	$80.5	$57.8	$31.6	$30.2	-28.2	-4.4	0.3	0.2	-$22.7	-$1.4
30	Food Industry Residues and Waste; Prep Animal Feed	$48.5	$54.6	$27.5	$33.6	12.6	22.2	0.2	0.3	$6.1	$6.1
	Total of Top 30 Commodities	$20,717.9	$21,925.6	$11,306.3	$12,491.6	5.8	10.5	96.9	97.0	$1,207.7	$1,185.3

Note: Total dollar value expressed in millions
*Using the standard percentage formula, not a rate of change as used elsewhere
Source: WISERTrade