An Update on Farm Land Assessment for Property Taxes

Larry DeBoer, Professor and Specialist on Indiana Taxation*

Farm land property taxes are rising because the assessed values of farm land are rising. Assessed values are rising because the "base rate" of farm land is rising. And the base rate is rising because the formula that calculates the base rate includes measures of land rent, yields, commodity prices and interest rates. The first three are rising, the last is falling, and all of those changes increase the base rate.

In August the *Purdue Agricultural Economics Report* published my article about farm land assessments. Since then we have new information. The Indiana Department of Local Government Finance (DLGF) has announced the base rate for taxes in 2010, and there is now enough data from 2008 to project the base rate for taxes in 2012.

Farm land assessments in Indiana start with a "base rate" per acre set by the DLGF. It's the same for all farm land in the state. To assess any particular acre, this base rate is multiplied by a soil productivity factor, which measures the productivity of the soil for growing corn, and ranges

---

* *Thanks to the reviewers of this paper: Alan Miller and George Patrick staff and professor, respectively, in the Department of Agricultural Economics.*

from 0.5 to 1.28. Some acreage also is adjusted by an "influence factor," which reduces the assessment for features like flooding or forest cover.

The productivity factor of a farm land parcel is unlikely to change, and neither is the influence factor. But the base rate changes every year, as part of the trending of assessed values. Increases in the base rate are the reason that farm land assessments are rising.

Figure 1 shows the history of the base rate since 1980. The years indicate the "pay year," the base rate used for tax bills in that year. From before 1980 though taxes in 2002, the base rate was a negotiated number. It changed only in years of general reassessment. Agricultural interest groups (such as the Farm Bureau) would meet with officials from the State Board of Tax Commissioners, known as the Tax Board, the predecessor of the DLGF. They would hammer out a base rate. In 1980 they decided on $450 per acre. This figure was used for tax payments until 1990. For the 1990 reassessment, the base rate was increased to $495, and for the 1996 reassessment it was left at $495.

In December 1998 the Indiana Supreme Court declared Indiana's assessment system unconstitutional, and decided that assessments must

be based on "objective measures of property wealth." The decision also found that farm land assessments did not have to be based on selling prices, or market value. The Tax Board and later the DLGF developed the base rate capitalization formula to meet this requirement. The formula uses (a lot of) objective data, and capitalization formulas are a recognized method for measuring property value or wealth.
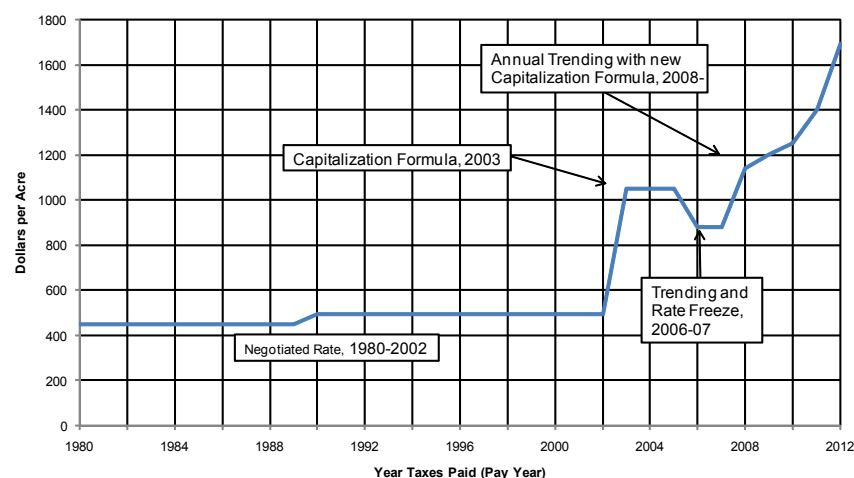
The base rate for 2003 taxes was set at $1,050, based on the average capitalized value for the four years 1996-1999. This more than doubled the base rate, and it meant that farm land was one of the property types that saw big tax increases in that reassessment, along with older homes and rental property.

Figure 1. Base Rate per Acre of Farmland for Property Taxation, Actual 1980-2010; and Estimated 2011-2012

The court decision also implied the need for trending, annual adjustments of assessed values to keep them close to objective measures of property wealth, between statewide reassessments. Trending started for farm land for taxes in 2006, one year before it started for other real property. The capitalization formula dropped the base rate to $880 in 2006, based on an average of the values for 1999-2002. The General Assembly held the base rate at that level for 2007 taxes. The capitalization formula was modified to use a six-year average, and trending resumed for 2008 taxes.

Table 1 shows the figures that have been used in recent years to calculate the base rate. The numerator of the capitalization formula is calculated from net income figures, one based on land rents, one based on operating incomes calculated using yields, commodity prices, and costs. In the denominator is an interest rate based on real estate and operating loan interest rates. The August PAER article "What's Happening to the Assessed Value of Farm Land?" described this formula in more detail.

