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Wind Farm Development Growing Across Indiana¹

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Introduction

Indiana is home today to four utility-scale wind farms. There were none in 2006. In November 2010 there were 800 wind turbines in Indiana in Benton, White, and Randolph counties, with a total capacity of 1,339 Megawatts (MW) of energy. One MW (1,000 kilowatts) of wind energy can produce between 2.4 million and 3 million kilowatt-hours (kWh) annually to provide electricity for 240 to 300 households. Around 40% of all new-generation power added to the electric grid in the U.S. in recent years has been from wind farm projects. An additional 2,257 turbines are expected to be built in Indiana over the next few years, producing 4,065 MW of energy.

The installation and operation of new turbine projects can alter a local and the state's economic landscape by creating new jobs, increasing land owners' cash flows, and generating incremental tax revenue.

Wind Farm Background

A wind turbine consists of two primary components — a tower and a rotor. A tower ranges in height from 213 to 230 feet, with the rotor hub at the top. The rotor contains three pitched asymmetric-shaped blades that range in length from 130 to 160 feet. Wind circulates around the blades, causing them to revolve

around the hub. A gearbox converts the blades' speeds of about 18 to 20 rotations per minute to electricity-generating speeds of 1,000 to 1,800 rotations per minute. The energy generated by the turbine is transferred underground through a network of cables to the transmission grid and routed to the power grid.

Capacity is defined as the amount of potential energy a turbine can produce, while production is the amount of actual electricity output. The absence of wind, the shutdown of turbines, and other factors prevent the structures from operating at full capacity.

Wind energy is different from non-renewable energy sources because turbines do not use any limited resources such as oil and coal or emit any pollutants into the atmosphere. A utility-scale wind turbine can replace the emission of 5,000 tons of carbon dioxide into the atmosphere each year. Turbines operate best in conditions of an average wind

¹ This version of the paper omits many in-text cites to the Sources list for ease of reading. The editor believes the data included is the best currently available. If the reader wishes a version with the citations in the text, contact Gerry Harrison, E-mail: <harrisog@purdue.edu>.

In This Issue



- **Wind Farm Development Growing Across Indiana**
- **When Times Get Tough: Food Assistance in Indiana**
- **Indiana Restructures Its State Budget**

speed of at least 13 miles per hour (mph).

A site with 15 mph average winds will produce nearly 54% more electricity than a location with 13 mph winds, a dramatic increase. Most wind turbines begin to create power at wind speeds of 9 mph and produce maximum power at 29 mph. At 56 mph, the turbines are turned off to prevent wind damage to the hub. While turbines may have a capacity of 2 or more MW, the electricity actually produced will be less than that, depending upon the wind.

Wind farm locations are based on the availability of land with limited visible infrastructure and its proximity to the electricity grid in addition to available average wind speed. A less extensive cable network has to be generated from the base of the turbine when it is located near the electricity grid. Land surrounding the individual turbines is not forfeited and can still be used as farmland or pastureland. A large-scale project requires that anywhere from 40 to 150 acres per MW be available. Less than 5% of the actual land area is taken up by the structure.

Proposed Project Costs

A proposed 100-turbine wind farm project to be constructed in 2011 in Indiana with each structure producing 2,000 KW (2 MW) would cost an estimated \$400 million, or \$2,000 per KW. A total of \$302 million would be used for materials cost, and \$98 million would be allocated towards construction labor. Annual operating costs for a 100-turbine farm would be \$4 million, or \$20 per KW. An estimated \$2.1 million would be spent annually to purchase replacement parts and equipment and stock spare parts inventory. It costs \$.056 per kWh to produce power using coal fired

technology in certain regions of the U.S., while turbine technology in these same areas is estimated at \$.068 kWh.

Economic Benefits

Economic benefits are derived from construction and operating activities, but also from fiscal policies (taxes) and royalty payments. In Indiana, turbines are subject to local property tax. Communities have the option of offering renewable energy companies abatements that reduce the taxable assessed value of business property. Counties may offer businesses a 10-year abatement of assessed value, with 100% of assessed value abated in the first year, 90% in the second year, and so forth.

Abatements have a particularly large effect on the taxable assessed value of personal property. This is because the taxable value of personal property depreciates rapidly. The large abatements in the first several years reduce taxable assessed value in the years when it is greatest. Taxable assessed value will have depreciated to 30% of its purchase value once the abatements expire at the end of 10 years.

The right to secure land for wind farms is primarily done through a leasing agreement. The owner of the wind farms may not own the land and pays a royalty for each turbine to the property owner. These payments are based upon land characteristics, project magnitude, and other characteristics. The royalty payments for recent projects have recently ranged as high as \$10,000 per turbine. The average compensation in the late 1990's was approximately \$2,000 per turbine.

Direct economic effects are the activities associated with the construction industry for the

installation of the turbines and the electric power generation, transmission, and distribution industry for the operation of them. This impact includes all jobs created within the two industries, employee wages, and economic output.

Indirect effects refer to the economic benefits derived by suppliers for their transactions with the primary industry. This includes manufacturers of the turbines, truckers, and their vendors.

The induced economic effects are the impacts associated with the purchases of households employed in the primary or secondary industries. The purchase of food, entertainment, automobile insurance, medical services, and other goods/services by employees associated directly or indirectly within the construction industry or electric power generation, transmission, and distribution segment make up the induced impacts. The economic activity associated with the royalty spending is spread relatively evenly over sectors: food services/drinking places, real estate establishments, and physicians, dentists, and other health practitioners.

The economic projections are generated using a system of multipliers and user-defined parameters. The JEDI Wind Model forecasts that an estimated 111 jobs would be created for a 1- to 2-year construction phase of the 100-turbine (200 MW capacity) project. Ninety-five of the positions would be labor-oriented, and 16 would be in engineering and professional services. The aggregate wages of these individuals would be approximately \$6.1 million, and they would contribute \$7.2 million in economic output. There would be 575 jobs attributed to the indirect impacts during the construction phase. The 575

Figure 1. Indiana Job Creations Comparison of a 50-Turbine (100 MW), 100-Turbine (200 MW), and 200-Turbine (400 MW) Project During Construction Phase (1 to 2 Years)

	50 Turbines	100 Turbines	200 Turbines
Direct Effect	68	111	206
Indirect Effect	288	575	1150
Induced Effect	81	160	319
Total Effect	437	846	1675

Figure 2. Indiana Job Creations Comparison of a 50-Turbine (100 MW), 100-Turbine (200 MW), and 200-Turbine (400 MW) Project During On-Going Operations Phase (Annual)

	50 Turbines	100 Turbines	200 Turbines
Direct Effect	6	10	18
Indirect Effect	7	14	28
Induced Effect	9	18	35
Total Effect	22	42	81

Figure 3. Economic Impact Summary of a 100-Turbine (200 MW) Project in Indiana During Construction Phase (1 to 2 Years)

	Jobs	Earnings (Millions)	Output (Millions)
Direct Effect	111	\$6.090	\$7.242
Indirect Effect	575	\$28.365	\$81.811
Induced Effect	160	\$6.167	\$19.383
Total Effect	846	\$40.622	\$108.436

employees would earn \$28.4 million in wages and increase state gross domestic product by \$81.8 million. There would be 160 jobs created due to the spending of the wages earned by employees hired for the turbine project during the construction period. These workers would earn collective wages of \$6.2 million and create \$19.4 million of economic output. The total impacts during the 1- to 2-year construction phase would be the creation of 846 jobs with earnings estimated at \$40.6 million. The output generated

during this period would be \$108.4 million.

