



KELLEY SCHOOL OF BUSINESS

INDIANA UNIVERSITY
Indiana Business Research Center

Indiana in the Global
Economy: Current Export
and FDI Activity

Education's Value:
It's Not That Simple!

demographic and economic perspectives, insights, and analysis since 1926

INDIANABUSINESSREVIEW



Fall 2010
Volume 85, No. 3

Kelley School of Business

Daniel C. Smith
Dean

Frank Acito
Associate Dean of
Information Technology

Munirpallam Venkataramanan
Associate Dean of
Academic Programs

Idie Kesner
Associate Dean of
Faculty and Research

Philip L. Cochran
Associate Dean of
Indianapolis Programs

Anne D. Auer
Director of Marketing

Indiana Business Research Center

Jerry N. Conover
Director and Publisher

Indiana Business Review

Carol O. Rogers
Executive Editor

Rachel M. Justis
Managing Editor

Amy L. Buck
Graphic Designer

Flora A. Lewis
Quality Control

Table of Contents

1

Indiana in the Global Economy: Current Export and FDI Activity

Matt Kinghorn and Matthew Hutchinson analyze current export and FDI data and its connection to the state's economic recovery. While the national economy is growing, job growth is stagnant and recovery remains fragile. However, recent export growth and increased FDI announcements are encouraging signs that Indiana is emerging from the recession.

6

Education's Value: It's Not That Simple!

Andy Zehner discovers that the slogan, "The more you learn, the more you earn," may not always be the case. By examining microdata samples from the U.S. Census Bureau, Zehner explores several factors that shape the wage scale besides attaining a bachelor's degree. In fact, many other catchy slogans are equally true.

From the Editor

As I write this in the early afternoon on a Monday, it is already Tuesday in Shanghai, close to midnight in Hanoi, bedtime in Kathmandu and dinnertime in Athens. Whatever the time anywhere in the world, it is increasingly likely that people in other countries are using Indiana exported products. In the first six months of this year, Indiana exported more than \$14 billion in goods around the world. As author and research economist Matt Kinghorn points out in our first article, Indiana is one of only fourteen states where the value of exports so far this year have surpassed pre-recession levels. This is a major accomplishment for our manufacturers and one that bodes well for our state economy.

Be sure to read on while Andy Zehner (formerly with iPIC and now with Purdue) examines the subtleties of "learn more, earn more" and the fact that not every degree pays off at every point in time. Andy taps into recent questions about whether higher education pays in the recession and considers what this means in Indiana.

We appreciate your readership and solicit your questions and suggestions. In addition to the IBR, we encourage you to use STATS Indiana and Hoosiers by the Numbers, along with the Indiana Economic Digest and InContext.

Indiana in the Global Economy: Current Export and FDI Activity

Matt R. Kinghorn: Economic Research Analyst, Indiana Business Research Center, Kelley School of Business, Indiana University

Matthew Hutchinson: Economic Research Assistant, Indiana Business Research Center, Kelley School of Business, Indiana University

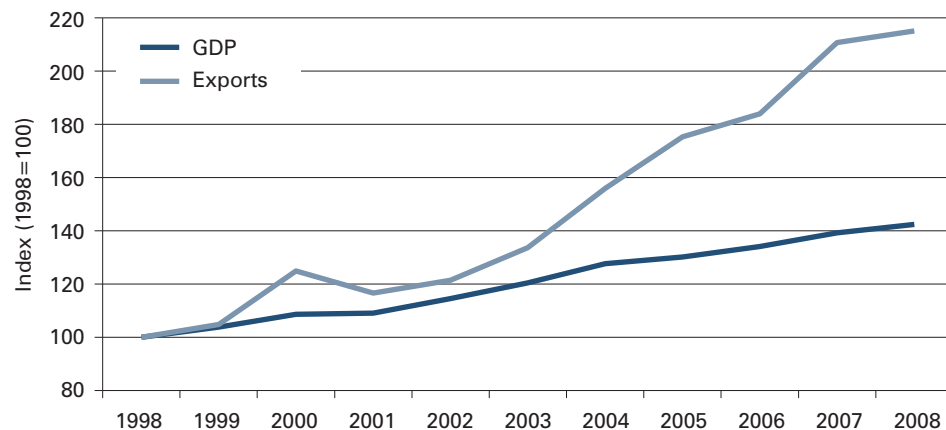
It is difficult to overstate how dramatic the effects of the current economic crisis have been on U.S. exports. In 2009, U.S. GDP was lower than it had been in the preceding year for the first time since 1949. In part, this decline was a result of falling demand across the globe brought about by the recent economic downturn. Compared to the same period in the preceding year, U.S. export growth remained negative in each quarter throughout 2009, reaching a nadir in the second quarter of 2009 when the value of exports was 25.8 percent lower than it had been in the second quarter of 2008.

Negative export growth was also observable at a more local level, with the value of Indiana's 2009 exports declining 14 percent compared to 2008. Trade data for the first two quarters of 2010, however, indicate that export activity is recovering along with the broader economy.

This resurgence in trade activity is important news for Indiana as exports play an ever larger role in the state's economy. **Figure 1** shows that export growth has outpaced Indiana's GDP growth in recent years. Between 1998 and 2008, Indiana's export-to-GDP ratio has climbed from 7.2 percent to 10.4 percent.¹ The latter mark ranked Indiana ninth among states in this measure. Given Indiana's ties to the global economy, a return to export growth will play a critical part in the state's economic recovery.