The base rate for 2009 taxes is an average of the calculations from 2000 to 2005. The result is $1,200, shown in Table 2. The DLGF recently announced the base rate for 2010 taxes at $1,250, based on the calculations from 2001 to 2006. This 4.2% increase results because the average base rate calculation was $842 in 2000, the year that was dropped, and $1,120 in 2006, the year that was added. The 6-year average increased as a result.

We already know all the data for 2007 which will be used to calculate the base rate for 2011 taxes. Plugging these numbers into the formula gives a 2007 figure of $1,914, much higher than the 2001 figure of $1,019 that will be dropped. This will increase the 6-year average base rate 12% to $1,400. (Note that this is higher than the estimate made in the August PAER article, because the final data on government payments have become available.)

Likewise, most of the data needed for the calculation of the 2008 average are available. It is clear that the 2008 figure to be added to the base rate calculation for 2012 taxes will be much greater than the 2002 average that will be dropped. The 2008 figure is $2,666; the 2002 figure is only $890. The 6-year average base rate for 2012 taxes is likely to rise 20.7% to $1,690.

The average calculations for 2007 and 2008 are so high because commodity prices were high in those years (see the appendix for the 2008 operating net income calculation). Costs are rising too, but not enough to offset the higher corn and soybean prices. The 2007 figure will be included in the base rate through the year 2016, the 2008 figure through the year 2017.

In 2008 the General Assembly passed a major property tax reform bill. Average homeowner tax bills dropped by one-third in 2008 as a result of new credits, and this

reduction will hold in the future. In 2009 and after property taxes will no longer be used to support the school general fund and county welfare funds. The state will take over funding for these functions.

This would reduce tax rates for all property, except that homeowners have been granted a new 35% homestead deduction, which will substantially reduce total assessments. Since tax rates are calculated by dividing local levies by local assessments, the lower assessed value will increase tax rates. Further, property tax replacement credits will be eliminated in 2009, and this was a percentage reduction in tax bills for which farm land was eligible. This part of the property tax reform will not reduce most farm land tax bills.

The tax reform also created property tax caps. Tax bills for homesteads will be limited to 1.5% of gross assessed value (before deductions) in 2009, and 1% in 2010 and after. Other residential property and farm land will be limited to 2.5% in 2009 and 2% in 2010. All other property, including farm buildings and equipment, will be limited to 3.5% in 2009 and 3% in 2010. When tax bills exceed the caps, the taxpayer gets a tax credit against his or her property tax bill.

Farm land does not receive many deductions, so these caps are effectively limits on tax rates. In 2010, if the tax rate exceeds 2% on a farm acre, the owner would receive a credit. It's too soon to tell what tax rates will be after all the reforms, but it is likely that tax rates after credits in 2008 will be similar to tax rates after the reforms in 2010.

Most farm land is located in unincorporated areas, outside of cities and towns. In 2008 the tax rates after credits were under 2% in 83% of the unincorporated taxing districts. Tax rates on most farm land will be less than 2%. Thus, few farm land owners will benefit from the property tax caps.

This is good news for farmers, in that most of their tax bills won't be high enough to hit the tax caps. But the General Assembly's property tax relief debate in 2009 will focus on whether to add the caps to the state Constitution. This debate will have little to do with farm land property taxes.

Without doubt agricultural interests will work to revise the capitalization formula, to lessen the impact of higher commodity prices on farm land assessments. That might be a tough sell in the General Assembly, though, because in rural areas the tax base is mostly farm land and houses. If farm land assessments are lower, taxes will shift to homeowners. And higher taxes for homeowners are not on the General Assembly's agenda.

Appendix

Calculation of the operating net income for 2008.

The big jumps in the base rate in 2011 and 2012 are mainly due to the big increase in the operating net incomes in 2007 and 2008, $182 per acre in 2011 and $217 per acre in 2012 (see Table 1). Here's a version of how the 2008 figure is calculated, simplified from the method used

Table 1. Data Used to Calculate Base Rate of a Farm Land Acre

| Data Year | Net Incomes | | Cap. Rate | Market Value In Use | | Average |
	Cash Rent	Operating		Cash Rent	Operating	
1999	99	36	8.77%	1,129	410	770
2000	101	60	9.56%	1,056	628	842
2001	102	61	8.00%	1,275	763	1,019
2002	105	20	7.02%	1,496	285	890
2003	106	71	6.29%	1,685	1,129	1,407
2004	104	135	6.35%	1,638	2,126	1,882
2005	110	60	7.22%	1,524	831	1,177
2006	110	73	8.17%	1,346	894	1,120
2007	122	182	7.94%	1,537	2,292	1,914
2008	136	217	6.62%	2,054	3,278	2,666

Table 2. Base Rate Calculations

| Tax Year | Data Range | | Base Rate | Percent Change |
	First	Last		
2006	1999	2002	$880	-16.2%
2007	2000	2003	$880	0%
2008	1999	2004	$1,140	29.5%
2009	2000	2005	$1,200	5.3%
2010	2001	2006	$1,250	4.2%
2011	2002	2007	$1,400	12.0%
2012	2003	2008	$1,690	20.7%

2006: Base rate reduced from $1,050; First year of annual trending; Last year of 4-year average.
2007: Base rate set by statute, not formula; 4-year average would have been $1,040, an 18.2% increase.
2008: First year of 6-year average; increase from $1,040 would have been 9.6%.
2009-2010: Base rates have been set by DLGF based on 6-year average formula.
2011-2012: Base rate estimates based on existing data and 6-year average formula.

by the Department of Local Government Finance.