There would be 10 jobs created due to direct impacts of the operations phase on an on-going annual basis with the 100-turbine (200 MW capacity) project. The new hires would work for the wind power company and be employed as field technicians, administrative assistants, and management personnel. They would earn an estimated \$580,000 in combined annual wages. Fourteen new employees would be hired earning a collective \$620,000 in pay and

contributing \$5.2 million in economic output on a yearly basis due to the indirect effects. The spending of the wages earned by the operations workers would create 18 jobs on a continuing annual basis paying \$700,000 in wages and creating \$7.9 million in economic output. In summary, there would be 42 jobs created on an annual basis during the operations phase, with workers receiving \$1.9 million in wages. Their collective economic output would be valued at \$7.9 million each year.

The additional jobs would create a larger tax base for the state. Indiana would earn \$1.4 million in incremental sales tax revenue and an additional \$1.2 million in individual income tax revenue, totaling \$2.6 million from the construction period. Once operations begin, the 42 workers will contribute approximately \$69,698 in annual sales tax revenue, with their individual income tax estimated at \$58,760 in 2011 dollars. The total attributed to operations on an annual basis is \$128,457.

Conclusion

The development of a wind farm could stimulate the state's economy by creating new jobs and increasing economic output. The technology is the world's fastest growing energy source and does not deplete non-renewable resources. Wind energy could power as much as 20% of the United States by 2030.

Development of local wind farms creates local economic impacts. Impacts associated with the installation/development phase of farm development infuse income into the economy over a 1-2 year period. The long-term employment of field technicians to oversee, manage, and repair a wind farm during its useful life of 25 to 35 years creates a longer term impact. Payments to land owners in exchange for leasing

rights also generate a stream of local income. Additionally, turbines and other capital equipment would be subject to property taxes, generating another local income stream. Communities evaluating potential for local establishment of wind farms should recognize that the investment could have positive economic benefits as they go through the process of determining how such an investment would fit into the local economy.

Figure 4. Economic Impact Summary of a 100-Turbine (200 MW) Project in Indiana During On-Going Operations Phase (Annual)

	Jobs	Earnings (Millions)	Output (Millions)
Direct Effect	10	\$0.576	\$0.576
Indirect Effect	14	\$0.620	\$5.249
Induced Effect	18	\$0.676	\$2.124
Total Effect	42	\$1.871	\$7.949

Figure 5. Incremental State Tax Revenue with a 100-Turbine (200 MW) Project in Indiana (Millions of Dollars) During Construction Period:

(1 to 2 Years)

(Annual)

Sales Tax	Income Tax
\$1.400	\$1.200

Sales Tax	Income Tax
\$0.070	\$0.059

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When Times Get Tough: Food Assistance in Indiana

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Since the economic crisis began in September 2008, the negative consequences have been felt throughout Indiana: stores out of business, houses foreclosed, jobs lost. Poverty became a reality for many families. At times, poverty means that families even lack the resources to provide enough to eat for everyone.

Figure 1 shows the percentage of the population with incomes below the poverty line for the United States and for Indiana. For most of the last decade, poverty was less severe in Indiana than in the nation as a whole. However, Indiana poverty increased quite fast, and, by 2008 poverty in Indiana reached the national average of about 14 percent.¹

Tightly linked to the spread of poverty is the increased prevalence of food insecurity among households, or being uncertain about having enough resources for sufficient food for all household members. USDA estimated that almost 15 percent

of the US population did not have food security in 2009, compared to 10.5 percent in the year 2000. The extent of food insecurity in Indiana in 2009 is estimated to be similar to the national average (http://www.ers.usda.gov/Briefing/FoodSecurity/stats_graphs.htm).

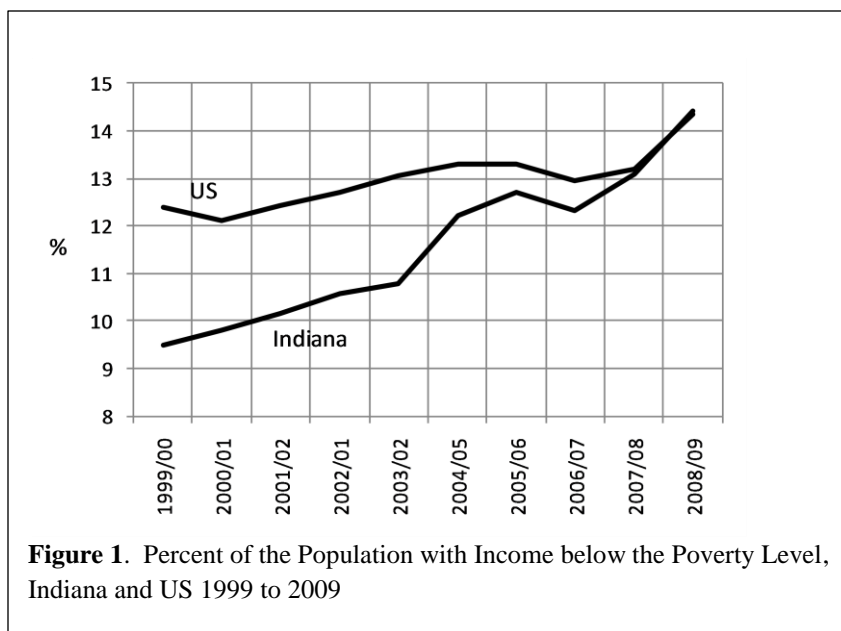


Figure 1. Percent of the Population with Income below the Poverty Level, Indiana and US 1999 to 2009

¹ Unless otherwise stated, the data for this report was taken from the 2000 US Census and the American Community Surveys, 2001 to 2009.

