U.S. and Indiana Trade Patterns with the BRICS Countries and Other (Often Overlooked) Emerging Markets

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Indiana Business Research Center

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Executive Summary

Much attention is given to the dynamism of the four large and rapidly growing emerging economies—Brazil, Russia, India and China—to such an extent that they have their own moniker, "BRIC." When adding South Africa to the set, it becomes "BRICS." Indiana Business Research Center (IBRC) analysts added a set of emerging markets that may rival the BRICS in terms of export growth potential. The research reported here assessed the BRICS countries' growth in imports from the U.S. and Indiana and identified other emerging markets to create a larger grouping of emerging markets: "BRICS Plus."

Indiana has expanded its influence and increased its status as an exporter. Across the more dominant Indiana industries—transportation equipment, industrial machinery and life science product manufacturing—the state's average rate of increase in exports has, for the most part, surpassed that of the nation for both the "traditional" BRICS as well as the "Plus" emerging markets.

Over the last 10 years:

- The BRICS all had astonishing economic as well as import growth.
- The BRICS countries' appetite for U.S. and Indiana products also accelerated, with the growth rate of Indiana's exports to the BRICS increasing faster than that of the U.S.
- The import volume from the U.S. and Indiana varied dramatically across the BRICS, from a high of China importing $1.3 billion from Indiana in 2012 and a low of Russia importing $100 million in 2012.
- The Plus countries of Chile, Colombia, Malaysia, Saudi Arabia, South Korea, Thailand and, of course, Mexico, all imported more Indiana goods than did Russia in 2012.
- The growth rates of Indiana's exports to the BRICS exceeded that of the U.S., and the state ranking of Indiana improved for all countries.
- The growth rates of Indiana's exports to the Plus countries were not consistently better or worse than the U.S.
- Economic growth for the Plus countries as a group was about half that of the BRICS, but was still better than the global average.
- Import growth from all global sources to the Plus countries was greater than either the U.S. or Indiana.
- Over the last 10 years, the Midwest region has experienced stronger export growth relative to the U.S. or Indiana. However, Indiana has surpassed the Midwest in export growth from 2010 to 2012.

- Industrial machinery (which includes diesel engines) was consistently the top export category to BRICS Plus countries for Indiana, with a couple of exceptions when it ranked second.
- Life sciences products ranked highly as well, making up nearly 60 percent of the Indiana exports to South Korea.
- The BRICS Plus countries did have slightly different import profiles. Eastern Europe is an example, with optical and medical instruments being in the top 10 imported products from Indiana, but with pharmaceuticals not clearing the top 10 threshold.

Identifying the Economies of Interest

Much attention is given to the dynamism of the four large and rapidly growing economies—Brazil, Russia, India and China—to such an extent they have their own moniker, "BRIC." To these four, many analysts have appended South Africa, turning the moniker into "BRICS." To these countries, the IBRC researchers wanted to add a set of emerging markets that may rival the BRICS in terms of export growth potential. In order to identify other fast-growing economies outside of the BRICS, the IBRC researchers evaluated country population, GDP per capita and GDP growth rate data within the past decade. The initial threshold (in order of importance) was to include countries with a 2012 population greater than 10 million, a GDP growth rate greater than the emerging countries' annualized average of 5.7 percent[1] in the past decade and GDP per capita greater than $10,000. Any "advanced" or "developed" countries were excluded from the analysis. In several cases, researchers did not hold strictly to the three thresholds and made some judgment calls as to which countries to include or exclude. As shown in **Table 1**, several countries had GDP per capita below $10,000, yet were included due to strong GDP growth rates or large population numbers.

In total, this analysis examined 18 countries, including all the BRICS. The additional non-BRICS countries are referred to here as "Plus countries" or "other emerging markets (or economies)." The shorthand for other emerging markets and the BRICS together is "BRICS Plus."

Table 1: BRICS and Other Growing Emerging Economies

Country	Population, 2012	GDP Growth Rate, 2002-2012	GDP per Capita, 2012
Brazil	198,656,019	15.0%	$11,340
Chile	17,464,814	13.3%	$15,363
China	1,350,695,000	17.3%	$6,091
Colombia	47,704,427	13.3%	$7,752
Czech Republic	10,514,810	9.1%	$18,608
India	1,236,686,732	12.6%	$1,489
Kazakhstan	16,797,459	21.0%	$12,007
Malaysia	29,239,927	11.0%	$10,381
Mexico	120,847,477	6.0%	$9,742
Peru	29,987,800	12.4%	$6,573

[1] The 5.7 percent average came from the World Bank's biannual report, "Global Economic Prospects" (June 2013 edition), available at http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1322593305595/8287139-1371060762480/GEP2013b_full_report.pdf. The World Bank defined 96 countries as emerging based on income levels and access to IBRD financing.

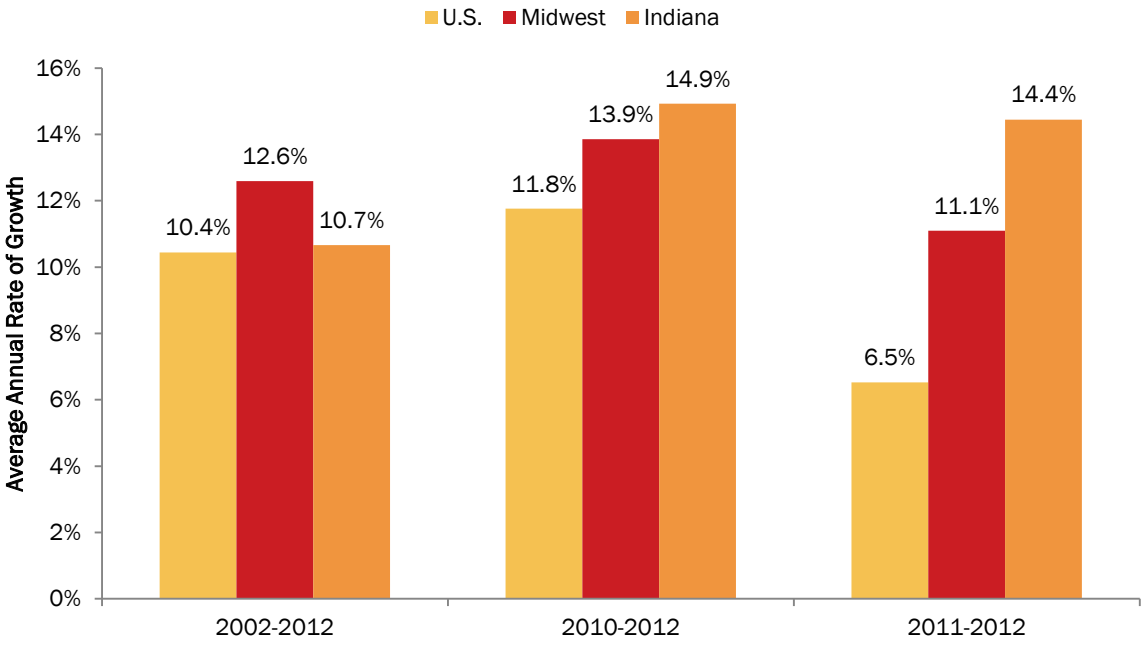
Country	Population, 2012	GDP Growth Rate, 2002-2012	GDP per Capita, 2012
Poland	38,542,737	9.0%	$12,708
Romania	21,326,905	13.1%	$7,943
Russia	143,533,000	17.6%	$14,037
Saudi Arabia*	28,287,855	11.5%	$20,778
South Africa	51,189,307	12.4%	$7,508
South Korea	50,004,000	6.7%	$22,590
Thailand	66,785,001	10.6%	$5,474
Turkey	73,997,128	12.2%	$10,666

* Saudi Arabia did not have 2012 data available at time of analysis. Thus, their data reflects the 2001-2011 time period.
Source: IBRC, using World Bank data

Export Trends in the Past Decade

Within the past decade, the U.S., Midwest and Indiana have strong export growth to the BRICS and other emerging markets (aka BRICS Plus). **Figure 1** depicts the average annual growth rates in the past decade (2002-2012), during the export rebound period following the recession (2010-2012) and within the past year (2011-2012). In the last 10 years, the Midwest region has experienced stronger export growth relative to the U.S. or Indiana. However, Indiana has excelled in more recent years. This strong export growth from Indiana reflects the commodity mix being imported by the countries, which will be discussed in a later section of this report.