Corn yield: 160 bushels per acre, from the Indiana Agricultural Statistics Service and USDA.

Corn price: $4.28 per bushel, the average of the November price, the calendar year average price, and the marketing year average price.

Gross income: $685, (Corn price times yield).

Variable costs: $380 per acre, from the Purdue Crop Guide.

Average contribution margin, corn: $305 (gross income less variable costs).

Beans yield: 44 bushels per acre, from IASS and USDA.

Beans price: $10.42 per bushel based on the November, annual average and marketing year prices.

Gross income: $458, (Bean price times yield).

Variable costs: $132 per acre, from the Purdue Crop Guilde.

Average contribution margin, beans: $326.

Government payments: $13 per acre (author's estimate based on trend changes).

Total contribution margin: $322 per acre (corn margin plus beans margin plus government payments, divided by two).

Minus overhead: $107 per acre (sum of machinery, handling, labor costs from the Purdue Crop Guide, and property taxes, estimated by the author based on trends and policy changes).

Net return to land: $215 per acre (total contribution margin less overhead).

This is close to the $217 per acre figure in Table 1. The actual method used by DLGF is a more complex version of the method here. It rounds the numbers to the nearest dollar at different points in the calculation.

For more information

DeBoer, Larry. "Indiana's 2008 Property Tax Reforms, Part 2" *Purdue Agricultural Economics Report*, August 2008 [www.agecon.purdue.edu/extension/pubs/paer/2008/august/paer0808.pdf].

DeBoer, Larry. "What's Happening to the Assessed Value of Farm Land?" *Purdue Agricultural Economics Report*, August 2008 [www.agecon.purdue.edu/extension/pubs/paer/2008/august/paer0808.pdf].

DeBoer, Larry. "Indiana's 2008 Property Tax Reforms, Part 1" *Purdue Agricultural Economics Report*, May 2008 [www.agecon.purdue.edu/extension/pubs/paer/2008/may/paer0508.pdf].

"Farmland Assessment for Property Taxes," Indiana Local Government Information website, Revised January 2009 [http://www.agecon.purdue.edu/crd/Localgov/Topics/Essays/Prop_Tax_FarmLand_Asmt.htm].

Immigrants in Indiana: Where They Live, Who They Are, and What They Do

Uris Baldos, Graduate Student, Tani Lee, Graduate Student, Delphine Simon, Graduate Student and Brigitte Waldorf, Professor

Just a couple of decades ago, immigration was not on the radar screen in Indiana. Compared to the rest of the nation − and especially compared to the so-called gateway states with their large immigrant concentrations such as in New York, Los Angeles, Miami, and Chicago − immigrants in Indiana have always been underrepresented. More recently, however, Indiana's immigrant population has steadily increased (Figure 1).

In 1990, Indiana's population included 94,263 immigrants, accounting for less than two percent (1.7%) of the total population. Ten years later, the number of

immigrants had almost doubled to 186,534, making up three percent

(3.1%) of all Indiana residents. The more recent figures (2006)

Figure 1: Percentage of foreign-born residents in the US and in Indiana, selected years 1990 to 2006
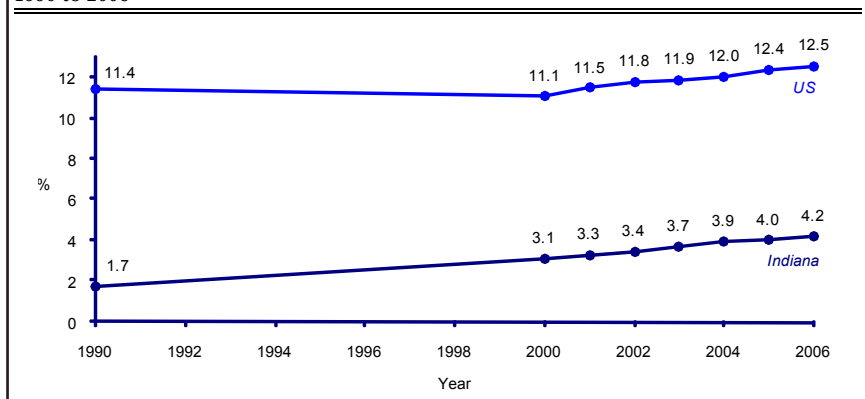
of the US Census Bureau suggest a further increase to 263,607 immigrants or 4.2% of Indiana's population. Moreover, compared to 1990, the characteristics of Indiana's immigrant population have changed substantially.