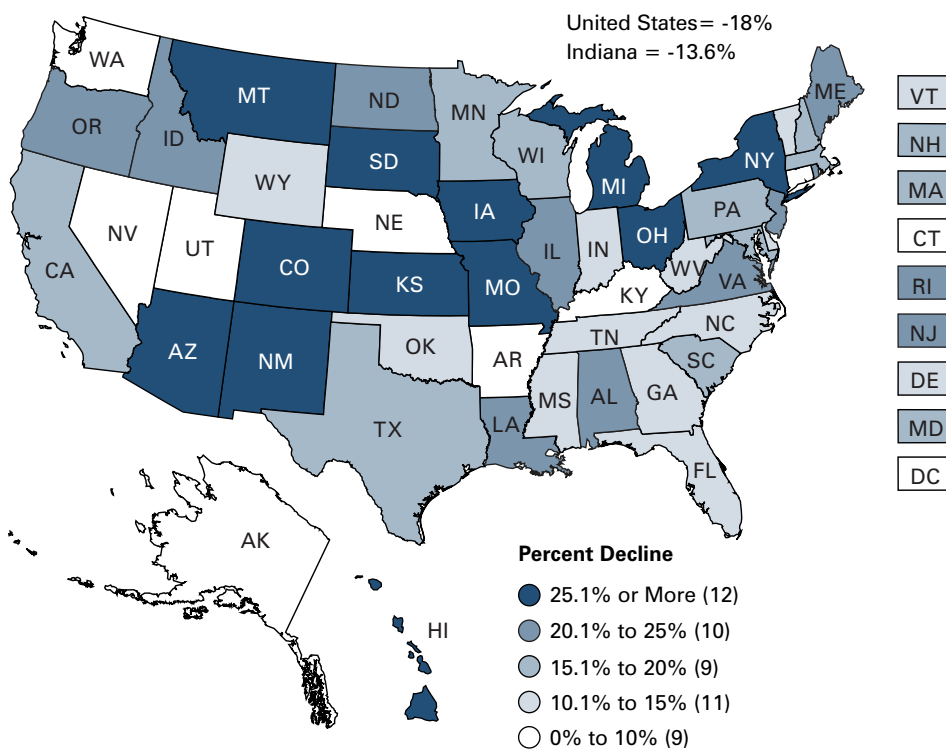
Foreign direct investment (FDI) is also important to the state's economy. Indiana has established itself as a prime destination for FDI and this trend doesn't appear to have abated during the recession. At the time of

FIGURE 1: Indiana's Growth in Exports and GDP, 1998 to 2008



Source: IBRC, using WISERTrade and Bureau of Economic Analysis data

FIGURE 2: Change in the Value of Exports, 2008 to 2009

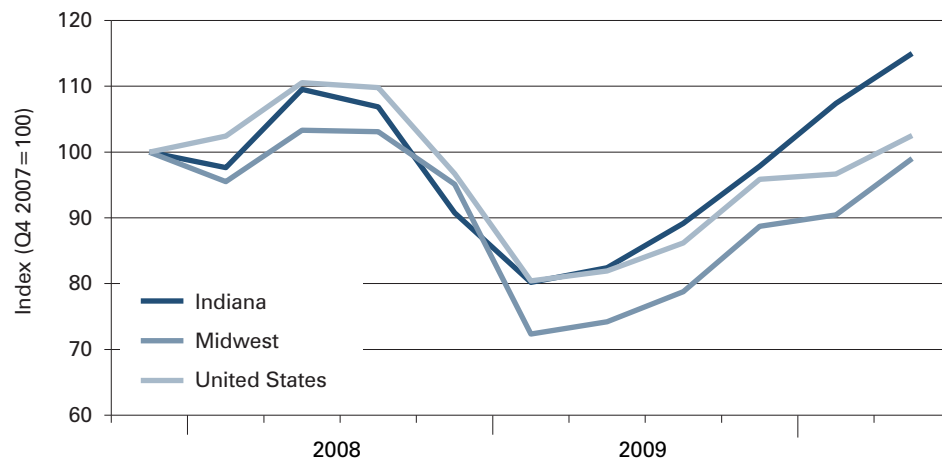


Source: IBRC, using WISERTrade and Bureau of Economic Analysis data

this writing, data on the 2009 FDI inflows into the United States are not yet available. However, we can get a feel for current foreign investment trends by looking at the annual number of FDI announcements as reported by the investment tracking

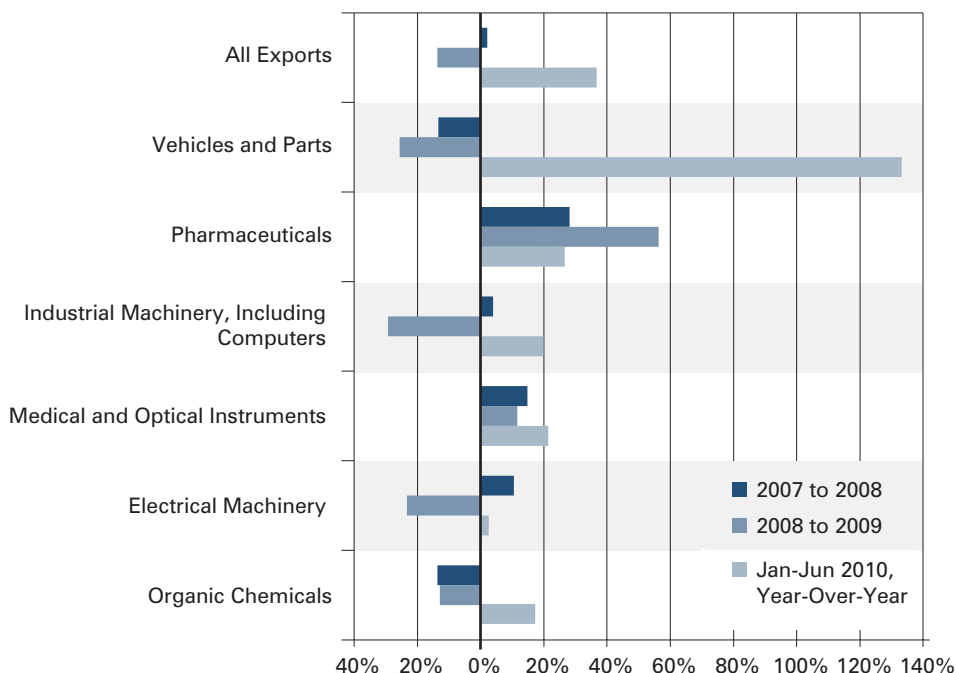
service fDi Markets.² Despite the global recession, fDi Markets reports that both the U.S. and Indiana had their largest number of FDI announcements in 2009 (note, however, that the fDi Markets data series only extends back to 2003).