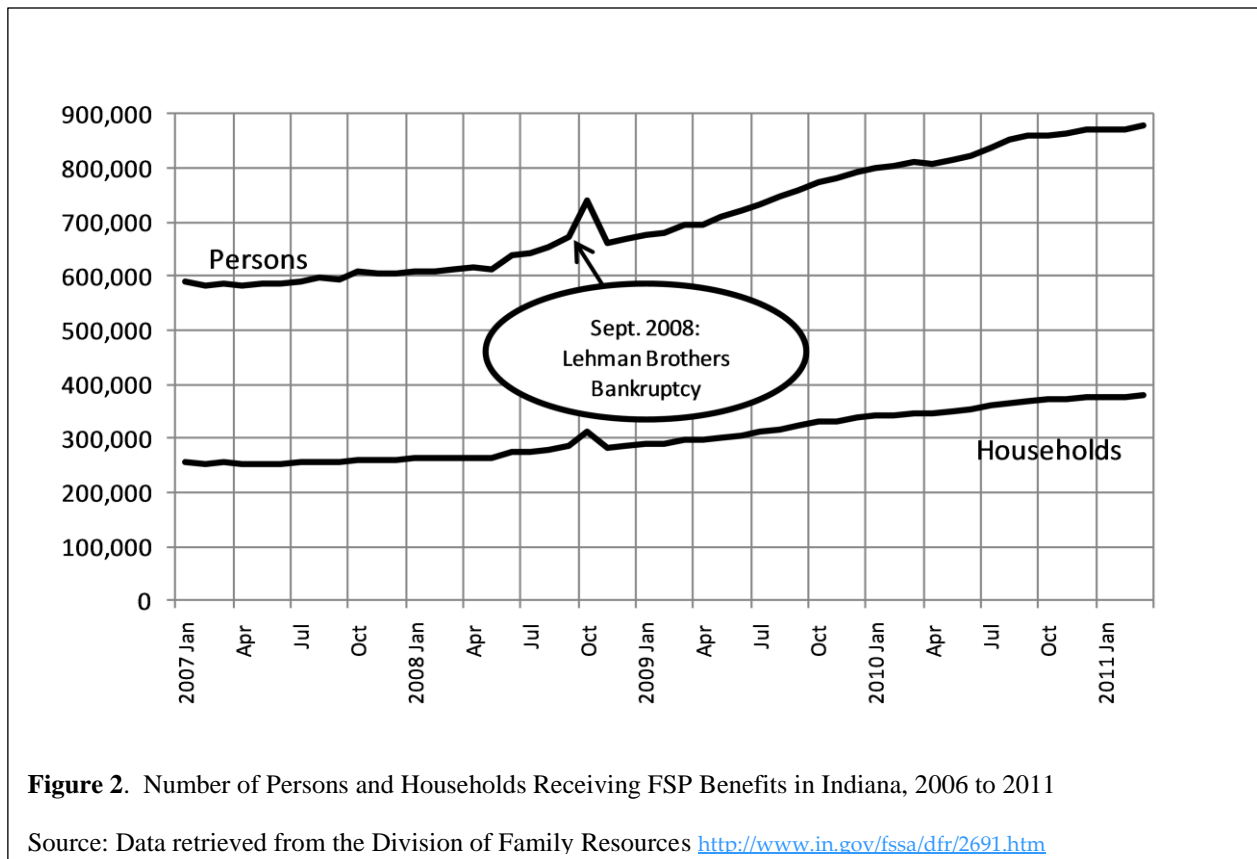
To relieve such hardships, the US government – under the auspices of USDA – provides a number of food assistance programs. Examples are the National School Lunch Program and the Supplemental Nutrition

level, it is administered at the state level.³

In the years leading up to the crisis, the number of households receiving FSP benefits in Indiana had been rising very slowly. A

households and 878,000 persons in March 2011 (Figure 2).

Just as the number of households receiving food stamp benefits increased as the financial and economic crisis



Program for Women, Infants and Children (WIC). The biggest food assistance program is the Supplemental Nutrition Assistance Program (SNAP), better known under its former name, the Food Stamp Program (FSP).² FSP provides financial aid to low income households to enable them to obtain adequate amounts of quality food. Although FSP is a nationwide entitlement program funded at the federal

distinct increase occurred in the summer of 2008, when gasoline prices exceeded \$4.00 per gallon and the first signs of the financial crisis became visible. A few months later, the financial crisis unfolded, increasing the number of households receiving FSP benefits. The demand peaked in October 2008 and increased gradually thereafter, eventually reaching about 381,000

unfolded, so did the total benefits issued (Figure 3, next page). The peak of \$74 million in October 2008 coincided with the peak in FSP recipients. The sharp and sudden increase in April 2009 was, however, due to the American Recovery and Reinvestment Act (ARRA) that went into effect in April of 2009, which increased the benefits that households received.

² In this report we will use the name “FSP” rather than “SNAP” because some of the data refer to the time prior to the name change and because the Indiana state government has not yet consistently adopted the new name.

³ The federal government pays for FSP benefits in their entirety and for 50 percent of the administrative costs. In Indiana, FSP is administered by the Division of Family Resources: <http://www.in.gov/fssa/dfr/2691.htm>

While there is a close relationship between poverty and reliance on food assistance, not every household with an income below the poverty line chooses to use, or is eligible for, FSP benefits. Poverty status is only based on income. In contrast, food assistance eligibility is

based on income and assets. As a result, some low-income households are ineligible for assistance. However, there are also some eligible households that do not receive food assistance. In many cases, this mismatch is due to barriers that

food assistance in 2005/06. In Tippecanoe County, home of Purdue University, the gap is also quite high. In both counties the reason for the mismatch between the figures for poverty and food stamp recipients is that the population includes a large

with older persons are far below those for households without elderly persons (Figure 4).

However, there is also some concern that a large portion of the elderly households do not apply for FSP benefits although