This report provides a profile of Indiana's growing immigrant population. Where in Indiana do immigrants settle? What are the characteristics of the newcomers? What kind of jobs do they have? This research is based on data from the 1990 and 2000 US Census and the 2006 American Community Survey.

Not Every County Gets its Fair Share of Newcomers

The enormous growth of Indiana's immigrant population is unevenly distributed across Indiana's 92 counties. Almost three quarters of the growth is concentrated in just ten counties. Table 1 shows the ten counties with the largest net increase of immigrants between 1990 and 2000.* Marion County tops the list with a net gain of 24,095 immigrants during the 10-year period. Interestingly, although immigrants in Marion County only made up 1.9% of the total population in 1990, they contributed 38% to the county's total population growth. Tippecanoe and Marion counties, home to Purdue and Indiana University, respectively, already had a diverse population

_____

The US Census Bureau has not provided detailed data for small counties since 2000. Therefore, the county rankings only consider changes between 1990 and 2000.

** *The maps are based on so-called PUMAs, the spatial reference used by the US Census Bureau. PUMAs are portions of counties (as in Marion County), or groups of counties that have at least 100,000 residents. The county names are shown to provide a better orientation.*

Table 1. Net change of the immigrant population, 1990 to 2000, top-ten counties

County	Net change of immigrant population, 1990 to 2000	Immigrants 1990		Immigrants 2000		Immigrants' contribution to total population growth [%]
		Absolute	%	Absolute	%	
Marion	24095	15291	1.9	39386	4.6	38.1
Elkhart	9668	3314	2.1	12982	7.1	36.4
Allen	7512	5882	2.0	13394	4.0	24.2
Lake	6387	19461	4.1	25848	5.3	71.2
Tippecanoe	5487	6680	5.1	12167	8.2	29.9
Hamilton	4920	2363	2.2	7283	4.0	6.7
St. Joseph	4689	7424	3.0	12113	4.6	25.3
Noble	1921	339	0.9	2260	4.9	22.9
Monroe	1830	4736	4.3	6566	5.4	15.8
Bartholomew	1696	987	1.6	2683	3.8	21.8

in 1990 and, by 2000, Tippecanoe County strengthened its position as the top county with the most diverse population in Indiana. Among the counties listed in Table 1, Elkhart County stands out because it almost quadrupled its immigrant population. In fact, by 2000 Elkhart's percentage of immigrants surpassed Monroe County. Lake County is exceptional because immigrants made up almost three-quarters of its total population growth. Finally, it is interesting to note that only two counties in the top-ten list − Monroe and Bartholomew – are located South of Indianapolis.

Figure 2 shows the distribution of immigrants across Indiana in 1990, 2000, and 2006.** The most remarkable features are the concentration of immigrants in urban areas, their gradual spread into non-urban areas, and their

increasing presence in the southern portions of the state. In fact, in some nonmetropolitan counties (Table 2) the influx of immigrants dampened the loss of the native-born population. The situation is most extreme in Wayne County at the Indiana-Ohio border. Wayne County had a net loss of 1,490 of its native-born residents. A net gain of 636 foreign-born residents could compensate for 43% of the loss so that the overall population was only reduced by 854 persons.

Rising Numbers of Immigrants from Mexico and Asia

Up until the mid-1960s, US immigration policies favored immigration from European countries. The Hart-Cellar Act of 1965 made US immigration more accessible to persons from non-European countries. Ever since then, the influx of

Table 2. Nonmetropolitan counties with a loss of native-born and a gain of foreign-born residents, 1990-2000

County	Net Loss of Native-born Population	Net Gain of Foreign-born Population	Total Population Change
Grant	-1,061	+295	-766
Knox	-772	+144	-628
Perry	-225	+17	-208
Wayne	-1,490	+636	-854

Figure 2. Indiana's Immigrant Population, 1990, 2000, and 2006

1990

Immigrant Population

- 0 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7000
- 7000 - 10000
- 10000 - 13000
- 13000 - 15274

2000

Immigrant Population

- 0 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7000
- 7000 - 10000
- 10000 - 13000
- 13000 - 15274