■ **FIGURE 3: Quarterly Change in the Value of Exports for Indiana, the Midwest, and the United States, 2007:4 to 2010:2**



Source: IBRC, using WISERTrade data

■ **FIGURE 4: Annual Change in the Value of Indiana Exports by Industry, 2008 to 2010**



Source: IBRC, using WISERTrade data

This article examines Indiana's connection to the global economy and whether these connections will help lead Indiana's recovery. Clearly, the national economy is growing at a modest pace, job growth is stagnant, and the recovery remains fragile. However, the most current export and FDI data show encouraging signs that Indiana is emerging from the economic downturn.

Indiana Exports Regain Footing

Export trends offer one more indicator into how widespread the current economic crisis has been. Every state in the nation saw the annual value of its exports decline between 2008 and 2009 with the depth of these declines ranging from as little as 0.6 percent in Utah to 55 percent in New Mexico. The Midwest region (which consists of Indiana, Illinois, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio, Tennessee, and Wisconsin) saw the value of its exports fall 21 percent in 2009.

The value of Indiana's exports fell from \$26.5 billion in 2008 to \$22.9 billion in 2009—a 14 percent decline. The recession took such a toll on exports throughout the nation that Indiana's 14 percent decline actually ranked among the top one-third of all states and positioned it well above the U.S. mark of -18 percent (see **Figure 2**).

Fortunately, export activity appears to be recovering since bottoming out in 2009. The value of U.S. exports in the first half of 2010 was 23 percent greater than for the same period in 2009. As **Figure 3** shows, Indiana's rebound has been stronger than that of the United States or the Midwest region. In the first half of 2010, Indiana exported a record \$14.6 billion worth of goods, which was a 37 percent increase over the same period in 2009 and a 7 percent improvement over the first

half of 2008. In contrast, the value of U.S. and Midwestern exports in the first half of 2010 fell short of their 2008 levels for the same period. In fact, Indiana is one of only fourteen states whose value of exports in the first half of 2010 surpassed pre-recession levels.

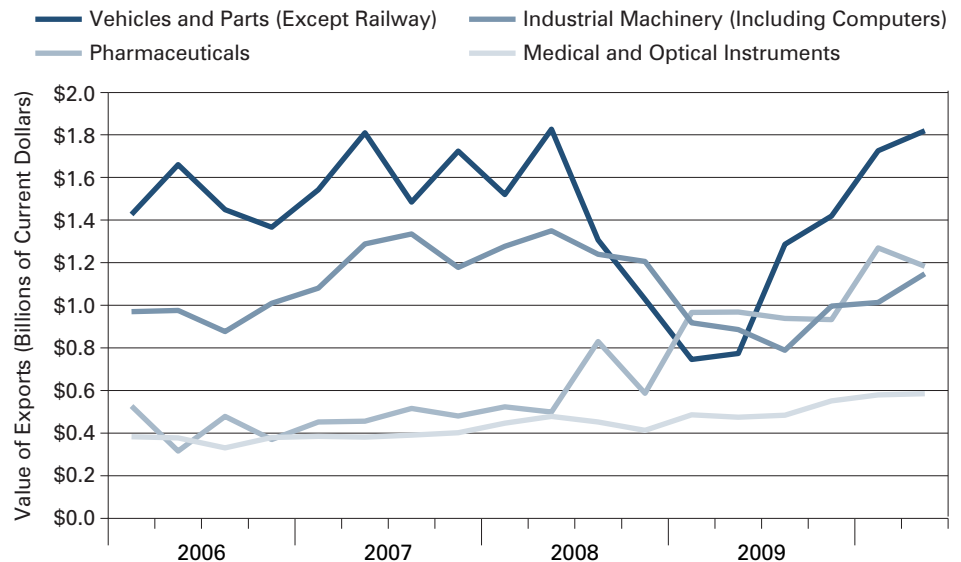
The primary force behind the decline and subsequent rebound of Indiana's exports has been the disruption in the auto industry. As **Figure 4** illustrates, the value of Indiana's vehicle and parts exports declined in both 2008 and 2009. However, Indiana's \$3.5 billion in vehicle exports in the first half of 2010 was more than twice the value for the same period in 2009. Compared to previous high watermarks, Indiana's auto industry exports in the first half of 2010 were a 6 percent improvement over both 2007 and 2008.

While the auto industry accounted for much of the variation in Indiana's export activity through the economic downturn, the state's life science companies largely prevented the level of declines seen in many Midwestern states and in the nation overall. **Figure 5** shows the quarterly value for Indiana's four largest export commodities. These commodities combined to account for 65 percent of the state's total exports in the first half of 2010. Indiana's pharmaceutical exports surged between the second quarter of 2008 and the first quarter of 2009 while vehicles and industrial machinery dropped. Meanwhile, medical and optical instrument exports remained strong through this period.