Figure 1: U.S., Midwest and Indiana Export Trends to BRICS Plus Countries



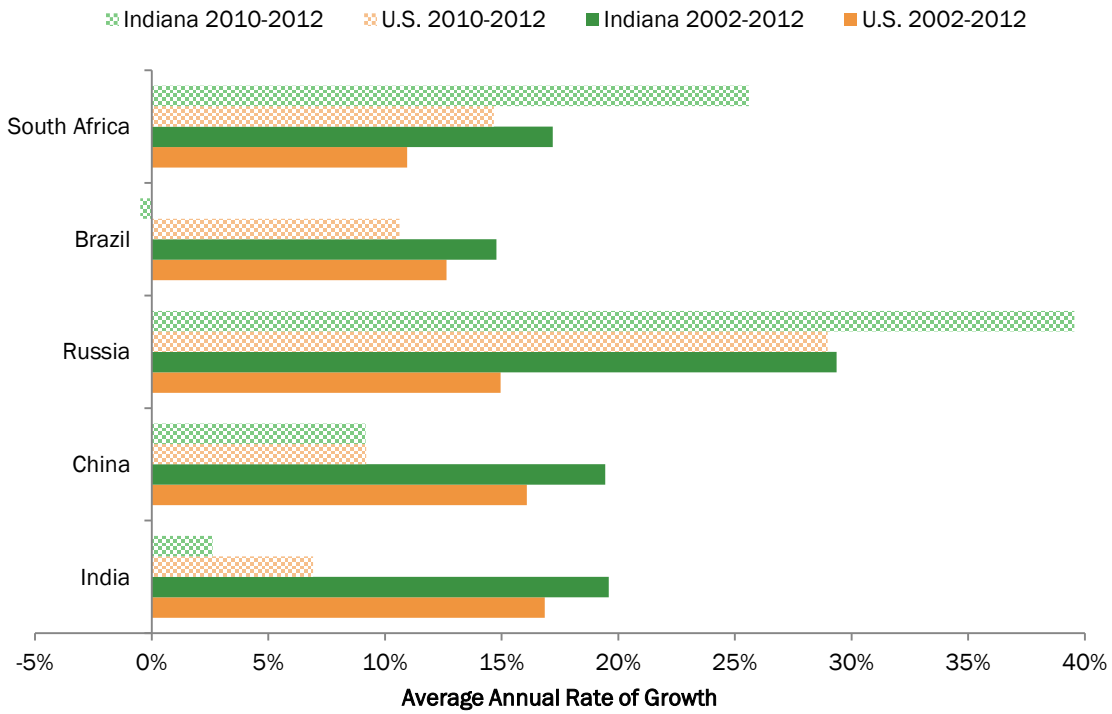
Source: IBRC, using WISER Trade data

To better understand which collections of countries drove export growth from the U.S. and Indiana, it was helpful to separate the performance of the BRICS countries from the other emerging markets. This is particularly true considering China's historically dominant and aggressive growth rates in GDP and imports over the past decade. Additionally, separating these two groups helps to avoid overwhelming the reader with its numerous data points and surfeit of graphs.

Over the past 10 years, Indiana's average annual growth rate to BRICS countries has exceeded the nation, particularly for Russia and South Africa (see **Figure 2**). However, when comparing a more

recent snapshot of export growth, the picture is mixed. Indiana exports to Russia and South Africa have remained robust, but exports to the remaining BRICS countries have slowed considerably, often lagging the nation.

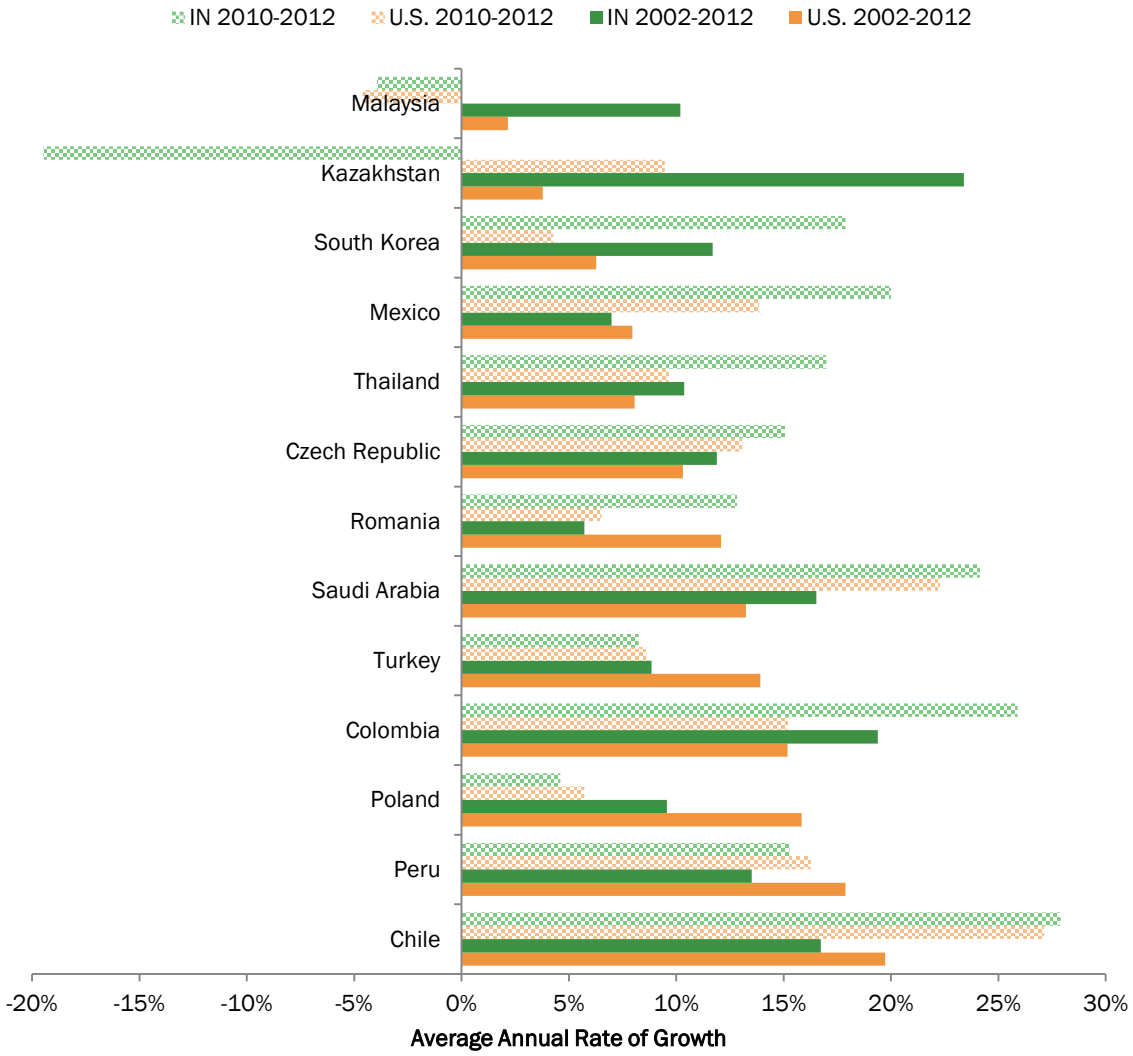
Figure 2: U.S. and Indiana Export Trends to BRICS Countries



Note: Sorted by U.S. average annual growth rate.
Source: IBRC, using WISER Trade data

Of the other emerging countries in the last decade, Chile had the largest average annual growth rate of imports from the U.S. at 16.7 percent. Kazakhstan had the strongest growth rate for Indiana imports (23.4 percent), as shown in **Figure 3**. Slightly more than half of the emerging countries experienced stronger export growth from Indiana than the U.S.

Figure 3: U.S. and Indiana Export Trends to the Other Emerging Countries



Note: Sorted by U.S. average annual growth rate.
Source: IBRC, using WISER Trade data

Increasing rates of growth and upward sloping trend lines are great news and they hint at improving export prospects for the future. That said, a complete picture would also include a reference point to show the relative scale of the exports to these emerging economies. **Table 2** does just this. The table presents the relative importance of trade to the BRICS Plus countries for both Indiana and the U.S. For the U.S., trade with Mexico is more important for the U.S. than it is for Indiana, relatively speaking. Trade to China represents a little over half of the trade with Mexico for the U.S., whereas trade with China represents a third of the trade with Mexico for Indiana.

The nation as a whole shipped a far greater percentage of its total exports to the BRICS Plus countries (36.1 percent) than did Indiana (24.7 percent) in 2012. Stated differently, Indiana is more dependent upon markets in Canada, Japan and Europe for its export sales than the U.S. as a whole. While Indiana has closed the gap somewhat in terms of exporting to the BRICS Plus relative to the

U.S.—this is detailed in the next section of the report—it still has a long way to go before the Hoosier state can say that its export markets are as diversified as the country as a whole.

The final takeaway from **Table 2** is that, despite all of the hype about the growth and importance of the BRICS, there are several emerging markets in the Plus category that import a greater volume of goods from Indiana and the United States. The importance of Mexico is no surprise, but South Korea and Saudi Arabia beat out India by a large margin. Colombia, Thailand and Chile surpass South Africa in terms of importing Indiana and U.S. products. In terms of importing U.S. and Indiana goods, Russia is something of a laggard.

Table 2: U.S. and Indiana Percentage and Volume of Exports to the BRICS Plus Countries, 2012

	Percent of Total Exports		Exports (000,000)	
	Indiana	U.S.	Indiana	U.S.
Mexico	11.3%	14.0%	$3,907.4	$215,931.2
China	3.8%	7.1%	1,308.9	110,483.6
Brazil	2.4%	2.8%	817.5	43,806.0
South Korea	2.3%	2.7%	788.1	42,283.5
Saudi Arabia	1.3%	1.2%	451.0	17,972.0
India	0.8%	1.4%	266.9	22,105.5
Colombia	0.4%	1.1%	152.2	16,354.9
Thailand	0.4%	0.7%	138.7	10,888.0
Chile	0.4%	1.2%	122.8	18,765.8
South Africa	0.3%	0.5%	117.4	7,551.9
Malaysia	0.3%	0.8%	109.1	12,840.9
Russia	0.3%	0.7%	100.6	10,699.5
Turkey	0.2%	0.8%	66.7	12,520.1
Peru	0.2%	0.6%	54.6	9,344.8
Poland	0.2%	0.2%	52.0	3,344.1
Czech Republic	0.1%	0.1%	36.7	1,832.3
Romania	0.0%	0.1%	4.1	831.2
Kazakhstan	0.0%	0.1%	3.0	882.5