2006

Immigrant Population

- 0 - 1500
- 1500 - 3000
- 3000 - 5000
- 5000 - 7000
- 7000 - 10000
- 10000 - 13000
- 13000 - 19544
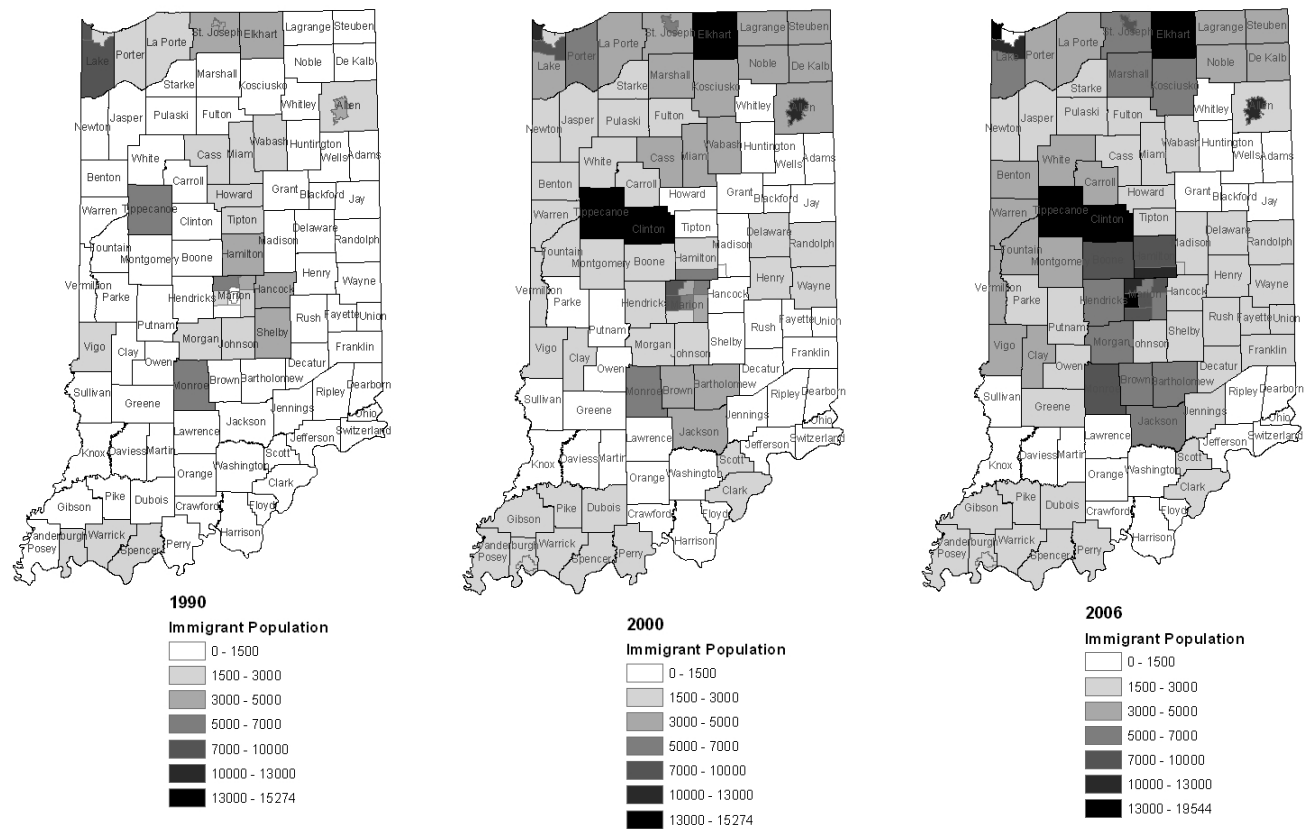
immigrants originating from Latin America, the Caribbean, and Asia grew. At first, immigrants from these new origins mainly settled in the traditional immigrant-receiving states along the East and West coasts. However, more recently immigrants from non-European countries also settled elsewhere, including in the Midwestern states.

What happened in Indiana is in line with these nationwide developments. Two decades ago, immigrants of European descent accounted for the largest share of Indiana's immigrant population. Today, their share has been dwarfed as the number of immigrants from Latin America and Asia have rapidly increased. The number of immigrants from Mexico grew more than ten-fold, from less than 10,000 in 1990 to over 100,000 in 2006. Mexicans now make up almost half of all immigrants in Indiana (46% in 2006). Although the Asian population had a less dramatic

Figure 3. Immigrants in Indiana by place-of-birth, 1990 to 2006[1]
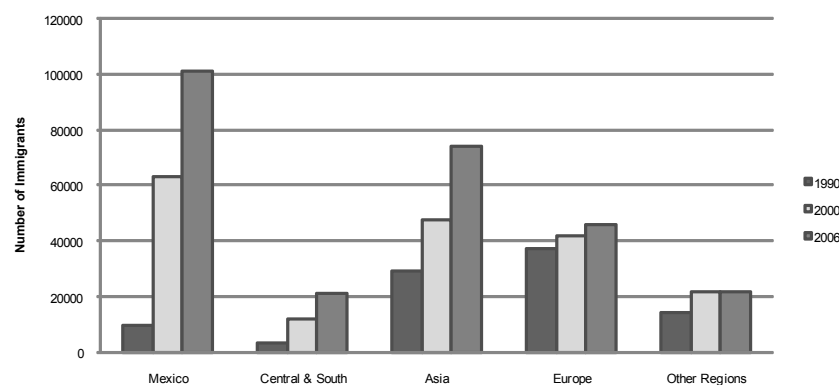
1   *"Other Regions" include Canada, the Caribbean Islands, Africa, and Oceania*

expansion, Asian immigrants more than doubled and now constitute over 30% of Indiana's immigrant population. Figure 3 shows the differential growth of immigrants by place-of-birth. Every group increased in size between 1990 and 2006, but the rapid increase of immigrants from Mexico and Asia constitutes a major shift in the composition of Indiana's immigrant population.