To underscore Indiana's strength in pharmaceuticals, the state's drug makers exported \$3.8 billion worth of goods in 2009, which ranked first among states. Indiana continues to lead all states in pharmaceutical exports through two quarters of 2010 with \$2.5 billion in foreign sales. It's

“In fact, Indiana is one of only 14 states whose value of exports in the first half of 2010 surpassed pre-recession levels.”

■ **FIGURE 5: Quarterly Value of Exports for Indiana's Top Commodities, 2006 to 2010**



Source: IBRC, using WISERTrade data

■ **TABLE 1: Indiana's Top Export Destinations**

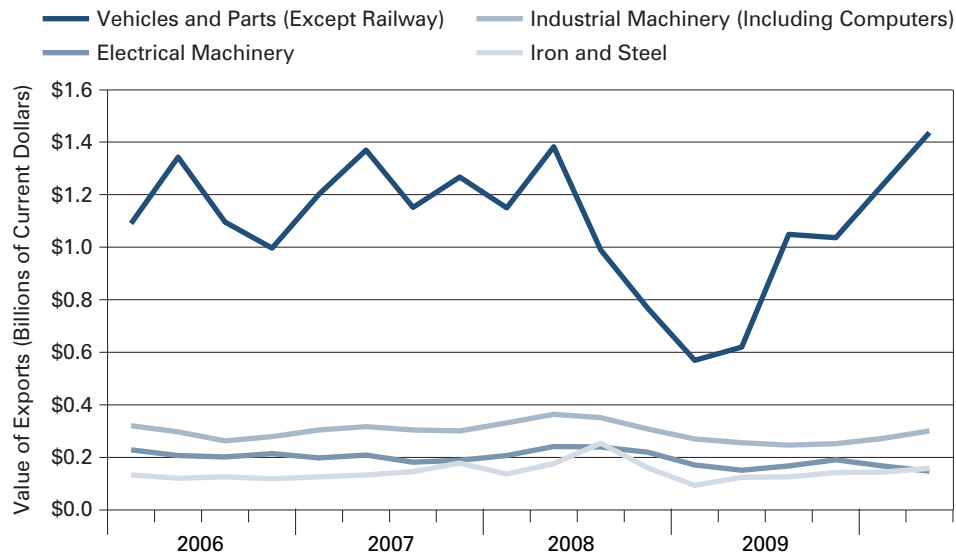
Country	Value of Exports (Millions of Current Dollars)			Average Annual Rate of Change		
	Jan-Jun 2010	2009	2008	Jan-Jun 2010*	2008-2009	2001-2008
World Total	\$14,561	\$22,889	\$26,502	36.8%	-13.6%	9.1%
Canada	5,461	8,412	10,566	49.9	-20.4	7.9
Mexico	1,280	1,783	2,112	87.3	-15.6	2.6
Germany	913	1,248	1,270	62.5	-1.7	12.6
United Kingdom	852	1,628	1,978	-16.9	-17.7	11.2
France	730	1,291	1,419	-1.0	-9.0	11.3
China	583	868	929	40.2	-6.6	24.5
Japan	558	823	863	51.5	-4.6	3.0
Spain	391	458	417	62.5	9.7	23.5
Brazil	389	534	636	75.7	-16.1	11.9
South Korea	310	435	372	77.1	17.0	7.7

*Year-Over-Year Change
Source: IBRC, using WISERTrade data

interesting to note that Puerto Rico, where many U.S. drug makers have a strong presence, exported \$13.2 billion worth of pharmaceuticals in

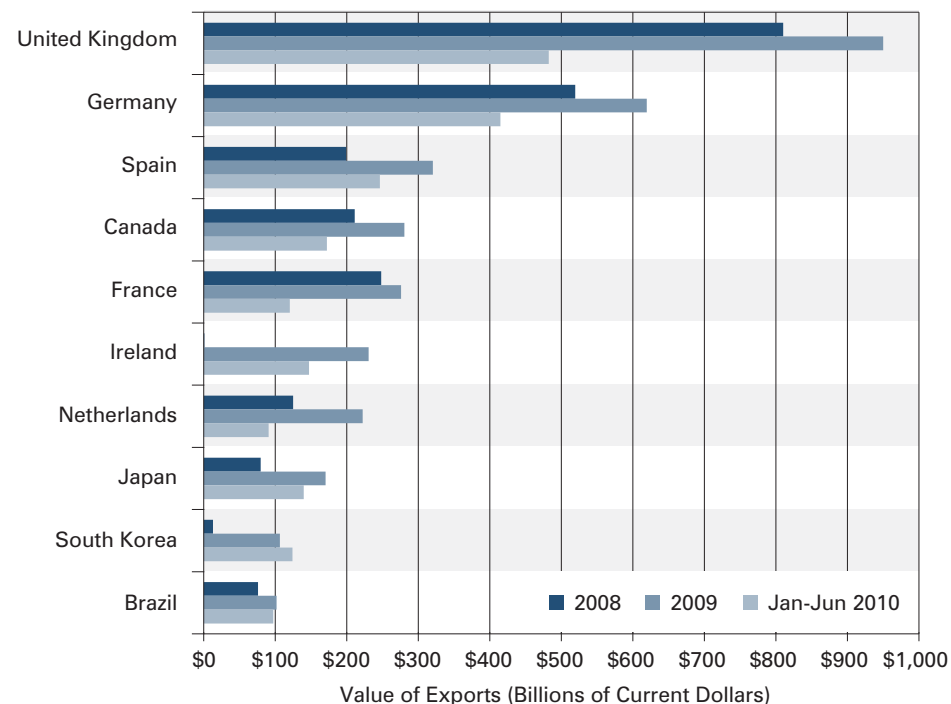
2009—a figure that was over three-times greater than Indiana’s.