Source: IBRC, using WISER Trade data

BRICS Plus Import and GDP Trends

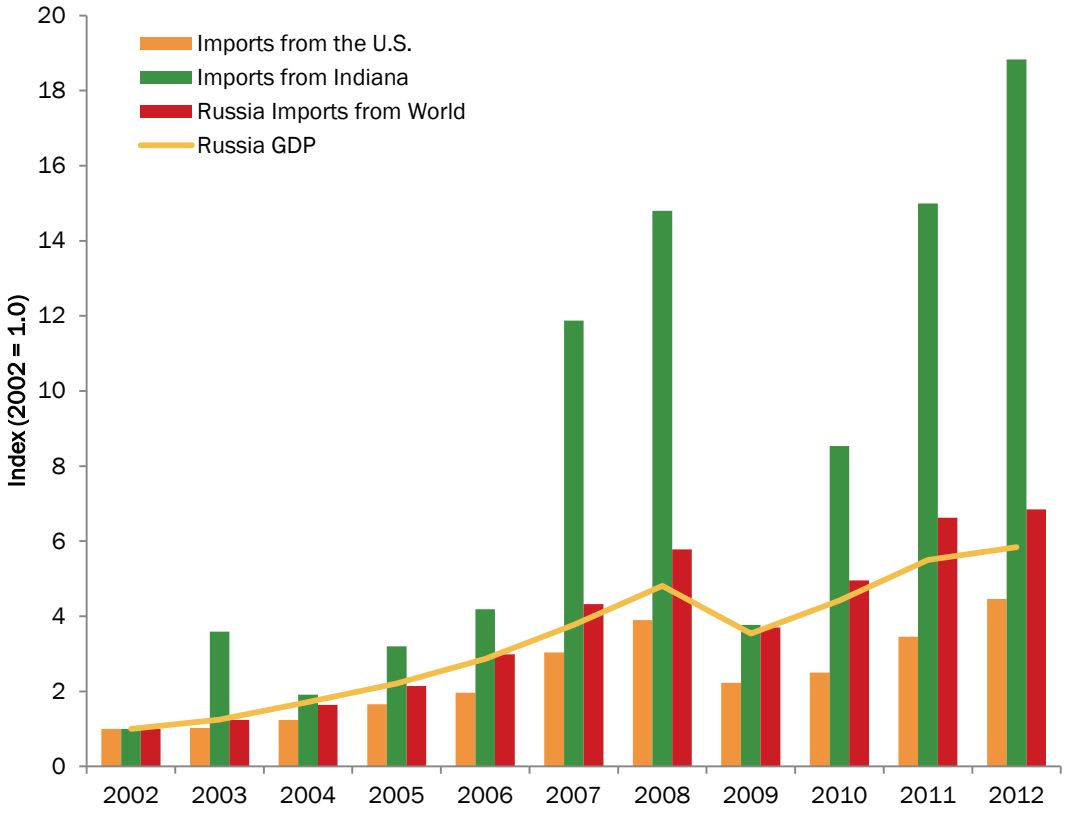
This section attempts to answer the question: Is there a relationship between how quickly a country's economy is growing and the rate of growth of that country's imports? Here, one can compare a country's GDP growth rate against its import levels, together with the growth rate of imports from the U.S. and Indiana. Each BRICS country, because of its size, warrants its own graph. The other emerging countries, however, were combined to provide a comparison between the BRICS and emerging countries' GDP growth and import levels.

Figure 4: Brazil GDP and Import Trends, 2002-2012

Source: IBRC, using World Bank and the United Nations International Trade Centre data

Brazil's GDP accelerated over the last decade, increasing almost five-fold until 2011, but has stalled in 2012 (see **Figure 4**). Imports from any source increased in almost lock-step, with Indiana's goods increasing at a rate generally similar to GDP. U.S. exports to Brazil have increased too, but the acceleration did not match Indiana's exports or the overall rise in Brazilian GDP. Indiana is performing better than the U.S., but the recent slowdown in economic growth will temper the prospects for continued acceleration in Indiana's exports to the country.

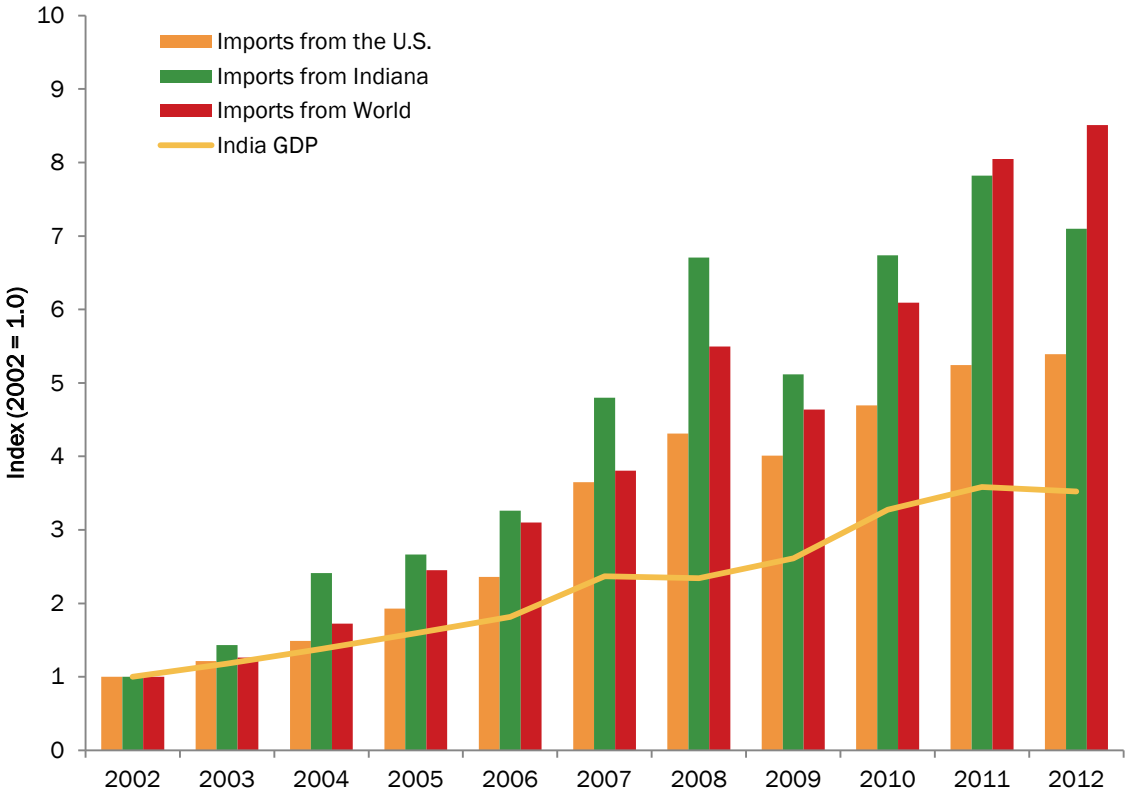
Figure 5: Russia GDP and Import Trends, 2002-2012



Note: Due to the rapid increase in Indiana imports, the scale on this graph differs from the other BRICS graphs.
Source: IBRC, using World Bank and United Nations International Trade Centre data

Like Brazil, Russia's GDP has increased dramatically—almost six-fold—over the last 10 years, but with a more pronounced retreat due to the global slowdown in 2009 (see **Figure 5**, taking note of the different scale on the Y axis.). But unlike Brazil, Russian GDP has continued to rise in 2012. Russian imports from all world sources rose at a clip greater than Brazil's—note there is a difference in the scale of the graph—but Russian imports of goods from Indiana have skyrocketed. While the drop in Indiana exports in 2009 was harder than the dip in Russian GDP, the acceleration in imports of Indiana goods from 2009 to 2012 is remarkable, eclipsing the growth in imports from both the U.S. and the rest of the world.

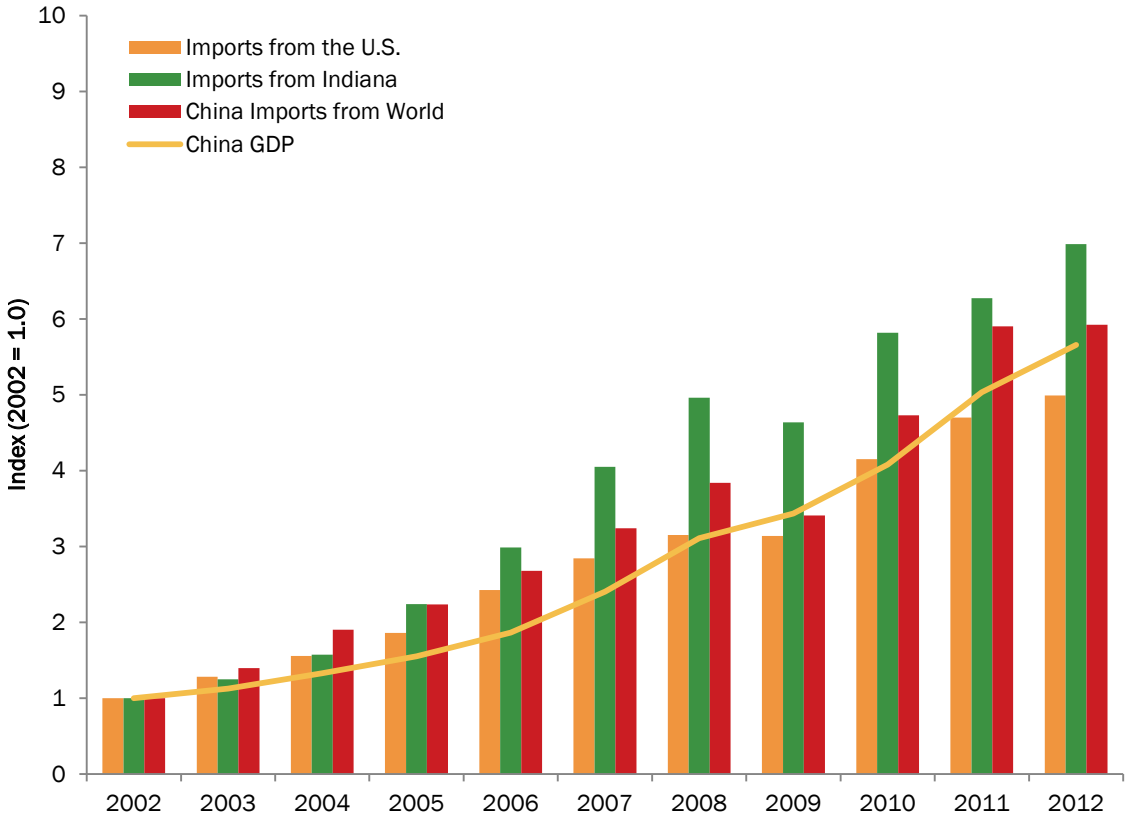
Figure 6: India GDP and Import Trends, 2002-2012



Source: IBRC, using World Bank and United Nations International Trade Centre data

Figure 6 showing Indian GDP and import growth tells a tale different from that of its (original) BRIC counterparts. While healthy from a global average perspective, India's GPD growth doesn't live up to the BRIC hype. In addition, while the import growth of other BRIC countries follows their GDP growth (in general terms), India's import acceleration was nearly double that of its economic output, a potentially troubling sign. This graph of India's imports must make Hoosiers happy. Indiana's exports outpaced the world until 2011 and greatly outpaced the rate of export growth from the United States as a whole.