The Immigrant Population Is Young
People who choose to move to a new place typically do so when they are young. This is particularly the case when the move involves crossing an international border. International moves require much more than transporting one's belongings from place to place, finding new employment and housing at the destination. International migrants also need to deal with visa issues, adjust to a different culture and, very often, learn a new language. It is a huge investment involving both monetary and psychological costs. The possible returns on such an investment are much higher for young people than for older persons. Thus, it is not surprising that the vast majority of Indiana's immigrants are of working-age, and that the recent growth of the immigrant population involves primarily young people between the ages 20 to 40. As such, immigrants are an asset for Indiana by rejuvenating the State's aging labor force.

Figure 4 shows population pyramids of Indiana's immigrant population in 1990, 2000 and 2006. The pyramids are a break-down of the population by age and sex. The bars represent the number of immigrants in each 10-year age cohort shown on the vertical axis. The bars extending to the right represent the number of male immigrants and the bars extending to the left represent the number of female immigrants. The pyramids show that:

Figure 4. Immigrants in Indiana by age and sex in 1990 (top), 2000 (middle), and 2006 (bottom)
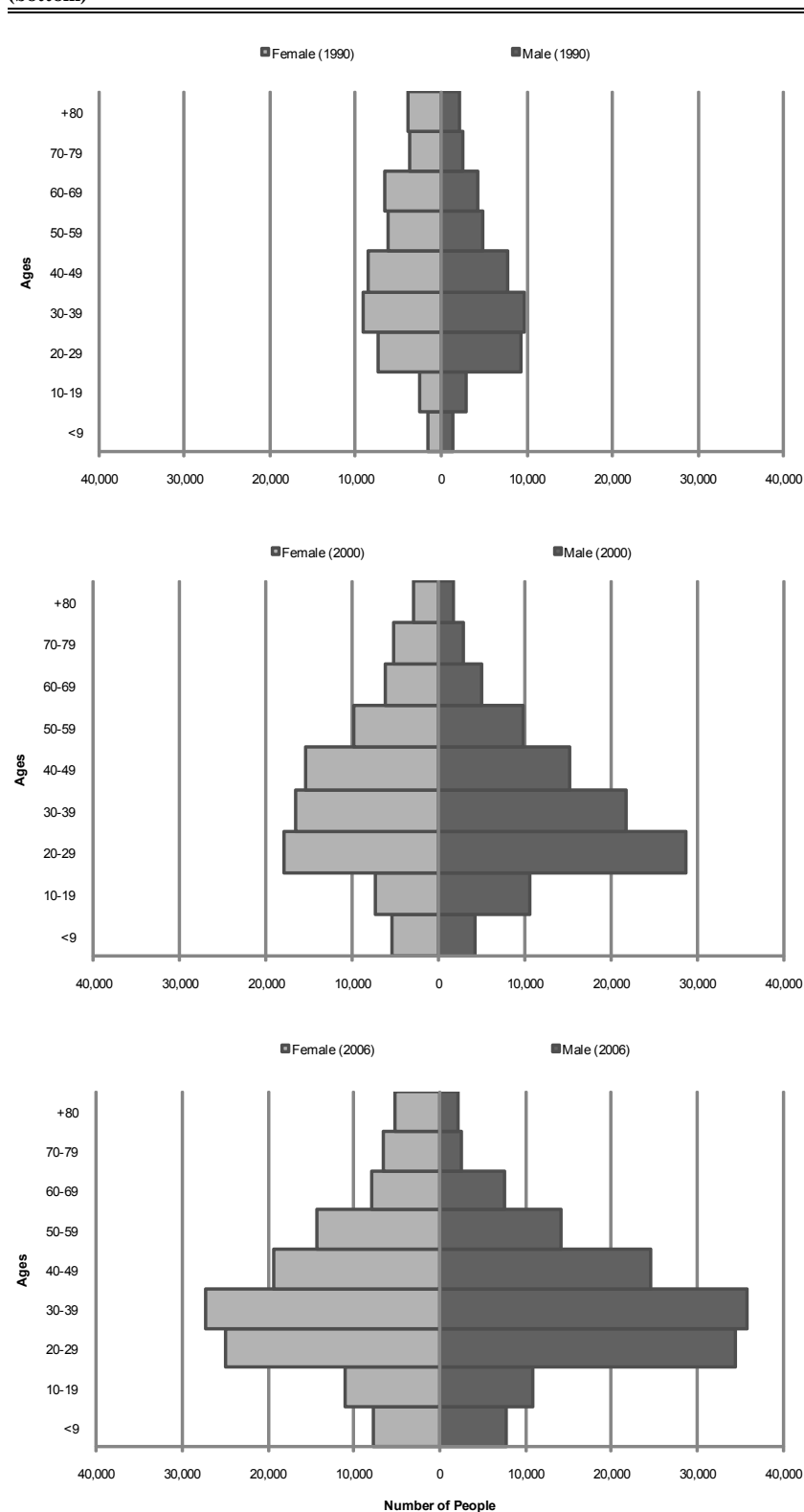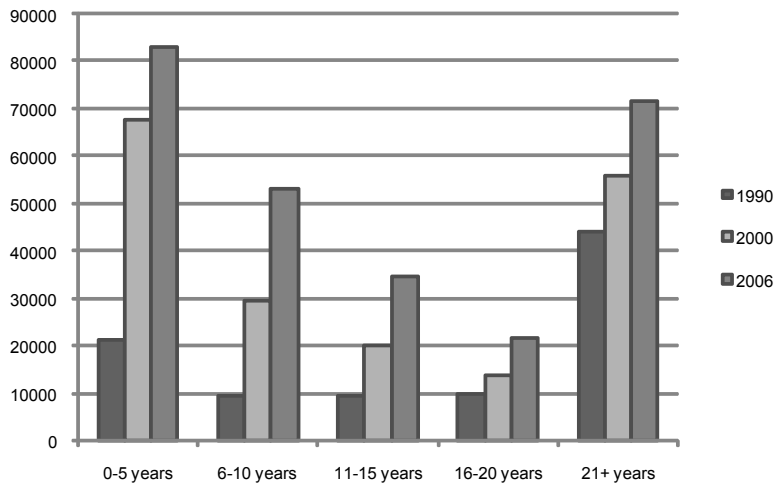
Figure 5. Indiana's immigrants by length of stay in the US, 1990, 2000 and 2006