■ **FIGURE 6: Indiana’s Top Export Commodities to Canada, 2006 to 2010**



Source: IBRC, using WISERTrade data

■ **FIGURE 7: Indiana’s Top Pharmaceutical Destinations**



Source: IBRC, using WISERTrade data

Indiana’s Largest Trading Partners

Canada has long been Indiana’s top export market. Our neighbor to the north purchased 37 percent of all Indiana exports in 2009 and 38 percent in the first two quarters of 2010, far ahead of the second largest destination, Mexico which accounted for 9 percent of all the exports in the first half of 2010 (see **Table 1**). A trio of European nations—Germany, the United Kingdom and France—round out Indiana’s top five trading partners. While the United Kingdom and France remain key markets for Indiana companies, the value of their exports from the state continued to decline in the first half of 2010.

Indiana’s fastest growing major trading partner in recent years has been China. The value of the state’s exports to the world’s most populous country grew by an average of 25 percent a year between 2001 and 2008 before declining in 2009. Indiana’s leading export commodity to China in 2009 was industrial machinery, which accounted for 32 percent of all exports, followed by plastics and electrical machinery.

Given that Canada is Indiana’s largest trading partner, it is important to take a closer look at this relationship. **Figure 6** shows that vehicle and parts sales dominate Indiana’s exports to Canada. The auto industry accounted for 39 percent of Indiana exports to Canada in 2009 and 49 percent of the total in the first half of 2010. Even more noteworthy, Canada traditionally accounts for roughly 75 percent of Indiana’s total exports of vehicles and parts. Indiana’s vehicle exports to Canada took a serious hit early in 2009—declining by 24 percent—but have recovered strongly thus far in 2010.

Canada is also an important market for Indiana drug makers, ranking as the fourth largest foreign destination for Indiana

pharmaceuticals in 2009. However, the recent increase in exports of pharmaceutical products was driven primarily by activity in Western Europe, most notably in the United Kingdom, which increased its purchases of Indiana's pharmaceuticals by \$139 million in 2009. Indiana pharmaceutical companies also increased sales to Germany, Spain, and Ireland by a sizable margin in 2009 (see **Figure 7**).

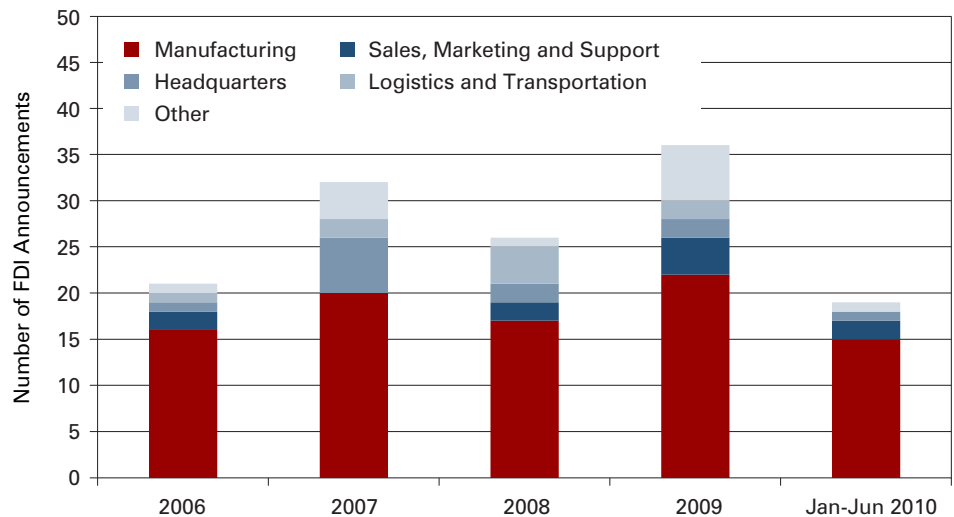
Foreign Direct Investment in Indiana

Indiana has been one of the nation's top beneficiaries of foreign direct investment (FDI). As of 2007, 144,000 Hoosiers worked at firms in which a foreign investor or company had at least a 50 percent stake. This number accounted for 4.5 percent of the state's total private employment at the time, which ranked twelfth nationally. Data are not yet available for FDI-related employment trends during the recession, but the number of FDI announcements in Indiana since 2009 suggests that foreign companies continue to find Indiana an attractive destination for investment.

The investment tracking service fDi Markets reports thirty-six FDI announcements for Indiana in 2009—the largest number of annual announcements since this data series began in 2003. The estimated total value of investment for these thirty-six projects is \$2 billion, which is Indiana's second highest investment total in this data series. The record investment amount occurred in 2006 when BP announced a \$3.6 billion investment in Whiting. Like Indiana, fDi Markets reports that the United States also had its largest tally of FDI announcements in 2009. The total value of these investments trailed only the 2008 mark.

Not surprisingly, the majority of announcements in Indiana are in the manufacturing sector (see

FIGURE 8: Number of FDI Announcements in Indiana by Business Activity, 2006 to 2010



Source: IBRC, using fDi Markets data

Figure 8). There were twenty-two manufacturing announcements in 2009 with the largest project coming from Toyota's \$500 million investment to retool its Princeton facility to begin producing a different type of vehicle. This investment is not likely to generate any new jobs at the facility but it should secure the jobs already there for some time.³ The other largest FDI announcements in 2009 came from BP and Electricite de France for renewable energy projects.