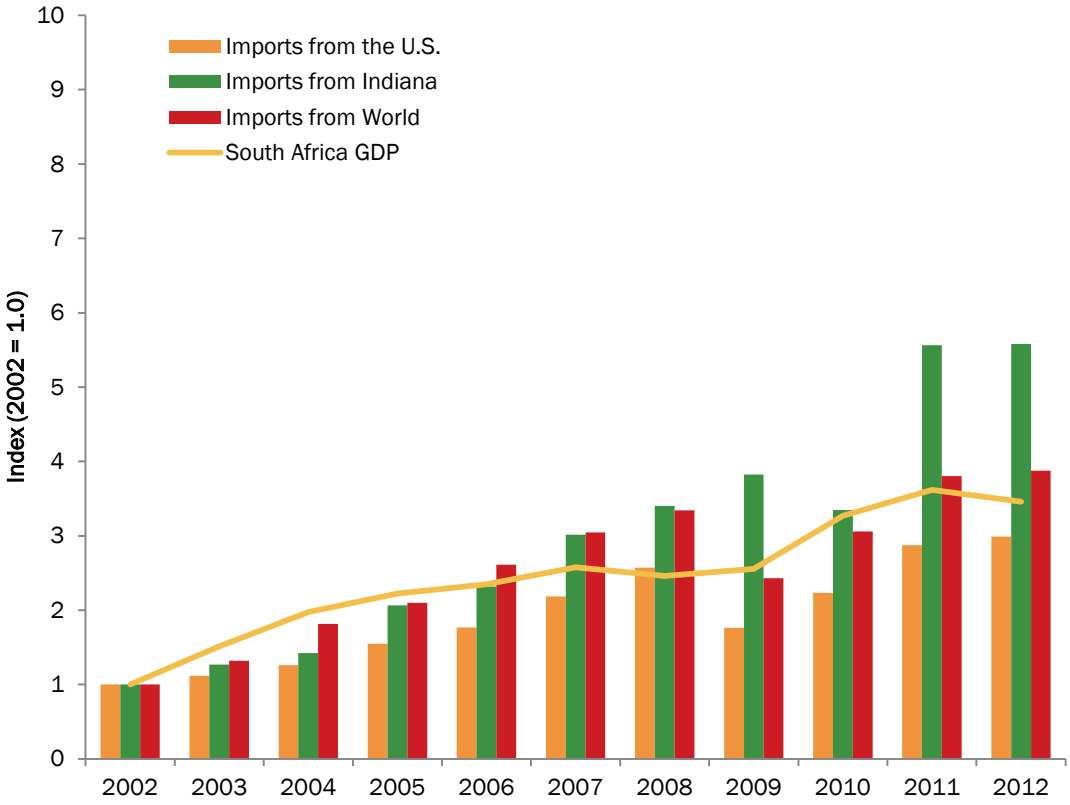
Figure 7: China GDP and Import Trends, 2002-2012



Source: IBRC, using World Bank and United Nations International Trade Centre data

With China, here again one sees GDP quickly accelerating and, with it, a rapid rise in imports, with the growth in imports of Indiana products trumping that of the U.S. and from the world (all sources), as shown in **Figure 7**. Unlike other BRICS—or for that matter, most other countries around the world—the slump in 2009 was not much more than a quick breather on a steep ascent in the growth of Indiana exports to China. It is also worth mentioning that China, now the second-largest economy in the world, drives the BRICS performance when the five countries' import and economic growth statistics are added together. For example, China's GDP grew more than five-and-a-half-fold over the last decade, whereas all the BRICS combined grew five-fold. China pulls up the other BRICS' performance.

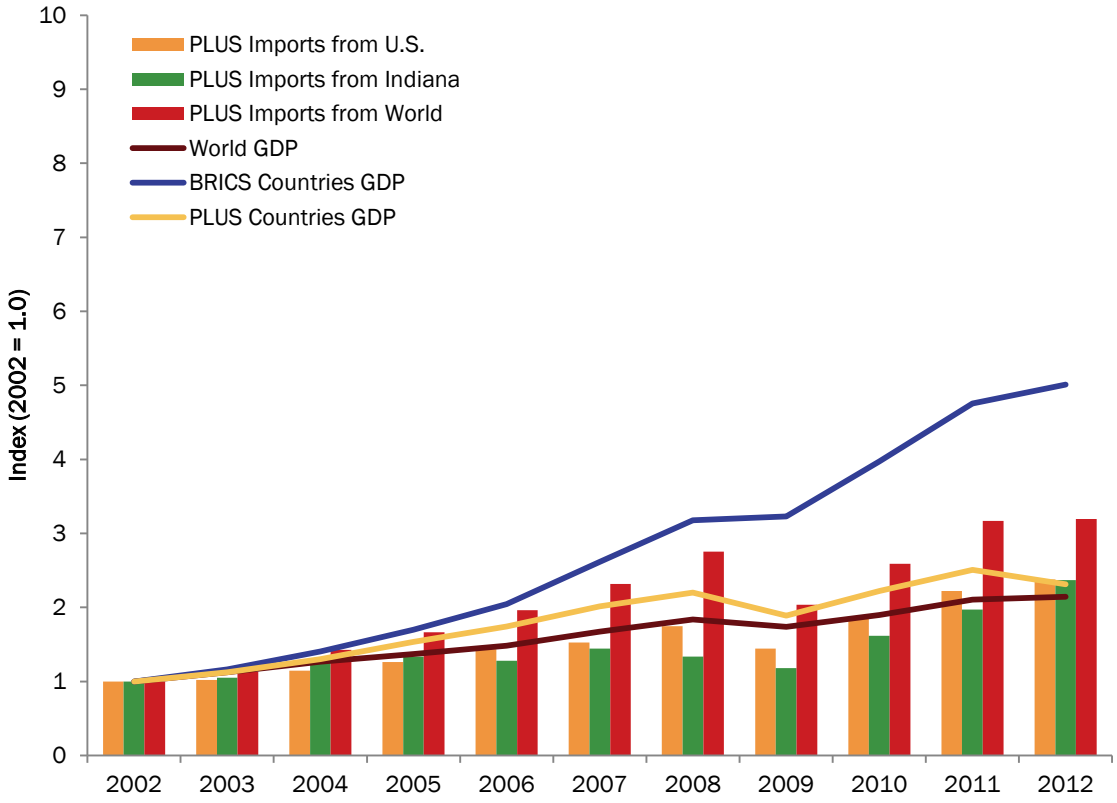
Figure 8: South Africa GDP and Import Trends, 2002-2012



Source: IBRC, using World Bank and United Nations International Trade Centre data

The GDP and import profile of South Africa (see **Figure 8**) is something of an average between Brazil and India—not as good as Brazil, but better than India. Like Brazil, 2012 GDP slipped from 2011; but unlike Brazil, imports didn't take a hit due to the softening economy. It also appears that the recession affected South Africa to a greater extent and, thus, is having a more pronounced effect on the rate of import growth from the U.S. or the world. As with the other BRICS, Indiana's export growth rate to South Africa exceeded the U.S.

Figure 9: GDP and Import Trends of the Other Emerging Markets, 2002-2012



Source: IBRC, using World Bank and United Nations International Trade Centre data

The first thing one notices in **Figure 9** is that the GDP growth of the Plus countries, while better than the global average, pales in comparison to the BRICS. Combined, the BRICS GDP increased five-fold whereas the Plus countries' increase was half of that. Like several of the BRICS, the growth of imports into other emerging markets follows the growth of GDP. Compared to the growth of imports from the world (all sources), the rate of increase in imports from the U.S. and Indiana, unlike the BRICS, is not that great. It is possible these markets have been overlooked by U.S and Hoosier exporters, and there could be untapped market potential. Assessing that potential is outside the scope of this investigation, but one hopes that, in the interest of expanding exports and creating jobs, those with the information about these markets and those with resources to cultivate trade would devote their attention to these growing regions.

Top Commodities Exported to BRICS Plus Countries

Under the assumption that each country imports a unique mix of commodities, this section presents the top 10 imported Hoosier goods between 2002 and 2012. To make the tables a little more visually interesting, a trend line icon graphically depicts how Indiana exports have fared in the early years of the decade, the Great Recession and during the recovery. All told, the top 10 exported Hoosier goods comprise approximately 90 percent of all exports to each country, reflecting a relatively shallow bench of export categories.