♦ Over time, the number of immigrants at all ages increased. The increase is highest for the working age cohorts (20 to 60).

♦ Among the working age cohorts, men outnumber women.

♦ The share of children and the share of the elderly are very small compared to the share of working-age immigrants.

The last issue is particularly important. For example, the percentage of school-aged children in Indiana's immigrant population is exceptionally low with only 11% compared to over 25% among Indiana's nonimmigrant population. This unusual age composition suggests a beneficial role of immigrants because the working-age population – compared to children and elderly – draws substantially less on services

and resources in the form of education, social security, and Medicare.

Half of Indiana's Immigrant Population Migrated to the U.S. Within the past 10 Years

As immigrants settle in a foreign country, they learn about and adjust to the new culture, norms and values of the host society. In general, the most recent immigrants are the ones who need a good deal of assistance. The federal government only regulates who may enter the country, under what conditions and for how long immigrants may stay. But there is no federal policy that addresses the integration of immigrants once they are in the US. Thus, immigrants are by and large on their own and receive assistance from their own immigrant community as well as from individuals, groups, and civic organizations dedicated to serving the immigrant community.

The recent growth of the immigrant population suggests a growing demand for such assistance in Indiana. In 1990, almost half of Indiana's immigrants had lived in America for more than 20 years. It is safe to assume, that they were well established and no longer needed assimilation aid. More recently, however, long-term immigrants no longer make up the largest group. In fact, according to the 2006 data from the American Community Survey, almost 45% of Indiana's immigrant population has lived in the US for five or fewer years (see Figure 5).

English Proficiency Has Been Declining among Immigrants from 1990 to 2006

Many of Indiana's newcomers did not originally come from an English-speaking country. Thus, in order to communicate, to perform certain basic tasks (driving, for example, or reading the newspapers), and to improve employment opportunities, immigrants often

Figure 6. Indiana's immigrants by English proficiency, 1990, 2000 and 2006
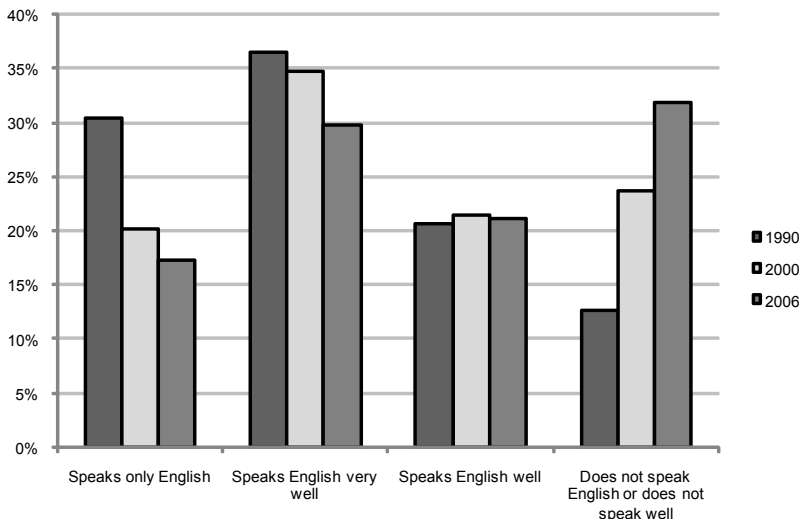
invest in learning English. In 1990, when most immigrants living in Indiana had been in the US for many years already and when a good deal of them originated in English-speaking countries (e.g., Canada, Ireland, UK), the share of those immigrants who did not speak English very well was quite small, slightly over 10% (see Figure 6). That has changed quite dramatically in recent years. Today, many immigrants entered the US only recently, and about one third of Indiana's immigrants do not speak English well or do not speak English at all. Language acquisition is just one step of a successful integration into the US, but many see it as the most essential step. The large share of Indiana's immigrants who are not fluent in English suggests a growing need for instruction in English as a second language.