Conclusion

The poor performance of U.S. exports was one of many indications that 2009 was a difficult year. Indiana may have suffered the same fate as the rest of the country—seeing a drop in demand from nearly all of its major trading partners—but there is evidence that this downward trend has been reversed in 2010. It is also encouraging that while 2009's export figures remained broadly negative, there were some bright spots, most notably in the life science industries. We are still in the early stages of recovery, however, and there are no

assurances that global demand will not decline again. That said, strong export growth in the first half of 2010 coupled with numerous FDI announcements are two positive signs that Indiana could be on the road to recovery.

Notes

1. GDP—the sum of all value-added components, such as wages and profits—is not conceptually the same as sales (sales include the price of intermediate inputs as well as value added). However, the export-to-GDP ratio provides a rough measure of the relative dependence a state has on exports.
2. fDi Markets tracks foreign direct investment announcements (media releases) which typically include projected investment values and job creation targets. With this data source, FDI projects are counted in the year they are announced but it may take years before the investments are fully realized, if they are realized at all. Also, fDi Markets collects data on greenfield and expansion related announcements only. Merger and acquisition transactions are not captured.
3. Ted Evanoff, "Toyota's \$500M move refocuses Indiana plant," *Indianapolis Star*, July 7, 2009, www.indy.com/posts/toyota-s-500m-move-refocuses-indiana-plant.

Education's Value: It's Not That Simple!

Andy Zehner: Independent Workforce Analyst

A growing body of thought claims that college may not be worth the cost. CNBC, Slate and NY Times have all had articles arguing that in a recession it makes no sense to prepare for jobs that aren't there now and may never come back. Others say that, recession or not, college just costs too much. Still others say vision and motivation are what matter, as the success of Bill Gates and other college dropouts attests. A writer for *Forbes* has suggested, in one of the more novel arguments, that parents who can afford to send their child to an elite private college might be wiser to invest the money and endow their child with the dividend stream.¹

Here in Indiana, though, we are dedicated to improving our educational attainment. We rank

low in college attainment, and we know that an uneducated population makes a low-skilled workforce unfit for the new industries we want to promote. The commitment is firm and the argument is simple: A person with a bachelor's degree will earn \$15,000 or more per year over what someone with only a high school diploma earns. The number varies, but this message can be found in dozens of articles, reports, official pronouncements, and web posts.

But that message is too simple. Saying, "College graduates earn more" implies that college makes a sure difference all by itself—that it guarantees the \$15,000 wage bonus. It doesn't. Age, occupation, and other factors also shape the wage scale. Those other factors can diminish the advantage conferred by education.

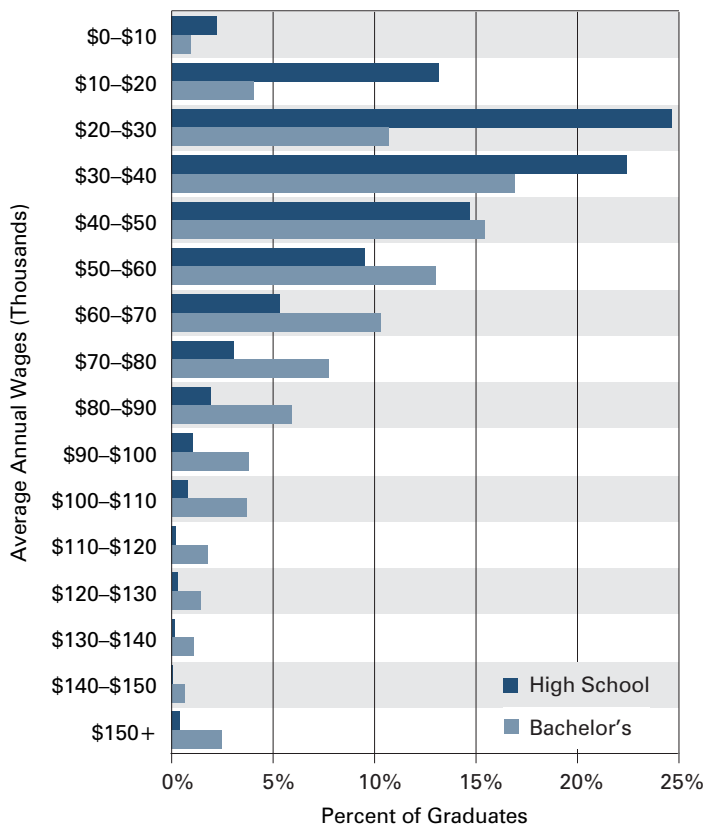
They can also magnify it. The link between college and higher earnings is more tentative than people think, but potentially more lucrative too.

We've been lulled by the appeal of the phrase, "The more you learn, the more you earn." Perhaps it seems persuasive because it is lyrical. But as I'll show, other catchy slogans are equally true.