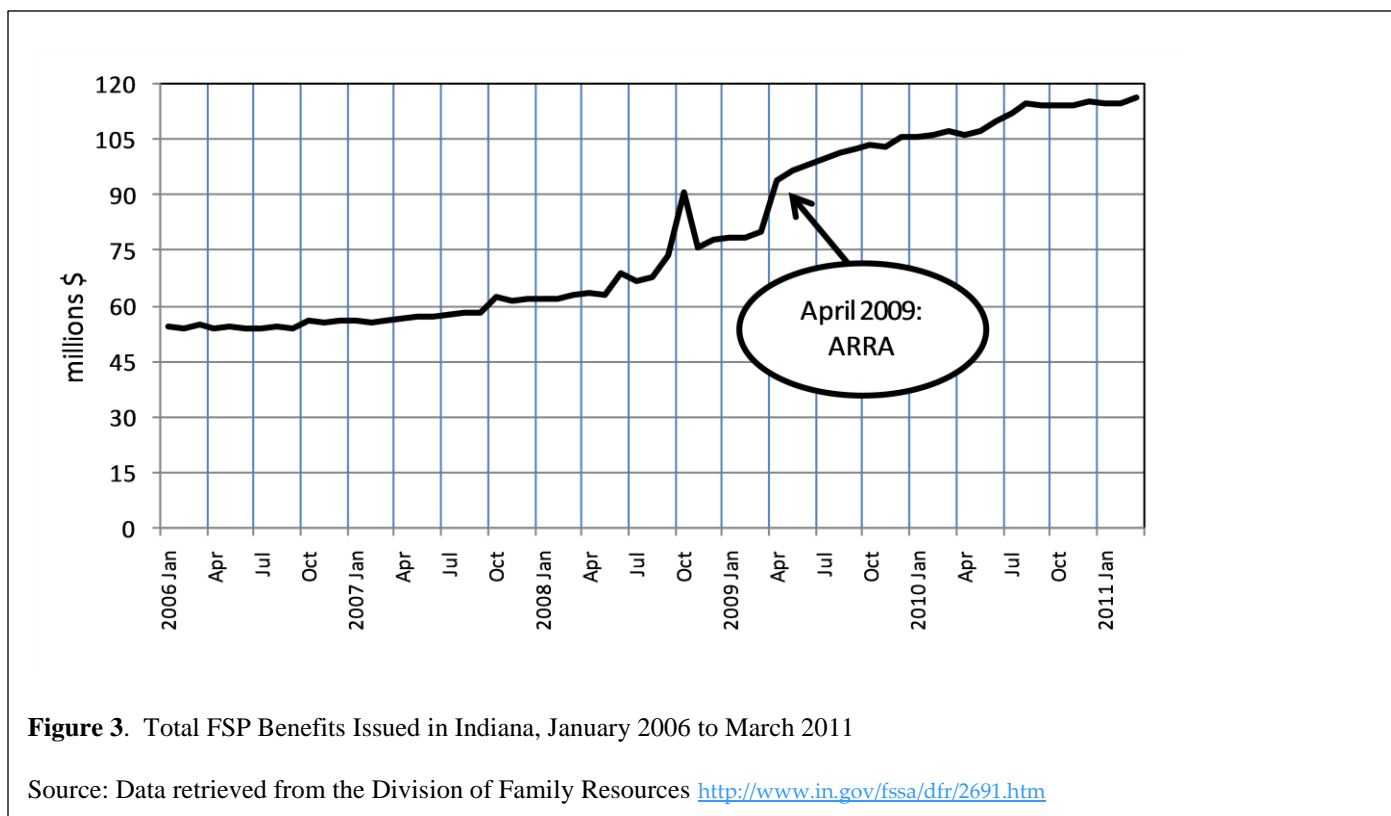


Figure 3. Total FSP Benefits Issued in Indiana, January 2006 to March 2011

Source: Data retrieved from the Division of Family Resources <http://www.in.gov/fssa/dfr/2691.htm>

keep households from applying for assistance although they meet the eligibility criteria. These barriers are of two types: (1) access barriers such as incomplete information, and (2) psychological barriers resulting from a stigmatization of welfare participation.

In 2008/09, only 45 percent of the Indiana households with incomes below the poverty level received FSP benefits, up from 41 percent in 2005/06. The most extreme gap between poverty and food assistance is found in Monroe County, home of Indiana University. In Monroe County, more than a quarter of the households were classified as below the poverty line; however, fewer than 4 percent received

share of students who tend to have little income and show up in the poverty statistics. In order to avoid student biases, the discussion below focuses on households with at least one person 60 years or older and on households with children under 18.

Households with Elderly Persons

Poverty among households with older people is less common than among the population as a whole. In 2008/09, poverty among the elderly in Indiana amounted to less than 10 percent compared to about 14 percent for all Indiana residents. Thus, it is not surprising that FSP participation rates for households

they are eligible. The elderly may be a vulnerable group for whom access barriers such as information deficits and welfare stigma are insurmountable challenges. Elderly households are also eligible for other food assistance programs, in particular the Senior Farmers' Market Nutrition Program (SFMNP) and the Elderly Nutrition Program. Because of these additional senior-targeted food assistance programs, low-income elderly households may not be as heavily dependent on FSP as households without older members.

As the economic situation in Indiana deteriorated at the end of the last decade, the number of elderly households that received

FSP benefits grew substantially from about 40,000 in 2005/06 to about 53,000 in 2008/09. Part of that increase is due to the fast growth of the elderly population. However, a good deal of the increase is the result of increasing FSP participation rates: between 2005/06 and 2008/09, FSP participation rates grew from about 5.5 percent to 6.8 percent for elderly households.

Inside Indiana, there is considerable variation in FSP participation rates among the elderly. Table 1 shows the 2005/06 and 2008/09 FSP participation rates of elderly households for counties and county groups,⁴ ranked by the 2008/09 rates.

In 2008/09, three counties – Clark County, located at the Ohio River; Morgan County, just south of Indianapolis; and Marion County – had reached very high FSP participation rates of over 10 percent in 2008/09, far above the Indiana average of 6.8 percent. The elderly in Lake, La Porte, Madison, and Vigo counties also rely heavily on food assistance. The three (predominantly rural) county groups with food stamp participation rates above the state average are located in the south and the southeast.

Between 2005/06 and 2008/09, 14 of the 25 counties and nine of the 23 county groups showed an increase in FSP participation rates. Even in some counties with a traditionally low demand for food assistance, food stamp demand has increased substantially. For example, in 2005/06 Hamilton, Monroe, and Floyd counties were the three counties with the lowest FSP participation among elderly households. By 2008/09, the FSP participation rate among

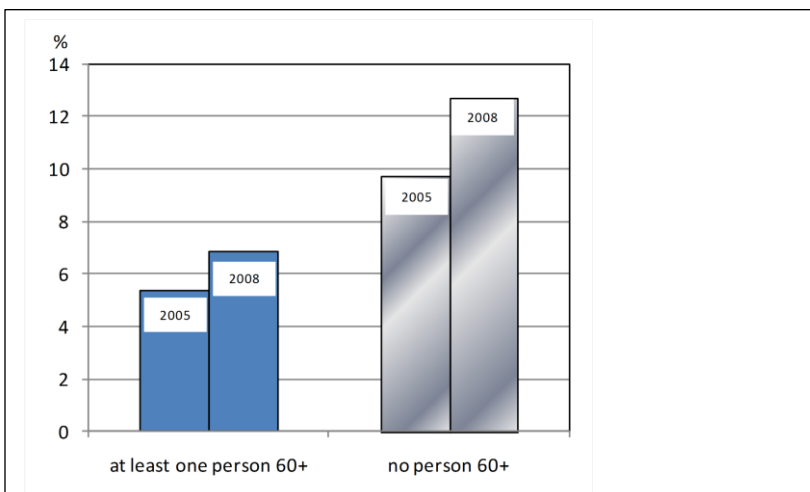


Figure 4. FSP Participation Rates by Type of Household (with/without persons 60 or over),

Indiana 2005/06 and 2008/09

elderly households had more than doubled in Hamilton County and more than tripled in Floyd and Monroe counties.

Of the places that experienced a decline in FSP participation rates, many already had low rates in 2005/06. However, there are five counties and six county groups – indicated in Table 1 – that had a declining FSP participation rate although poverty had increased between 2005/06 and 2008/09. This suggests that these are places where barriers may keep low income households with elderly persons from applying for food assistance. The elderly do not always demand more food assistance when poverty becomes more widespread. Quite the opposite seems to be the case. Many places with high poverty increases have only small increases or even declines in food stamp participation.

Households with Children

Households with children⁵ deserve special attention because poverty prevalence is quite high for this group. In Indiana in 2008/09, almost 20 percent of children under 18 lived in households with incomes below the poverty line. Not surprisingly, food stamp participation among households with children is far above the state average. Children from households enrolled in the FSP automatically qualify for the National School Lunch Program. As a result, households with children may have an added incentive to apply for food stamp benefits. Moreover, access barriers and stigma may be more easily overcome when an adequate diet for children is at risk.

⁴ For small counties, the US Census Bureau only releases estimates for county groups.

⁵ Children under 18.