The section begins with a one-table summary of export patterns to the BRICS. **Table 3** shows that Indiana has been a growing percentage of U.S. exports to the BRICS, not surprising given the figures presented in the previous section. As a result of these greater growth rates, the state has moved up in the rankings of exporters to the various BRICS. In the case of Russia, it moved up 14 slots in 10 years. **Table 3** also presents the volume of exports for Indiana and the United States. China and Brazil are the two most important markets, receiving more than $2 billion in goods from Indiana between them. In contrast, Hoosier exports to Russia, India and South Africa are merely a quarter of shipments of process agricultural goods to China and Brazil.[2]

Table 3: Summary of U.S. and Indiana Exports to the BRICS, 2002-2012

	Year	Brazil	Russia	India	China	South Africa
Total Indiana Shipments *(millions $)*	2002	$186.6	$5.3	$37.6	$187.3	$21.0
	2012	$817.5	$100.6	$266.9	$1,308.9	$117.4
Indiana Average Annual Rate of Growth		**14.8%**	**29.4%**	**19.6%**	**19.4%**	**17.2%**
Total U.S. Shipments *(millions $)*	2002	$12,376.0	$2,397.0	$4,101.1	$22,127.8	$2,525.5
	2012	$43,806.0	$10,699.5	$22,105.5	$110,483.6	$7,551.9
U.S. Average Annual Rate of Growth		**12.6%**	**15.0%**	**16.8%**	**16.1%**	**11.0%**
Indiana Percent of U.S. Total	2002	1.5%	0.2%	0.9%	0.8%	0.8%
	2012	1.9%	0.9%	1.2%	1.2%	1.6%

[2] The reckoning of agricultural exports by state to various countries is tricky. WISER Trade specifically states that non-manufactured export data on agricultural goods is not a good approximation of the true state of origin. This is because they largely credit the major port states where the shipments of agricultural commodities—that is, not yet processed farm products—are consolidated (e.g., Louisiana) and customs agents record transactions. Raw agriculture export estimates are done by the Department of Agriculture, which is not the same agency that collects other export data. For more information on Indiana's agricultural exports, please see the report "Agriculture's Bounty: The Economic Contribution of Agriculture," available at www.ibrc.indiana.edu/studies/AgriculturesBounty.pdf.

	Year	Brazil	Russia	India	China	South Africa
Indiana State Ranking	2002	18	37	23	25	27
	2012	13	23	22	22	18

Source: IBRC, using WISER Trade data

Indiana exports to Brazil (see **Table 4**), as well as U.S. exports, are dominated by industrial machinery, which includes diesel engines and other non-auto engines not yet attached to a vehicle. Given Indiana's strength in the life sciences, it is no surprise that these products also rank highly. The less than good news is that recent trends are not as rosy as they could be, with the growth rate of exports for several products slowing down. Aircraft, spacecraft and parts is of particular note. The growth of exports from Indiana to Brazil in the category went almost vertical from 2002 to 2008, but came back to earth from 2010 to 2012. Even so, 4 percent of Indiana's exports to Brazil consisted of aerospace products in 2012.

Table 4: Top 10 Indiana Commodities Exported to Brazil, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery[3]	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	1	12.6%	8.8%	39.5%		40.0%
Pharmaceutical Products	10	31.5%	38.5%	1.4%		20.5%
Optical or Medical Instruments	5	29.6%	37.4%	1.1%		8.2%
Organic Chemicals	6	27.4%	-22.9%	-3.1%		5.7%
Electrical Machinery	4	4.6%	18.4%	7.7%		4.6%
Aircraft, Spacecraft and Parts Thereof	3	96.8%	28.4%	-92.3%		4.0%
Miscellaneous Chemical Products	9	20.3%	-60.4%	17.7%		2.6%
Vehicles and Parts (Except Railway or Tramway)	8	32.7%	14.6%	-36.2%		2.5%
Plastics and Articles Thereof	7	20.0%	-14.1%	-19.6%		2.3%
Aluminum and Articles Thereof	27	-9.2%	-21.2%	-1.6%		1.5%
Sum of Top 10 Commodities						**91.9%**

Source: IBRC, using WISER Trade data

Like exports from the U.S., the top two Indiana export categories to Russia are machinery and aerospace products (see **Table 5**). In contrast to Brazil, life science products are not as dominant. In addition, there appears to be recent acceleration in Hoosier exports across an array of industries.

[3] The growth, recession and recovery sparklines are to provide a quick pictorial impression, rather than a precise visualization of data. The time periods for the sparklines refer to the 2002-2008 time period of strong economic and import growth, the 2008-2010 Great Recession period of economic contraction and the 2010-2012 time period of economic recovery. The visual provides a simple way to assess the degree to which imports have been consistent, were negatively affected by the global recession, or were sustained through economic good times as well as bad. The three data points on the graphs roughly correspond to the data in the columns.

Table 5: Top 10 Indiana Commodities Exported to Russia, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Aircraft, Spacecraft and Parts Thereof	2	n/a	13.6%	113.2%		33.9%
Industrial Machinery, Including Computers	1	30.0%	10.4%	12.1%		19.5%
Meat and Edible Meat Offal	4	42.7%	-154.0%	254.9%		9.5%
Electrical Machinery	5	79.1%	-115.5%	105.3%		7.1%
Pharmaceutical Products	10	47.1%	62.1%	58.4%		5.9%
Live Animals	8	n/a	n/a	n/a	n/a	4.6%
Optical or Medical Instruments	6	26.8%	5.8%	-1.2%		3.7%
Sugars and Sugar Confectionary	49	n/a	22.0%	36.3%		3.5%
Cereals	44	37.0%	-16.5%	-18.1%		2.0%
Furniture; Bedding; Prefabricated Buildings	21	51.6%	30.2%	13.2%		1.8%
Sum of Top 10 Commodities						**91.7%**

Source: IBRC, using WISER Trade data

As with all the other BRICS, industrial machinery products are big business for both the state as well as the U.S. in India (see **Table 6**). Unfortunately, exports in this category have recently diminished. In contrast to the U.S., however, the hallmark Indiana industries of pharmaceuticals and transportation equipment are also leading export categories to India.

Table 6: Top 10 Indiana Commodities Exported to India, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	31.1%	-5.7%	-17.7%		23.7%
Optical or Medical Instruments	6	36.4%	23.2%	11.9%		14.8%
Vehicles and Parts (Except Railway or Tramway)	16	19.7%	-7.9%	83.8%		11.3%
Pharmaceutical Products	19	48.6%	229.1%	23.6%		8.7%
Organic Chemicals	7	22.2%	13.2%	-29.8%		8.2%
Plastics and Articles Thereof	8	42.0%	24.8%	-5.3%		6.5%
Electrical Machinery	4	37.8%	-39.6%	22.5%		5.3%
Miscellaneous Chemical Products	11	43.5%	-39.6%	-0.8%		2.9%
Iron and Steel	9	85.4%	-51.9%	16.2%		2.5%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Albuminoidal Substances; Modified Starch; Glue; Enzymes	34	28.1%	163.5%	11.5%		1.7%
Sum of Top 10 Commodities						**85.5%**

Source: IBRC, using WISER Trade data

China's imports of Indiana products, unlike the other BRICS, is more evenly spread among product categories (see **Table 7**). Of all the BRICS, the top 10 import categories is the lowest percent of total imports, barely topping 80 percent. The mainstay of the Indiana economy—industrial machinery and transportation equipment—tops the list, with the life science category of optical and medical instruments close behind in 2012. As the Chinese economy grows and the population gets richer, one can expect increased imports of medical devices.

Table 7: Top 10 Indiana Commodities Exported to China, 2002-2012

Commodity	U.S Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	23.4%	12.7%	-21.7%		16.6%
Vehicles and Parts (Except Railway or Tramway)	6	19.2%	49.7%	31.1%		12.8%
Optical and Medical Instruments	5	23.1%	32.1%	29.8%		11.1%
Plastics and Articles Thereof	7	16.2%	24.6%	10.7%		10.8%
Electrical Machinery	3	30.5%	0.4%	-1.8%		7.9%
Organic Chemicals	11	27.3%	-15.6%	25.9%		7.3%
Aircraft, Spacecraft and Parts Thereof	4	63.5%	-1.7%	25.0%		5.0%
Miscellaneous Chemical Products	15	27.2%	53.4%	22.4%		3.5%
Nickel and Articles Thereof	40	45.6%	-27.8%	13.4%		2.9%
Prep Cereal, Flour, Starch or Milk; Bakewares	62	n/a	25.0%	232.4%		2.8%
Sum of Top 10 Commodities						**80.7%**

Source: IBRC, using WISER Trade data

As mentioned in the first section of the report, South Africa's import appetite hasn't increased as much as its fellow BRICS (with the exception of India), but it has for Indiana's products—with electrical machinery, rubber products and pharmaceuticals exceeding the U.S. trends (see **Table 8**). A majority of Indiana's leading export products to South Africa have recovered from the global recession and then some.

Table 8: Top 10 Indiana Commodities Exported to South Africa, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	1	19%	10%	7%		22%
Electrical Machinery	4	32%	-2%	42%		13%
Rubber and Articles Thereof	11	35%	-66%	125%		11%
Pharmaceutical Products	13	9%	75%	34%		10%
Vehicles and Parts (Except Railway or Tramway)	2	62%	-7%	-3%		6%
Aircraft, Spacecraft and Parts Thereof	5	46%	15%	25%		6%
Railway or Tramway Stock; Traffic Signal Equipment	14	6%	-2%	269%		5%
Optical and Medical Instruments	6	19%	-17%	1%		5%
Art of Stone, Plaster, Cement, Asbestos and Mica	25	n/a	48%	194%		4%
Albuminoidal Substances; Modified Starch; Glue; Enzymes	31	-37%	146%	45%		4%
Sum of Top 10 Commodities						**84%**

Source: IBRC, using WISER Trade data

Exports to the Plus Countries

In contrast to the BRICS, the overall growth profile of Indiana exports to the Plus countries was mixed. One can see this by comparing and contrasting **Table 9** and **Table 10** (summary of the Plus countries) with **Table 3** (summary of the BRICS). There were no definitive trends. Relative to other states, Indiana's export ranking fell for Mexico, Kazakhstan, Thailand, Turkey, Poland and Romania, as shown in red. For the case of Thailand, the rate of export growth exceeded the U.S., as shown in green. In a couple of cases, Chile and Peru, the state ranking increased while the percent of Indiana's exports among the states decreased. In short, one can't ascertain consistent trends for the Plus countries as a group. This is most likely due to the fact that smaller markets experience greater fluctuations. The Russian Federation may be the classic example of this, as Russia's Indiana imports totaled a mere $5.3 million in 2002 and experienced a staggering growth rate to top $100 million by 2012, but this was still below several of the Plus countries' imports in 2012.