If You Work The Year 'Round, Your Earnings Will Compound

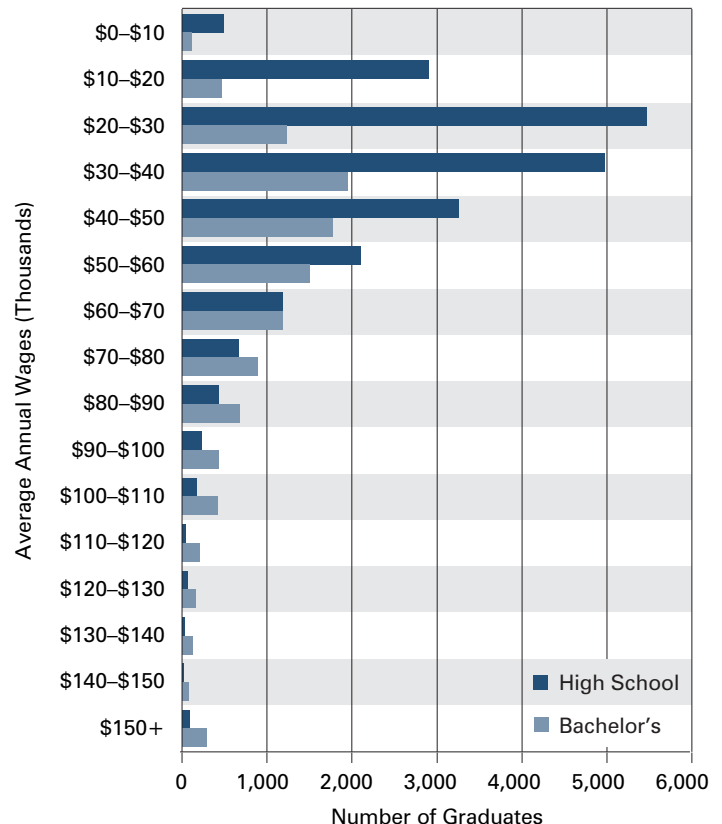
The ordinary standard of full-time employment and a forty-hour workweek isn't prevalent, and high school graduates and college graduates don't work the same amount. Some people work only thirty hours, while others work sixty or more. Most people stay on the job year-round, but others work only

■ FIGURE 1: Wages by Percent of Graduates, 2006 to 2008



Source: IBRC, using the U.S. Census Bureau's Public-Use Microdata Sample

■ FIGURE 2: Wages by Number of Graduates, 2006 to 2008



Source: IBRC, using the U.S. Census Bureau's Public-Use Microdata Sample

in the warm months, only during the school year, or only during the Christmas shopping season.

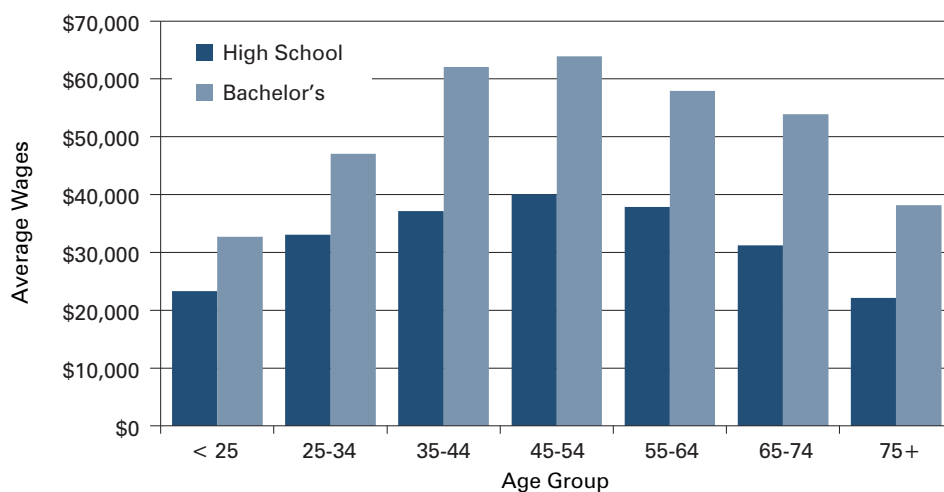
Census Bureau data for Indiana show that 59.1 percent of bachelor's degree graduates worked full-time, compared to 40.7 percent of high school graduates.² The average income for college graduates is higher because they work more. They would earn more even if both groups were paid the same rates for all jobs.

According to the Census Bureau's Public-Use Microdata Sample (PUMS), when combining full-time Hoosier workers with a high school diploma or a bachelor's degree, average annual wages are \$43,184.³ When looking at them separately, the difference between high school and a bachelor's degree is immediately evident. Average wages for full-time workers who are high school graduates are \$36,441 compared to only \$28,021 for all Indiana high school graduates.⁴ Bachelor's degree graduates who work full-time and year-round make \$56,156 compared to \$44,248 for all bachelor's. Clearly, the degree alone doesn't make all the difference, and not all college graduates attain the promised benefit.

Despite Its Popularity, the Average Cloaks Disparity

The U.S. Census Bureau issued a seminal report in 2002 called *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings*.⁵ That rigorous study adjusted for work time and other factors. It produced valid results. But it also encouraged less-workish folks to view complex results through the simplistic lens of the average. The report illustrated its findings with bar charts showing average annual earnings for each level of education. Bar charts have become the normal way to display the relationship between educational attainment and wages, and they wrongly imply that an increment of educational

■ **FIGURE 3: Wages by Age Group, 2006 to 2008**



Source: IBRC, using the U.S. Census Bureau's Public-Use Microdata Sample

attainment causes a discrete step in earnings. It's not that simple.

Figure 1 shows the distribution of annual wages for the PUMS sample. The two groups are not separated by a wide gap as the aggregate average implies. Rather each spreads across a wide distribution that overlaps the other distribution. There are both high school graduates and bachelor's graduates at every level. The bachelor's degree holders include some who have gained far more than the reputed \$15,000 a year, and others who seemingly have gained nothing. **Figure 2** displays the wage curves for the same two groups in raw numbers rather than percentages, revealing another key point about the wage scale: High school graduates outnumber bachelor's degree workers at every wage level below \$70,000. Bachelor's degree holders hold more of the jobs at all levels over \$70,000, but both groups are represented in wage ranges far above the average.