Table 1. Ranking of Counties/County Groups by 2008/09 FSP Participation Rates [%] Among Elderly Households

Counties	Rank	FSP Participation Rate	
		2005/06	2008/09
Clark	1	3.9	11.4
Morgan	2	2.8	10.5
Marion	3	7.7	10.1
Lake	4	8.6	9.3
Vigo	5	7.5	8.9
* Madison	6	8.6	8.3
St. Joseph	7	4.1	7.7
* La Porte	8	8.4	7.5
Grant	9	4.3	7.4
Elkhart	10	4.0	7.2
Allen	11	5.0	7.1
Floyd	12	2.1	6.8
* Delaware	13	7.8	6.8
Vanderburgh	14	5.0	6.6
Tippecanoe	15	4.3	6.5
Monroe	16	1.8	6.0
Wayne	17	8.2	5.0
Johnson	18	2.7	4.9
Howard	19	3.8	4.0
Bartholomew	20	3.5	3.4
Hancock	21	6.9	2.7
* Hendricks	22	5.5	2.5
Hamilton	23	1.0	2.0
Porter	24	2.8	1.5
* Kosciusko	25	3.0	1.3
<i>County Groups</i>			
Lawrence, Orange, Crawford, Washington	1	4.0	11.9
Clark, Scott	2	4.5	11.1
Decatur, Rush, Fayette, Union, Franklin, Jennings	3	5.6	10.5
Vermillion, Vigo, Clay	4	6.7	8.5
* Newton, Jasper, Pulaski, Starke, Fulton	5	8.4	7.6
* Randolph, Wayne, Henry	6	7.9	7.3
Sullivan, Knox, Daviess, Martin	7	5.6	7.3
Blackford, Grant, Jay	8	4.1	6.9
Whitley, Huntington, Wells, Adams	9	3.3	6.4
Harrison, Floyd	10	2.7	6.1
Tippecanoe, Clinton	11	4.6	5.9
Ripley, Dearborn, Ohio, Switzerland, Jefferson	12	3.8	5.5
Parke, Putnam, Owen, Greene	13	3.1	5.4
Benton, Warren, Fountain, White, Carroll	14	4.5	4.9
Howard, Tipton	15	3.9	4.5
Gibson, Pike, Dubois, Spencer Perry	16	3.0	4.2
Hancock and Shelby	17	5.3	3.7
* LaGrange, Steuben, Noble, DeKalb	18	4.2	3.7
* Cass, Miami, Wabash	19	5.5	3.3
* Posey, Warrick, rural part of Vanderburgh	20	3.3	3.2
Bartholomew, Brown, Jackson	21	6.5	2.6
* Marshall, Kosciusko	22	2.3	1.8
Boone, rural part of Hamilton	23	2.6	1.8

* FSP participation rate declined despite increasing poverty

Table 2. Ranking of Counties/County Groups by 2009 FSP Participation Rates [%] among Households with Children under 18

<i>Counties</i>	Rank	All Households with Kids		Single Mom Households	
		2005/06	2008/09	2005/06	2008/09
Wayne	1	16.4	31.9	41.1	56.0
Delaware	2	23.3	30.6	53.7	56.9
Elkhart	3	10.4	26.5	28.3	54.2
Lake	4	20.6	26.0	44.1	47.7
Marion	5	20.3	25.3	38.3	43.3
St. Joseph	6	14.8	24.7	35.7	56.0
Howard	7	29.1	24.5	51.4	62.2
Grant	8	16.2	23.8	23.3	42.1
Vigo	9	21.8	23.5	45.0	43.2
La Porte	10	17.1	21.4	35.4	33.8
Allen	11	15.9	20.2	44.1	47.4
Tippecanoe	12	17.0	19.6	40.8	47.6
* Madison	13	19.7	17.5	34.7	45.2
Kosciusko	14	9.6	16.5	28.5	29.8
Monroe	15	7.5	16.5	15.4	34.3
Morgan	16	12.0	15.1	41.7	42.7
Floyd	17	13.7	14.4	46.2	26.2
Vanderburgh	18	17.3	13.6	40.1	35.2
Clark	19	11.3	13.3	21.0	31.5
Hancock	20	3.5	11.8	17.4	26.9
Bartholomew	21	5.7	11.7	8.1	35.5
Porter	22	9.7	11.2	19.0	29.5
* Johnson	23	11.8	10.9	24.4	36.8
Hamilton	24	2.0	4.6	4.9	18.7
Hendricks	25	7.4	2.7	30.4	9.4
<i>County Groups</i>					
Randolph, Wayne, Henry	1	13.96	27.80	32.3	50.1
Decatur, Rush, Fayette, Union, Franklin, Jennings	2	11.31	25.42	16.4	55.4
Blackford, Grant, Jay	3	18.96	24.47	35.2	47.0
Lawrence, Orange, Crawford, Washington	4	17.32	24.25	37.5	56.4
Vermillion, Vigo, Clay	5	20.94	23.87	43.9	44.4
Cass, Miami, Wabash	6	15.08	23.16	32.3	49.5
Newton, Jasper, Pulaski, Starke, Fulton	7	10.79	23.14	33.8	51.0
Parke, Putnam, Owen, Greene	8	17.31	22.59	42.2	34.9
Sullivan, Knox, Daviess, Martin	9	16.49	22.51	43.4	48.6
Howard, Tipton	10	26.56	22.12	51.1	57.6
Tippecanoe, Clinton	11	17.08	19.59	41.4	46.9
Marshall, Kosciusko	12	8.89	19.42	29.7	30.3
LaGrange, Steuben, Noble, DeKalb	13	12.25	17.77	35.4	42.6
Clark, Scott	14	10.10	16.88	19.0	36.7
Hancock and Shelby	15	5.65	16.79	16.6	31.4
Harrison, Floyd	16	13.84	16.39	46.5	25.1
Benton, Warren, Fountain, White, Carroll	17	14.61	16.00	29.0	41.8
Ripley, Dearborn, Ohio, Switzerland, Jefferson	18	12.05	15.99	27.4	34.2
Bartholomew, Brown, Jackson	19	6.23	13.74	10.1	36.7
Whitley, Huntington, Wells, Adams	20	9.39	12.87	17.6	27.7
Posey, Warrick, rural part of Vanderburgh	21	10.24	10.50	27.7	38.6
Gibson, Pike, Dubois, Spencer Perry	22	6.53	10.45	32.0	27.6
Boone, rural part of Hamilton	23	4.58	7.71	8.9	34.0

* FSP participation rate declined despite increasing poverty

Statewide, the number of food stamp benefits-receiving households with children rose by more than 33 percent between 2005/06 to 2008/09, from about 121,000 to 161,000. Participation rates increased from 14.9 percent to 19.4 percent.

A particularly needy sub-group is made up of female-headed households with children (no husband present). For this group of single-mom households, the reliance on food assistance has risen less than for all households with children. However, at 35 percent the percentage of single-mom households receiving food stamp benefits was already quite high in 2005/06 and increased even further to 42 percent three years later.