Perhaps the key takeaway is that the size of the economy, and the propensity to import, is the more important consideration when searching for new markets. As the following tables of each Plus

country's imports from Indiana show, industrial machinery is the dominant export for the Plus countries (as well as the BRICS), ranking as either number one or two. After industrial machinery, however, things get a little more interesting for the Plus countries.

Table 9: Summary of Plus Country Imports from the U.S. and Indiana, 2002-2012

Metric	Year	Colombia	Czech Republic	Chile	Kazakhstan	Malaysia	Mexico
Total Indiana Shipments *(millions $)*	2002	$21.9	$11.2	$23.1	$0.3	$39.3	$1,942.4
	2012	$152.2	$36.7	$122.8	$3.0	$109.1	$3,907.4
Indiana Average Annual Rate of Change		19.4%	11.9%	16.7%	23.4%	10.2%	7.0%
Total U.S. Shipments *(millions $)*	2002	$3,582.5	$653.7	$2,609.0	$604.6	$10,343.7	$97,470.3
	2012	$16,354.9	$1,832.3	$18,765.8	$882.5	$12,840.9	$215,931.2
U.S. Average Annual Rate of Change		15.2%	10.3%	19.7%	3.8%	2.2%	8.0%
Indiana Percent of U.S. Total	2002	0.6%	1.7%	0.9%	0.0%	0.4%	2.0%
	2012	0.9%	2.0%	0.7%	0.0%	0.8%	1.8%
Indiana State Ranking	2002	24	19	22	29	29	8
	2012	21	16	20	30	27	10

Note: Green text indicates where Indiana's growth exceeded the nation's. Red text indicates where Indiana's ranking among the states fell.
Source: IBRC, using WISER Trade data

Table 10: Summary of Plus Country Imports from the U.S. and Indiana, 2002-2012

Metric	Year	Peru	Poland	Romania	Saudi Arabia	South Korea	Thailand	Turkey
Total Indiana Shipments *(millions $)*	2002	$14.1	$20.0	$2.3	$86.3	$244.7	$ 54.0	$27.6
	2012	$54.6	$52.0	$4.1	$451.0	$788.1	$138.7	$66.7
Indiana Average Annual Rate of Change		13.5%	9.6%	5.7%	16.5%	11.7%	9.4%	8.8%
Total U.S. Shipments *(millions $)*	2002	$1,562.5	$686.3	$248.2	$4,780.7	$22,575.8	$4,860.2	$3,113.0
	2012	$9,344.8	$3,344.1	$831.2	$17,972.0	$42,283.5	$10,888.0	$12,520.1
U.S. Average Annual Rate of Change		17.9%	15.8%	12.1%	13.2%	6.3%	8.1%	13.9%
Indiana Percent of U.S. Total	2002	0.9%	2.9%	0.9%	1.8%	1.1%	1.1%	0.9%
	2012	0.6%	1.6%	0.5%	2.5%	1.9%	1.3%	0.5%
Indiana State Ranking	2002	23	11	21	18	23	23	22
	2012	18	21	32	14	14	24	31

Note: Green text indicates where Indiana's growth exceeded the nation's. Red text indicates where Indiana's ranking among the states fell.
Source: IBRC, using WISER Trade data

Latin America

There are four Plus countries from Latin America: Chile, Colombia, Mexico and Peru. Industrial machinery, a consistently strong segment, ranks in the top slot for all four countries. However, Mexico has a different import profile than the South American sub-set. Indiana's exports to Mexico tend to reflect the robust trade volume and industrial products of the NAFTA region, especially in transportation equipment manufacturing (TEM). At less that 5 percent, imports of life science manufacturing are not particularly high for Mexico. Meanwhile, life science products comprise 30 percent of Chile's imports from Indiana, over 28 percent for Colombia and over 21 percent for Peru.

Table 11: Top 10 Indiana Commodities Exported to Chile, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	30.2%	-18.8%	30.0%		21.8%
Optical or Medical Instruments	8	22.9%	8.9%	25.1%		17.1%
Pharmaceutical Products	15	9.6%	31.5%	41.2%		13.9%
Electrical Machinery	4	32.6%	-9.9%	52.5%		11.6%
Vehicles and Parts (Except Railway or Tramway)	3	9.8%	20.3%	27.6%		9.4%
Paper, Paperboard and Articles	14	-1.6%	-0.2%	128.6%		3.2%
Mineral Fuel and Oil; Bitumin Substances; Mineral Wax	1	33.3%	45.7%	22.5%		3.0%
Miscellaneous Chemical Products	12	6.7%	-23.6%	36.2%		2.7%
Plastics and Articles Thereof	7	22.5%	-15.1%	-3.0%		1.9%
Iron and Steel	32	70.4%	-71.7%	178.7%		1.7%
Sum of Top 10 Commodities						**86.1%**

Source: IBRC, using WISER Trade data

Table 12: Top 10 Indiana Commodities Exported to Colombia, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	38.0%	-10.8%	4.0%		17.9%
Pharmaceutical Products	13	14.2%	70.6%	33.5%		15.6%
Optical and Medical Instruments	7	39.3%	-22.3%	36.3%		13.1%
Electrical Machinery	3	29.9%	-26.0%	45.6%		12.0%
Vehicles and Parts (Except Railway or Tramway)	8	36.3%	17.3%	64.9%		7.9%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Organic Chemicals	4	31.3%	-55.7%	13.7%		4.7%
Miscellaneous Edible Preparations	24	-1.3%	-27.8%	62.2%		2.6%
Aluminum and Articles Thereof	33	1.9%	-23.8%	31.0%		2.5%
Miscellaneous Chemical Products	11	6.8%	21.6%	-7.5%		2.4%
Food Industry Residues and Waste; Prep Animal Feed	14	-31.6%	n/a	n/a		2.3%
Sum of Top 10 Commodities						**80.9%**

Source: IBRC, using WISER Trade data

Table 13: Top 10 Indiana Commodities Exported to Mexico, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	1	1.1%	3.4%	19.6%		32.8%
Vehicles and Parts (Except Railway or Tramway)	4	-4.7%	13.7%	21.3%		27.0%
Railway or Tramway Stock; Traffic Signal Equipment	30	-17.8%	54.3%	258.1%		7.5%
Electrical Machinery	2	-2.2%	11.6%	10.9%		6.1%
Plastics and Articles Thereof	5	4.9%	10.3%	22.5%		3.8%
Iron and Steel	11	22.7%	16.5%	-12.6%		3.4%
Pharmaceutical Products	20	14.3%	58.1%	-2.1%		2.6%
Aircraft, Spacecraft and Parts Thereof	17	58.1%	42.6%	107.8%		2.4%
Articles of Iron or Steel	9	2.7%	35.1%	30.4%		1.7%
Optical or Medical Instruments	8	1.8%	21.5%	2.8%		1.5%
Sum of Top 10 Commodities						**88.7%**

Source: IBRC, using WISER Trade data

Table 14: Top 10 Indiana Commodities Exported to Peru, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	24.4%	-18.4%	17.5%		44.0%
Pharmaceutical Products	24	-6.0%	78.1%	31.8%		13.9%

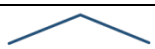
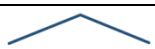
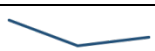
Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Plastics and Articles Thereof	5	5.7%	-4.3%	16.7%		9.4%
Optical or Medical Instruments	7	27.8%	22.6%	10.3%		7.6%
Electrical Machinery	3	17.2%	9.2%	-1.2%		6.5%
Food Industry Residues and Waste; Prep Animal Feed	21	-56.9%	n/a	n/a	n/a	2.6%
Articles of Iron or Steel	12	38.6%	-45.7%	88.3%		2.4%
Tanning and Dye Extract; Dye, Paint, Putty and Inks	25	16.4%	110.0%	-24.8%		1.5%
Miscellaneous Chemical Products	10	30.7%	-7.3%	-40.1%		1.3%
Prep Vegetables, Fruit, Nuts or Other Plant Parts	64	n/a	49.5%	5.2%		1.2%
Sum of Top 10 Commodities						**90.5%**

Note: Food industry residue exports had no trade value in 2010, hence the absent trade trends.
Source: IBRC, using WISER Trade data

Eastern Asia

Malaysia, South Korea, Thailand are the Eastern Asian representatives of the Plus countries. Unlike South America, there does not appear to be a regional similarity. Rather, it appears to be based on the average level of income—South Korea's GDP per capita is $22,600, Malaysia's is $10,400 and Thailand's is $5,400. With greater income, South Korea is importing a relatively large volume of pharmaceuticals—almost 53 percent of the country's imports from Indiana are drugs. However, the country also imports a significant volume of Indiana's staple of TEM products. Malaysia and Thailand, while importing a larger share of Indiana's heavy industry goods, also import a respectable share of life science products.