The Greater Your Age, the Higher Your Wage

We have established that wages earned by Hoosier workers range broadly rather than clustering around educational attainment indicators. Now let's consider how age affects wages. **Figure 3** shows that bachelor's

earn more in each age group. Once again, we find that the oft-repeated \$15,000 value understates the value of college.

Figure 3 raises puzzling questions about the age effect on wages. Why does the benefit of better education, which is \$24,903 among 35–44 year olds, diminish to \$20,058 for workers 55–64 years old? Why does the earnings curve decline after age 54 for both groups, even in this sample of full-time, year-round workers?

Choosing The Right Vocation Will Lead to Wealth Formation

Next we consider another important factor: occupational group. **Table 1** displays average annual wages for each of twenty-two major occupational groups for high school graduates and bachelor's degree holders.

The value of education is apparent, but it is not consistent across skill groups. Education makes a relative, not a definite or absolute, difference. Bachelor's degree holders in the personal services earn only \$27,385, those working in food services make just \$28,054, and those in health support occupations earn just \$29,513. These are not just below the average for bachelor's degree holders, but below the average for

all working high school graduates. Meanwhile bachelor's degree holders in engineering earn an average of \$71,374, and managers earn \$70,792. The education attainment bonus in these and other fields is far larger than the oft-quoted average. The key to a high income is not just a college degree, but the right sort of degree leading to work in a well-paying field. This important detail must be included in the message.

A look further down **Table 1** displays a surprising finding. In this sample, high school graduates in the legal occupations earn more than those with a bachelor's degree. The legal professions offer some of the best pay rates in the labor market to people with a juris doctor degree, but a bachelor's degree has little value there.

Detailed examinations of occupations at which both high school graduates and bachelor's work in large numbers provide further evidence of the complexity of the learn-earn relationship. A bachelor's degree confers only a 10.3 percent wage advantage to secretaries.⁶ But clerical supervisors with a bachelor's degree earn 51.8 percent, or \$20,021 a year, more than similar workers with only a high school diploma.

Conclusion

Educational attainment is a major contributor to higher earnings and to more productive workers and more profitable companies. But the wage value of a college degree varies widely. The benefit is greatest for people who choose the right industry and occupation, and work full-time. Moreover, the value of college is not realized immediately but develops over a lifetime of work. When all relevant factors are considered, the result can be small or very large indeed.

Indiana should continue urging its students to finish high school and then proceed to some level of post-secondary educational attainment. But the message needs to be refined.

■ **TABLE 1: Average Annual Wages by Occupational Group, 2006 to 2008**

Occupational Group	High School Diploma	Bachelor's Degree	Numeric Difference	Percent Difference
Architecture and Engineering	\$48,685	\$71,374	\$22,689	46.6%
Management	42,739	70,792	28,054	65.6
Computer and Math	48,815	65,690	16,875	34.6
Health Professions	36,078	60,528	24,450	67.8
Sales Occupations	35,301	60,313	25,013	70.9
Business and Financial Specialties	41,852	59,063	17,211	41.1
Life, Physical, and Social Sciences	42,417	55,459	13,042	30.7
Installation, Maintenance, and Repair	45,842	53,986	8,144	17.8
Production Occupations	39,006	53,587	14,581	37.4
Protective Services	38,403	50,169	11,766	30.6
Transportation and Material Moving	38,474	49,844	11,370	29.6
Construction	40,906	48,946	8,040	19.7
Art, Design, Entertainment, Sports, and Media	32,759	43,753	10,994	33.6
Office and Administrative Support	32,036	42,191	10,155	31.7
Farm, Forestry, and Fishing	29,674	41,621	11,948	40.3
Legal Occupations	42,842	40,832	-2,010	-4.7
Education	24,721	36,934	12,213	49.4
Social Services	30,754	35,471	4,717	15.3
Groundskeeping and Building Maintenance	27,080	35,380	8,301	30.7
Health Care Support	24,556	29,513	4,957	20.2
Food Preparation and Serving	20,763	28,054	7,290	35.1
Personal Services	16,554	27,385	10,832	65.4

Source: IBRC, using the U.S. Census Bureau's Public-Use Microdata Sample

Today, not enough Hoosier students are studying the fields that lead to the highest wage benefits—which, incidentally, are also the occupations that our key industries most depend on. Meanwhile, too many Hoosier students are engaged in studies that will lead to a degree but not to the promised income.

The goal is not to undermine but to strengthen Indiana's commitment to greater educational attainment. The state's researchers, school counselors, and other workforce and education leaders need to step beyond the undue reliance on aggregate averages and one glib catchphrase. We must develop a message that accords with the complex reality of the labor market.

Notes

1. Rich Karlgaard, "Is College Worth It?" *Forbes.com*, March 27, 2006, www.forbes.com/forbes/2006/0327/039.html.
2. Data are extracted from the 2006–2008 American Community Survey three-year Public-Use Microdata Sample (PUMS) file. Full-time is defined here as working forty-eight or more weeks during the year and thirty-five or more hours per week. This subset provides 33,654 records.
3. American Community Survey, 2006–2008, Table B20004: http://factfinder.census.gov/home/en/acs_pums_2008_3yr.html
4. Jennifer Cheeseman Day and Eric C. Newburger, "The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings," U.S. Census Bureau Special Studies, July 2002, www.census.gov/prod/2002pubs/p23-210.pdf.
5. This is based on a PUMS sample of 715 high school graduates and 192 bachelor's degree holders.
6. This is based on a PUMS sample of 274 high school graduates and 184 bachelor's degree holders.