Within the state of Indiana, there is tremendous variation in food stamp assistance for households with children. Table 2 shows the 2005/06 and 2008/09 FSP participation rates of households with children for counties and county groups, ranked by the 2008/09 rates. At the low end are Hendricks County and Hamilton County, with FSP participation rates of less than 5 percent in 2008/09. At the upper end of the range are two eastern Indiana counties, Delaware County and Wayne County, where over 30 percent of households with children receive food stamp benefits. In total, five counties and five county groups have FSP participation rates exceeding 50 percent.

For single-mom households, the range is even wider. The lowest 2008/09 FSP participation rate among single-mom households is in Hendricks County, slightly under 10 percent. The highest rate is observed in Howard County where over 60 percent of single-mom households received food stamp benefits in 2008/09.

Between 2005/06 and 2008/09, very few places experienced a decline in FSP participation rates

among households with children. The vast majority of counties and county groups had increasing food stamp participation rates and increasing poverty. This suggests that – for the most part – the demand for food assistance among households with children responds to changes in poverty status.

Conclusions

Since the onset of the financial and economic crisis in 2008, the demand for food assistance through the Food Stamp Program has increased substantially. As a result, an increasing flow of money was funneled to needy people and places in Indiana. The American Recovery and Relief Act further increased the total benefits issued since April 2009, and reached a high of over 116 million dollars in March 2011.

Participation in the food stamp program is low for households with persons over 60. It has risen since the start of the crisis, but not as much as one would expect based on the increasing poverty among the elderly households. In many places food stamp participation decreased despite growing poverty among the elderly.

For households with children, a different picture emerges. Their participation in the food stamp program was above the state average before the crisis and increased to 20 percent in the first year of the crisis. Within this group, single-mom households are a particularly needy target group. On average, almost a third relies on food stamp assistance, in many places reaching more than 50 percent.

Because the Food Stamp Program is a federal program, some aspects of the program are not under the control of the states. For example, the amount of monthly benefits an authorized household receives is calculated

using federal guidelines. Nevertheless, states are responsible for the administration of the program. Thus, Indiana influences how well the program reaches needy people.

USDA encourages states to work towards increasing program participation among eligible households. In a 2008 study, Indiana was identified as a state in which participation is lower than what could be expected based on the characteristics of its residents.⁶ The study suggests that elderly households in Indiana may be underserved by the program. Particular attention should be devoted to places where FSP participation among the elderly has declined since the onset of the economic crisis while poverty increased.

⁶ Cody, S., A. Schirm, E. Stuart, L. Castner, and A. Zaslavsky (2008, March). Sources of Variation in State-Level Food Stamp Participation Rates. *Food Assistance and Nutrition Research Report* (37).

Indiana Restructures Its State Budget

Larry DeBoer, Professor

The Indiana General Assembly passed a state budget for the 2012-13 biennium on April 29, 2011, on time, with no special session required. The apparent ease with which the budget passed belies its importance, however. This budget restructures Indiana state government.

The April Revenue Forecast

In mid-April, 2011 the long session of the General Assembly was nearing its climax. As usual during budget years, a revised revenue forecast was to be announced on April 15, in time for the final negotiations about

revisions for the next two years, so many thought the new forecast would increase expected revenues by \$300 to \$400 million.

Instead, the revenue forecast jumped \$762 million. It was a ray of sunshine after years of budget gloom. It was the first time the April forecast had shown an upward revision since April 2005.

The reason for the big increase in expected revenues was a more optimistic forecast for the Indiana economy. The state hires the IHS Global Insight company to do its economic forecasting. In April, Global

values rising an extra 7% and U.S. gross domestic product growing about 1% more than in December's projection.

These improved economic projections entered the state's revenue formulas and increased revenue forecasts. More Indiana income growth means more consumer spending, which raises sales tax revenue. A lower unemployment rate should inspire more consumer confidence, which would increase sales tax revenue some more. More income growth means more income tax revenue. Higher GDP growth and a bigger rise in the stock market should

Table 1

Actual and Forecast Revenues, FY2011-2013

	Actual Revenues		Forecasts			Difference, April '11	
	Actual FY 2011	Actual FY 2010	Budget May '09	Revision Dec. '10	Budget April '11	From May '09	From Dec. '10
Year to Date (through May)	\$11,659	\$10,683	\$12,009	\$11,422	\$11,532	(\$477)	\$110
Actual YTD, Percent Change		9.1%	-2.9%	2.1%	1.1%		
Total, 12 months		12,187	13,609	12,951	13,071	(\$538)	\$120
Pct. Chng. From FY2010			11.7%	6.3%	7.3%		
Forecast, 2012				13,402	13,741		\$340
Percent change from FY2011				3.5%	5.1%		
Forecast, 2013				13,946	14,249		\$304
Percent change from FY2012				4.1%	3.7%		

Source: Indiana State Budget Agency, End-of-Month Revenue Reports, July 2010 - present; State Revenue Forecast., April 15, 2011.

the state's budget for the 2012 and 2013 fiscal years. Everyone expected an upward revision. Revenues were running \$100 million ahead of the revenue forecast made in December for the first nine months of fiscal 2011. That was money in the bank, literally. It was reasonable to expect similar upward

Insight projected that Indiana income will grow 12.9% from fiscal year 2010 to fiscal year 2013. Back in December, it had projected growth of only 10.8%. The company predicted that the Indiana unemployment rate will drop to 8.2% by 2013, instead of December's prediction of 9.2%. They also had stock market

increase income taxes on capital gains.

Table 1 shows the numbers. Through May—11 months of the 2011 fiscal year—Indiana has collected \$11,659 million. This is \$110 million or 1.1% above what was projected in December 2010. Revenues are 9.1%

higher than they were in the first ten months of fiscal 2010. In an expanding economy growth is

budget predicted that revenues would be \$12,009 million through May. We've collected \$477

actually was cut from 4.1% to 3.7% by the April revision, but since it was slightly slower

Table 2

Indiana State Budget Summary, FY 2010-2013

	Actual 2010	Budget 2011	Revenue Forecast Final Budget		Avg. Ann. Change 2011-13
			2012	2013	
Start of Year Balances	1,420	831	797	841	
Revenues	12,317	13,168	13,836	14,402	4.6%
Sales Tax	5,915	6,214	6,518	6,796	4.6%
Individual Income Tax	3,876	4,390	4,774	5,051	7.3%
Corporate Income Tax	592	673	687	692	1.4%
Gaming	680	681	700	667	-1.0%
Appropriations	14,383	14,450	13,849	14,241	-0.7%
K-12 Education	7,450	7,584	7,285	7,352	-1.5%
Higher Education	1,725	1,755	1,696	1,702	-1.5%
Medicaid	1,848	1,874	1,858	2,024	3.9%
Current Year Surplus/Deficit	(2,066)	(1,282)	(13)	161	
ARRA Total	683	501	-	-	
Total Reversions/Transfers	794	747	57	57	
Balances Used	589	34	(43)	(218)	
End of Year Balances	831	797	841	1,059	
Total Balances % of Revenue	6.7%	6.1%	6.1%	7.3%	
Appropriations less Reversions	13,754	13,704	13,819	14,211	
Percent Change	-2.3%	-0.4%	0.8%	2.8%	

Sources: Indiana State Budget Agency, State Revenue Forecast, April 15, 2011;
Legislative Services Agency, Fiscal Impact Statement, HB1001, May 1, 2011;
House Ways and Means Republican Staff, Budget Summary, as Passed Budget, May 2, 2011.

usually around 4% per year. A 9.1% growth rate is revenue acceleration.