Table 15: Top 10 Indiana Commodities Exported to Malaysia, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Electrical Machinery	1	33.8%	-3.0%	-4.3%		31.3%
Industrial Machinery, Including Computers	2	19.2%	-2.6%	-23.5%		19.9%
Pharmaceutical Products	20	-23.4%	158.1%	34.6%		8.6%
Optical or Medical Instruments	4	11.6%	59.9%	-8.4%		8.3%
Tanning and Dye Extract; Dye, Paint, Putty and Inks	28	-4.3%	133.9%	121.7%		4.9%
Plastics and Articles Thereof	6	13.9%	-17.8%	-22.5%		3.8%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Inorganic Chemicals; Precious and Rare-Earth Metals and Radioactive Compounds	10	-28.5%	127.9%	109.8%		3.7%
Miscellaneous Chemical Products	8	13.5%	-10.0%	19.4%		3.6%
Organic Chemicals	14	6.5%	16.6%	0.3%		3.5%
Special Classification Provisions	7	-2.2%	-27.1%	7.0%		1.6%
Sum of Top 10 Commodities						**89.2%**

Source: IBRC, using WISER Trade data

Table 16: Top 10 Indiana Commodities Exported to South Korea, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Pharmaceutical Products	13	15.6%	139.8%	35.0%		52.9%
Industrial Machinery, Including Computers	1	7.1%	-13.2%	2.1%		9.8%
Vehicles and Parts (Except Railway or Tramway)	10	-5.4%	3.3%	8.2%		6.8%
Optical or Medical Instruments	4	13.7%	5.9%	-4.9%		6.1%
Electrical Machinery	2	12.5%	-16.8%	-15.1%		4.0%
Plastics and Articles Thereof	7	1.2%	1.4%	6.3%		4.0%
Miscellaneous Chemical Products	12	20.2%	17.1%	6.8%		2.2%
Aluminum and Articles Thereof	20	25.7%	-23.1%	26.2%		2.1%
Art of Stone, Plaster, Cement, Asbestos and Mica Etc.	43	10.1%	272.6%	22.9%		1.8%
Meat and Edible Meat Offal	11	-32.0%	112.5%	100.7%		1.7%
Sum of Top 10 Commodities						**91.4%**

Source: IBRC, using WISER Trade data

Table 17: Top 10 Indiana Commodities Exported to Thailand, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	12.3%	17.7%	-7.1%		21.2%
Pharmaceutical Products	19	-41.0%	215.6%	23.1%		17.3%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Optical or Medical Instruments	5	25.9%	30.6%	-3.1%		14.0%
Plastics and Articles Thereof	6	-2.5%	13.8%	19.5%		7.9%
Prep Cereal, Flour, Starch or Milk; Bakewares	48	-36.1%	110.0%	262.4%		6.5%
Aircraft, Spacecraft and Parts Thereof	4	-23.2%	-94.2%	322.9%		5.7%
Miscellaneous Chemical Products	11	15.9%	-35.0%	35.2%		5.4%
Electrical Machinery	1	-1.8%	-9.1%	6.7%		3.8%
Albuminoidal Substances; Modified Starch; Glue; Enzymes	34	57.6%	-6.9%	12.0%		2.7%
Organic Chemicals	8	4.3%	15.5%	-25.6%		2.1%
Sum of Top 10 Commodities						**86.6%**

Source: IBRC, using WISER Trade data

Eastern Europe

The three members from Eastern Europe that are included in the Plus set of emerging markets are the Czech Republic, Poland and Romania. Contrasting the import profile of the three Eastern Asian countries with these three, one does see some regional differences in imports. Indiana exports a fair share of industrial machinery to these countries, with strong showings in aircraft, spacecraft and parts as well. Unlike the Asian emerging markets, however, this region doesn't import much by way of pharmaceuticals. The hardware side of life sciences, optical and medical instruments, are in the top 10 for each country, but pharmaceuticals are nowhere to be found. Like all the Plus countries, the top 10 imports from Indiana comprise a lion's share of products, and then some. In the case of Romania, the top four import categories make up over 80 percent of the imports from Indiana.

Table 18: Top 10 Indiana Commodities Exported to the Czech Republic, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	1	16.2%	4.6%	4.1%		30.5%
Aircraft, Spacecraft and Parts Thereof	3	36.3%	94.6%	34.4%		24.9%
Electrical Machinery	2	51.2%	4.5%	-5.1%		13.3%
Plastics and Articles Thereof	7	1.8%	-7.2%	73.3%		7.5%
Optical or Medical Instruments	4	-11.0%	-4.9%	61.2%		5.7%
Furniture; Bedding; Prefabricated Buildings	19	18.7%	-16.5%	31.1%		2.7%
Natural Pearls, Precious Stones and Metals; Coins	20	n/a	292.4%	0.7%		2.5%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Nickel and Articles Thereof	17	n/a	140.7%	52.3%		2.4%
Rubber and Articles Thereof	13	41.3%	-24.7%	37.7%		2.0%
Toys, Games and Sport Equipment and Parts	24	28.9%	-77.3%	56.0%		1.6%
Sum of Top 10 Commodities						**93.2%**

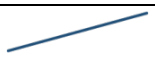
Source: IBRC, using WISER Trade data

Table 19: Top 10 Indiana Commodities Exported to Poland, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	2	16.2%	-13.9%	-13.4%		22.3%
Miscellaneous Chemical Products	18	3.3%	125.6%	8.2%		16.2%
Iron and Steel	20	n/a	225.1%	59.8%		10.7%
Electrical Machinery	3	5.9%	-22.1%	20.5%		10.6%
Rubber and Articles Thereof	8	30.8%	16.7%	19.3%		10.5%
Articles of Iron or Steel	16	4.8%	23.9%	41.1%		6.7%
Optical or Medical Instruments	4	-2.3%	-8.9%	11.8%		5.5%
Aircraft, Spacecraft and Parts Thereof	1	89.4%	-117.4%	36.5%		5.0%
Vehicles and Parts (Except Railway or Tramway)	5	13.0%	-44.8%	-16.7%		1.7%
Cereals	56	38.8%	-15.1%	-3.6%		1.7%
Sum of Top 10 Commodities						**90.7%**

Source: IBRC, using WISER Trade data

Table 20: Top 10 Indiana Commodities Exported to Romania, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Aircraft, Spacecraft and Parts Thereof	7	n/a	-165.8%	136.6%		26.6%
Industrial Machinery, Including Computers	2	15.8%	33.8%	-17.4%		26.0%
Optical or Medical Instruments	4	-4.4%	19.6%	46.3%		22.2%
Electrical Machinery	3	16.8%	-34.6%	2.3%		6.5%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Vehicles and Parts (Except Railway or Tramway)	5	n/a	97.0%	114.2%		5.1%
Plastics and Articles Thereof	11	n/a	71.0%	0.6%		4.3%
Miscellaneous Chemical Products	26	n/a	99.6%	-27.8%		4.0%
Furniture; Bedding; Prefabricated Buildings	28	-60.8%	119.7%	-98.7%		1.0%
Prep Vegetables, Fruit, Nuts or Other Plant Parts	43	n/a	n/a	n/a	n/a	0.9%
Ships, Boats and Floating Structures	44	n/a	n/a	n/a	n/a	0.9%
Sum of Top 10 Commodities						**97.5%**

Note: Exports of prep vegetables, etc. did not begin until 2012—hence the absent trade trends. Exports of ships, boats and other floating structures have been intermittent over the years, causing unreliable trade trends.
Source: IBRC, using WISER Trade data

Western Asia

For many product categories, Kazakhstan has rapidly increased its imports of Indiana goods, so much so that rates of growth from even 2010 to 2012 cannot be calculated (see the "n/a" in **Table 21**). Another thing to consider when looking at the table of major import categories from Indiana is that all imports from the state add to only $3 million (and from the U.S. to $882 million). As a result, it is difficult to make any definitive statements about trends over the last 10 years. That said, in Kazakhstan, like most countries, a large percentage of Indiana-produced imports consist of industrial machinery. Saudi Arabia and Turkey imports from Indiana also consist of TEM-related products. Saudi Arabia's relatively high income levels may explain the strong showing in life science product imports, but the post-recession reversal in the rate of growth in the category is worrisome—especially considering that the country's rate of import growth from Indiana averaged over 16 percent from 2002 to 2012.

Table 21: Top 10 Indiana Commodities Exported to Kazakhstan, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	1	34.4%	-3.3%	51.5%		54.5%
Pharmaceutical Products	9	n/a	n/a	n/a	n/a	11.9%
Rubber and Articles Thereof	17	n/a	-53.8%	91.2%		7.7%
Vehicles and Parts (Except Railway or Tramway)	4	n/a	151.5%	-146.2%		5.8%
Meat and Edible Meat Offal	2	n/a	n/a	n/a	n/a	4.8%
Electrical Machinery	3	-7.8%	62.5%	-52.5%		4.4%

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Art of Stone, Plaster, Cement, Asbestos and Mica Etc.	44	n/a	n/a	n/a	n/a	3.7%
Articles of Iron or Steel	10	n/a	n/a	n/a	n/a	2.4%
Furniture; Bedding; Prefabricated Buildings	25	n/a	n/a	9.5%	n/a	2.2%
Plastics and Articles Thereof	16	n/a	n/a	n/a	n/a	1.2%
Sum of Top 10 Commodities						**98.4%**

Notes: All of the above commodities had export values in 2012; however, trade did not always exist in years prior to 2012.
Source: IBRC, using WISER Trade data

Table 22: Top 10 Indiana Commodities Exported to Saudi Arabia, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Vehicles and Parts (Except Railway or Tramway)	1	9.1%	36.4%	-10.3%		20.7%
Industrial Machinery, Including Computers	2	6.1%	16.4%	48.6%		19.8%
Aircraft, Spacecraft and Parts Thereof	3	-7.9%	180.2%	250.9%		14.8%
Electrical Machinery	4	14.3%	-22.2%	35.1%		10.2%
Aluminum and Articles Thereof	10	45.8%	-339.9%	320.5%		8.1%
Pharmaceutical Products	12	10.9%	50.6%	-0.7%		8.0%
Miscellaneous Chemical Products	6	-1.4%	227.5%	7.1%		7.0%
Furniture; Bedding; Prefabricated Buildings	15	1.3%	71.6%	5.7%		5.2%
Optical or Medical Instruments	5	17.3%	7.7%	-3.7%		1.6%
Miscellaneous Articles of Base Metal	34	36.2%	63.3%	19.5%		1.0%
Sum of Top 10 Commodities						**96.3%**