But we're growing out of a deep hole. That's evident from a comparison of the year-to-date revenue and what we expected to have by now when the 2011 budget was written. The last forecast before the legislature passed the 2011 fiscal year

million less than that. Revenues are up, but not nearly enough to fund what we'd planned to spend back in 2009.

The April 2011 forecast shows 5.1% growth for fiscal 2012, up from 3.5% in the December 2010 forecast. That's mainly the result of the improved economic outlook for Indiana's economy. The percent change for 2013

growth from a bigger 2012 number, total collections were up. The total increase of \$762 million is the sum of the forecast increases for 2011, 2012 and 2013. That's shown in the table, off by a couple million due to rounding.

Table 2 shows some additional detail about revenues. The revenue totals in Table 2 include

a small amount of additional revenue that is not part of the revenue forecast. Sales tax revenue is the largest share of the state's general fund total. It is expected to grow 4.6% on average over the next two years, as the economy is expected to expand.

Individual income tax revenue is next largest, and shows a larger 7.3% growth rate. This is due to expectations of faster economic growth, but also reflects a quirk in Indiana's method for distributing local income tax revenue. Local income tax revenue is collected by the state in the same way as state income tax revenue, but is distributed to local governments based on the previous year's collections. State revenues are the residual after local distributions. Collections are growing with the expanding economy, so local distributions lag, and the state's residual shows faster growth.

Revenues are dominated by sales and income taxes. Sales and individual income taxes sum to 82% of total general fund revenues. The remainder includes corporate income taxes, gaming taxes, and (not shown) tobacco, alcoholic beverage, inheritance, insurance, and several smaller revenue sources.

Corporate income taxes are expected to increase modestly over the next two years. The slower growth rate is due in part to the reduction in the corporate income tax rate passed by the General Assembly. It will phase down from 8.5% to 6.5% over the next four years. Gaming taxes are expected to decline in 2013 with the opening of a casino in Cincinnati. It will compete with the three Indiana riverboats that serve that market.

The 2012-13 Biennium Budget

What will we do with this money? On the day of the April forecast Governor Daniels recommended an added \$150 million for K-12 education over the two-year budget, partly to fund grants for all-day kindergarten. He also warned that the new revenues were "no reason to abandon caution."

"Cautious" is a good description of the budget for the coming biennium. An outline of the budget is shown in Table 2. The improved revenue picture in 2011 will allow us to end fiscal 2011 (and start the new biennium) with balances of about \$797 million, which is 6.1% of the budget. That's better than the rock-bottom minimum near 5% in the governor's original budget proposal.

A budget is a set of appropriations passed by the General Assembly. Appropriations are the legal authorizations to spend on the various functions of the state government. Appropriations are down in 2012-13, by an average of 0.7% per year. In fact, total appropriations for 2013 are lower than they were in 2009. The recession cut about five years off state budget growth.

Appropriations are dominated by education and Medicaid. In 2013 52% of the state's general fund will be devoted to K-12 education. The state pays for almost all local school operating costs, including teacher pay. Add higher education, and 64% of the budget goes to education. Education plus Medicaid makes up 78% of the budget. The remainder includes general government operations, public safety, health and social services and other functions not shown in Table 2.

Appropriations for Medicaid are rising. Medicaid is the joint state and Federal program of health care for low income people. It is an entitlement, so the state must pay its share of the costs of medical care for eligible people. Health care costs are rising, and the number of recipients is trending upward as well. This does not take account of the Federal health care reforms, which begin in 2014.

Other appropriations are falling. The cuts in appropriations are because revenues fell so far short of the projections used to set appropriations for the 2010-11 budget. Because of that shortfall spending had to be cut below appropriations. When the state spends less than its legal authorization, the money "reverts" to general fund balances. So spending cuts are called "reversions."

Appropriations less reversions are a measure of spending. The 2012 and 2013 appropriations less reversions show small increases over 2011, of 0.8% and 2.8%. In effect, the new budget incorporates those spending cuts into the plan for the next biennium.

This is also indicated by the current year surplus/deficit. The budgets for 2010 and 2011 were expected to be balanced when they were passed. Revenues as forecast were expected to cover appropriations. Instead, revenues fell short by \$3.3 billion in total. Revenues are forecast to grow in the coming biennium, but growth from that reduced level still leaves them short of what was needed to fund planned appropriations for 2010 and 2011. So appropriations have been cut.

The current year surplus/deficit shows near balance in 2012, and a surplus for 2013. This is an indication of the caution that the governor recommended. The budget does not increase

appropriations to match revenue growth. Balances will rise instead. The state is expected to have 7.3% of the budget in the bank by the end of the biennium in mid-2013.

How did Indiana cover those big deficits in 2010 and 2011? Partly with Federal stimulus aid. The American Recovery and Reinvestment Act (ARRA) was the Federal stimulus aid originally passed in February 2009. As part of that program, the state budget received about \$1.2 billion in 2010-11. A large part of this revenue was an increase in the Federal government's share of Medicaid spending. This added money did not increase Medicaid spending, which is defined by the entitlement rules. It simply increased the Federal revenue available to support this spending, which freed up some state revenue for other uses. About 35% of the two-year deficit was covered by Federal stimulus dollars.

Reversions and transfers summed to \$1.5 billion over the biennium. This figure is mostly reversions, which are the spending cuts ordered by the governor. State agencies, universities and local schools spent less than their legal spending authorizations during the biennium. Reversions and transfers covered about 45% of the two-year deficit.

The remaining 20% was covered by balances. One reason balances are accumulated is to cover shortfalls in revenues. The "rainy-day fund" is a part of balances devoted specifically to this purpose. In fiscal 2010 balances fell from \$1.4 billion to \$831 million. The difference, \$589 million, covered part of the deficit. Another \$34 million was used in 2011. At that point balances were near 5% of the budget. Indiana always keeps at least 5% of its budget in balances, to cover cash flow.

This accounting of the current year deficits is a third way to understand the state's re-structuring. Indiana was able to cover its deficit with Federal aid, balances, and spending cuts. The ARRA aid for state budgets ends as of June 30, 2011, and Congress is unlikely to come up with more. Balances are near the rock-bottom 5% minimum. So, for the next biennium, only spending cuts remain to balance the budget. Appropriations for 2012 and 2013 incorporate these spending cuts. The state's budget has been re-set, down-sized, restructured to match lower revenue expectations.

Does Indiana Have a Structural Budget Deficit?