Source: IBRC, using WISER Trade data

Table 23: Top 10 Indiana Commodities Exported to Turkey, 2002-2012

Commodity	U.S. Rank	Average Annual Rate of Change 2002-2008	2008-2010	2010-2012	Growth, Recession & Recovery	Share of 2012 Indiana Exports
Industrial Machinery, Including Computers	4	26.0%	11.6%	-4.7%		33.6%
Vehicles and Parts (Except Railway or Tramway)	11	14.7%	-62.7%	58.8%		25.1%
Electrical Machinery	7	71.4%	-56.8%	-19.1%		5.9%
Optical or Medical Instruments	8	15.8%	-22.2%	-7.9%		4.5%
Organic Chemicals	10	-3.1%	-128.5%	85.0%		4.2%
Furniture; Bedding; Prefabricated Buildings	34	29.9%	-38.6%	-9.3%		3.2%
Articles of Iron or Steel	26	-0.4%	137.2%	-40.0%		3.0%
Wood and Articles of Wood; Wood Charcoal	18	43.2%	0.7%	19.7%		2.7%
Aircraft, Spacecraft and Parts Thereof	2	n/a	117.9%	45.6%		2.7%
Albuminoidal Substances; Modified Starch; Glue; Enzymes	57	-2.3%	-3.3%	67.7%		2.6%
Sum of Top 10 Commodities						**87.5%**

Source: IBRC, using WISER Trade data

Industry Exports Strengths and Weaknesses

The prior section examined the top commodities exported from Indiana to each BRICS Plus country, providing an informative view of demanded products over time. However, it does not give a complete picture of whether Indiana is excelling in exports from a particular industry relative to the U.S. To facilitate this comparison, the IBRC researchers calculated growth quotients (GQs) which behave in a manner similar to location quotients.[4] The GQs allows for a quick assessment of the state's strengths or weaknesses in export growth over a time period by industry, thus identifying industries with growth greater than the nation's.

A GQ greater than 1 indicates that Indiana experienced stronger growth than the nation; a GQ less than 1 indicates that Indiana grew less than the nation; and a negative GQ indicates that Indiana experienced a decline in exports over the period.

The first column in **Table 24** and **Table 25** shows a sparkline of the average annual growth rate between 2002-2012 for those three-digit NAICS industry with more than $5 million in Indiana exports. The sparklines provide a general sense of how the export trends were interrupted by the Great Recession and the degree to which exports recovered. (Please note that these sparklines are not directly connected to the data in the tables. They are, however, tied to the data used to calculate the GQs. The next three columns show whether Indiana's growth in the given time period was stronger or weaker than the nation overall.) Stronger than U.S. growth values are shown in red. As expected, GQs varied across industries and time periods, with a few industries displaying strong export growth across all three time periods relative to the U.S.

Here are the highlights of the key industries and their general Indiana export growth profile.

- Transportation equipment surpassed the national average.
- Computer and electronic products surpassed the U.S. for the BRICS, but not the Plus countries.
- Chemicals, including pharmaceuticals, surpassed the national average.
- Indiana machinery products (except electrical) were, for the most part, outdone by the U.S. growth rate.

[4] See the appendix for the growth quotients methodology.

- Miscellaneous manufactured commodities, which includes medical and optical instruments, also surpassed the rate of growth of the U.S., except for the last couple of years for the Plus countries.
- Electrical equipment, appliances and component manufacturing was stronger than the U.S. for the BRICS but weaker for the Plus countries.

Table 24: Indiana Export Growth by Industry to the BRICS Countries, 2002-2012

Industries	Growth Trend[5]	2002-2008 GQ	2008-2010 GQ	2010-2012 GQ
Agricultural Products		1.41	-2.68	-1.16
Chemicals, Including Pharmaceuticals		0.89	1.79	3.33
Computer and Electronic Products		1.29	1.85	25.12
Electrical Equipment, Appliances and Components		1.60	11.91	2.81
Fabricated Metal Products		0.95	0.31	3.14
Food and Kindred Products		1.03	0.14	6.36
Forestry Products		0.13	0.70	2.50
Furniture and Fixtures		1.51	5.77	2.45
Livestock and Livestock Products		-0.01	12.72	8.97
Machinery, Except Electrical		0.98	4.63	-1.05
Miscellaneous Manufactured Commodities*		0.92	1.31	6.61
Nonmetallic Mineral Products		0.50	4.93	2.03
Oil and Gas	n/a	n/a	n/a	1.71
Paper		1.45	0.39	0.94
Petroleum and Coal Products		1.23	1.09	0.48
Plastics and Rubber Products		1.08	-0.69	1.64
Primary Metal Manufacturing		0.32	-0.71	-0.80
Printing, Publishing and Similar Products		2.33	0.99	-19.50
Special Classification Provisions		3.04	-1.29	2.04
Textiles and Fabrics		0.24	11.22	5.85
Transportation Equipment		1.40	7.20	1.12
Waste and Scrap		1.68	-9.30	-4.04
Wood Products		0.58	-1.06	1.78

* Miscellaneous manufactured commodities includes optical and medical instruments.
Note: Red text indicates that Indiana had stronger growth relative to the nation.
Source: IBRC, using WISER Trade data

[5] The sparklines are to provide a quick pictorial impression, rather than a precise visualization of data. The time periods for the sparklines refer to the 2002-2008 time period of strong economic and import growth, the 2008-2010 Great Recession period of economic contraction and the 2010-2012 time period of economic recovery. The visual provides a simple way to assess the degree to which imports have been consistent, were negatively affected by the global recession, or were sustained through economic good times as well as bad. The three data points on the graphs roughly correspond to the data in the columns.

Table 25: Indiana Export Growth by Industry to the Emerging Countries, 2002-2012

Industries	Growth Trend	2002-2008 GQ	2008-2010 GQ	2010-2012 GQ
Agricultural Products		4.93	1.81	-0.22
Chemicals, Including Pharmaceuticals		1.86	3.36	1.06
Computer and Electronic Products		2.86	-0.48	0.34
Electrical Equipment, Appliances and Components		3.16	0.24	0.49
Fabricated Metal Products		0.37	1.42	1.24
Food and Kindred Products		3.37	-32.41	0.44
Furniture and Fixtures		4.44	2.92	0.35
Machinery, Except Electrical		0.50	0.96	0.91
Miscellaneous Manufactured Commodities*		2.05	4.85	0.72
Nonmetallic Mineral Products		-3.39	0.94	2.51
Paper		0.27	-0.10	3.73
Petroleum and Coal Products		1.44	1.39	0.17
Plastics and Rubber Products		0.59	0.38	1.03
Primary Metal Manufacturing		2.38	3.18	0.22
Printing, Publishing and Similar Products		10.92	-1.86	1.84
Special Classification Provisions		5.27	-0.06	-6.61
Textiles and Fabrics		47.86	12.51	4.41
Transportation Equipment		-0.56	1.15	1.15
Wood Products		5.71	-7.00	0.56

* Miscellaneous manufactured commodities includes optical and medical instruments.
Note: Red text indicates that Indiana had stronger growth relative to the nation.
Source: IBRC, using WISER Trade data

Conclusion

The BRICS countries have been very much in the news. Their economic growth rates have helped buoy the global economy when the advanced economies were in the throes of the Great Recession. Because of their size and growth rates, these emerging economies could be seen as export markets with great potential and promise. The research reported here assessed the BRICS country growth in imports from the U.S. and Indiana, and identified other emerging markets, thereby creating a larger grouping of emerging markets: "BRICS Plus."

Given their cultural and resource endowments, it would be foolish to consider the BRICS a homogeneous market block. Indeed, rates of economic growth and import growth varied greatly, as did the absolute level of imports. China could be considered the economic and import tiger, but India's economic growth rate put in a middling performance. Russia's rate of growth, and rate of import growth from Indiana, were impressive, but the starting point was so low that Russian imports from Indiana barely topped $100 million in 2012—less than Chile, Colombia, Malaysia, Saudi Arabia and Thailand, to name a few. Brazil's imports from Indiana topped $800 million, second only to China among the emerging markets, but its economic growth has moderated recently.

Are there other emerging markets that might be smaller, but just as dynamic, as the BRICS? The growth and import trends of the Plus countries were also somewhat mixed. While Mexico's economy and import *levels* from the U.S. and Indiana are impressive compared to other emerging markets like the BRICS Plus countries, the Mexican growth *rates* are not. A country like Colombia may have had an impressive average growth rate in Indiana imports over the last 10 years—over 19 percent—but the $152 million in Indiana imports are a mere 3.8 percent of Mexico's imports.

One important finding of this analysis is that Indiana's ranking among the states increased and the average rate of export growth outperformed the nation at large for **all** the BRICS. This could not be said of the Plus countries.

When looking at the top 10 Indiana-produced imports of each country, industrial machinery was in the top position across the board—except in the rare case in which it was second. This held true for the BRICS as well as the Plus countries. Regions appeared to have slightly different import profiles. Eastern Europe, for example, while importing Indiana medical devices and optical instruments, did not import Indiana pharmaceuticals in abundance. Latin American Plus countries did import life science products, but for Mexico, that product category was eclipsed by other transportation equipment products in terms of relative importance.

Finally, Indiana has expanded its influence and increased its status as an exporter. Across the more dominant Indiana industries—transportation equipment and life science product manufacturing—the state's average rate of increase in exports has, for the most part, surpassed that of the nation for both the "traditional" BRICS as well as the "Plus" emerging markets.

Appendix

Growth Quotient (GQ)

Mirroring the methodology used to create location quotients, IBRC researchers crafted a growth quotient to compare Indiana's growth rate versus the U.S. The equation is as follows:

$$Growth\ Quotient\ = \frac{\frac{regional\ AARC}{total\ regional\ AARC}}{\frac{national\ AARC}{total\ national\ AARC}}$$

Where AARC represents the average annual growth rate for the time period being examined (e.g. 2002-2008). The term regional represents the region of interest, in this case, Indiana. This GQ was calculated for each industry, each set of countries and each set of time frames.