Does Indiana have a structural budget deficit? In one sense, Indiana has never had a deficit at all. Article 10, section 5 of our state constitution says "No law shall authorize any debt to be contracted, on behalf of the State, except in the following cases: to meet casual deficits in the revenue; to pay the interest on the State Debt; to repel invasion, suppress insurrection, or, if hostilities be threatened, provide for the public defense." We interpret this section to mean that the state balances must be positive at the end of each fiscal year, which is one definition of a balanced budget. This requirement has always been met, one way or another, so there's never a deficit in a Constitutional sense.

When we say "deficit," maybe we mean that *current* revenues are not enough to cover *current* appropriations. These would be the current year deficits shown in Table 2. Revenues fell short of appropriations by \$1.3 billion in 2011. That's one measure of the budget deficit. But what is a "structural deficit?"

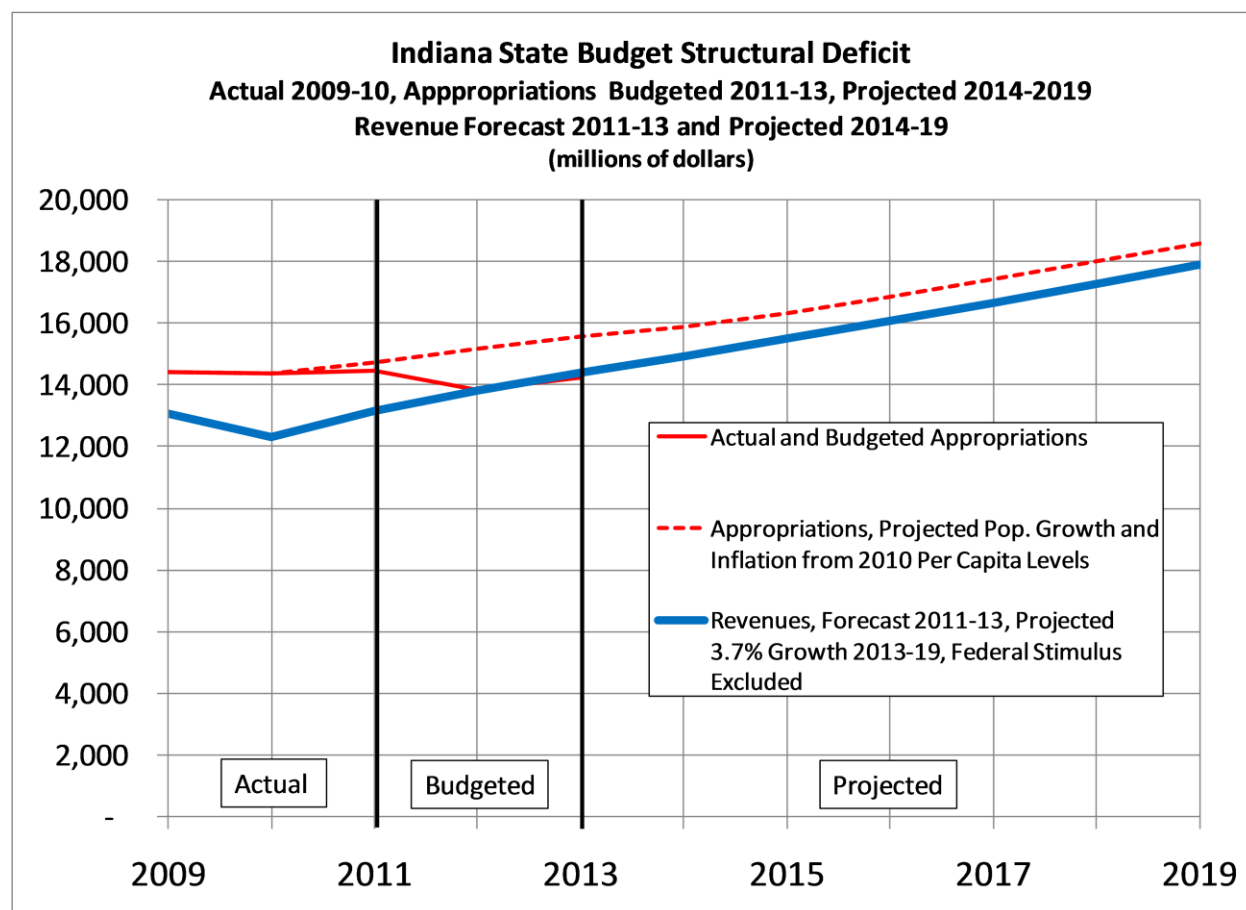
In the public budgeting business there are two kinds of deficits: "cyclical" and "structural." Recessions cause cyclical deficits. Revenues fall because incomes and sales drop; spending rises because more people receive entitlement benefits. When the economy recovers a cyclical deficit goes away. Revenues grow and benefit payments fall, so the budget is balanced again. A cyclical deficit can be closed simply by waiting for economic recovery to increase revenues.

A structural deficit is one that continues, even after the economy recovers. Action is required to close a structural deficit. The federal government's deficit is both cyclical and structural. The deficit is huge because of the recession, but even with recovery a large deficit will remain. We haven't figured out how to pay for rising federal medical and retirement benefits over the long haul.

Certainly Indiana's deficits are partly cyclical. The budgets for 2010 and 2011 were expected to be balanced. The recession reduced revenues below forecasts, and created big deficits. The deficits would be structural if part remains after the economy recovers.

Here's an experiment to test for a structural deficit. Suppose for 2010 we calculate K-12 education appropriations per pupil, higher education appropriations per college student, Medicaid appropriations per beneficiary, and all other appropriations per person. That's a measure of the service level that the state provided in 2010. Then, let's increase these per-person spending amounts by estimated inflation each year, and let's multiply those figures by the projected number of students, beneficiaries, and other people. That tells us how much money we would need in the

Figure 1



future in order to provide services at the 2010 level, to more people at ever-higher prices.

Figure 1 shows the result. Revenues are shown with the thick solid line. Federal stimulus aid is excluded, since it is not a permanent revenue source. Revenues are those actually received in 2009 and 2010, forecast for 2011-13, and projected at a 3.7% growth rate for 2014-19. That 3.7% growth rate simply continues the growth forecast for 2013.

Appropriations are shown with the thin solid line. These are actual appropriations for 2009 and 2010, and budgeted appropriations through 2013.

After 2010, the dotted line shows the amount needed to provide state services at the 2010 level, with inflation and population growth.

Revenues never recover enough to support the 2010 service level. All the way out to 2019, revenues fall below the 2010 spending amount. This would represent a structural deficit.

Except, budgeted appropriations fall to match revenues as of 2012. So, unless revenues accelerate, or government service delivery becomes more efficient, Indiana's state government will provide less in services in the future than it did in the past. Likewise, because

the state funds virtually all K-12 education operating costs, we'll see a reduction in school services too, unless school corporations learn to deliver more services for fewer dollars. The widespread budget difficulties experienced by our local school corporations can be interpreted as budget restructuring.

Does Indiana have a structural deficit? No. The governor and General Assembly, in the 2011 budget session, eliminated the structural deficit by cutting appropriations. The state budget was re-structured. Instead of a structural deficit we have a smaller state government.

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For further information, see Larry DeBoer's Indiana Local Government website,
<http://www.agecon.purdue.edu/crd/Localgov>.

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