Naturalization: Becoming a US Citizen

The integration of immigrants is formally completed when they become US citizens. There are certain requirements attached to becoming a US citizen, most notably a minimum length of residence in the US and passing a test of English, US civics and history. In Indiana, only about one-third of the immigrants are US citizens. Figure 7 shows that the pool of non-citizens has increased drastically since 1990 and, as of 2006, included about 200,000 immigrants. Clearly, many of Indiana's immigrants do not yet meet the minimum length of residency requirement.*** However, looking ahead, Indiana can play an active role by encouraging and assisting immigrants in integrating themselves into society and

_____
*** *Typically, an immigrant is eligible to apply for citizenship five years after being granted permanent residency, i.e., five years after obtaining a "green card".*

Figure 7. Number of non-U.S. citizens in Indiana by length of stay, 1990, 2000 and 2006
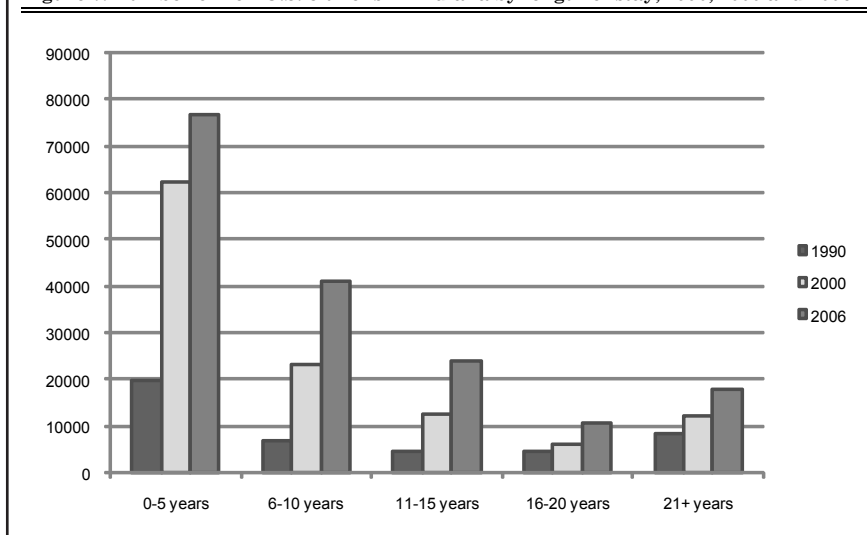
choosing to naturalize as they become legally eligible to do so. This may be even more relevant as the federal government defines the rules

Table 3. Educational attainment by immigrant status among adults (25+) in selected Indiana counties, 2006

Place of Residence	% Immigrants with: Less than High School	High School or Some College	Bachelor's, Graduate or Professional Degree	% Non-Immigrants with: Less than High School	High School or Some College	Bachelor's, Graduate or Professional Degree
Allen	34.3	37.8	27.8	10.4	64.8	24.8
Bartholomew	9.5	35.0	55.5	10.3	64.1	25.6
Clark	41.3	31.3	27.4	16.7	68.4	14.9
Delaware	0.0	26.1	73.9	15.6	62.7	21.7
Elkhart	44.3	46.0	9.7	17.2	64.8	18.0
Floyd	0.0	70.6	29.4	12.8	64.7	22.5
Grant	48.2	0.0	51.8	16.7	68.3	15.0
Hamilton	8.0	33.1	59.0	2.8	45.7	51.5
Hancock	17.4	55.0	27.6	10.6	64.3	25.1
Hendricks	8.0	41.0	51.0	7.8	65.1	27.1
Howard	10.7	52.3	37.0	17.1	64.9	18.0
Johnson	36.0	36.8	27.2	10.0	63.1	26.9
Kosciusko	36.2	45.6	18.2	14.7	65.7	19.6
Lake	36.7	46.9	16.4	12.7	68.2	19.0
LaPorte	30.8	61.1	8.1	14.1	70.4	15.5
Madison	15.3	69.9	14.8	15.6	68.0	16.4
Marion	36.6	38.3	25.1	14.8	58.7	26.5
Monroe	7.2	18.5	74.3	9.0	51.9	39.0
Morgan	3.2	67.0	29.9	14.2	69.9	15.9
Porter	32.4	37.5	30.1	8.5	68.8	22.8
St. Joseph	39.4	38.7	21.9	13.4	60.7	25.9
Tippecanoe	18.2	21.5	60.2	10.0	58.3	31.7
Vanderburgh	21.2	32.0	46.8	13.5	66.4	20.1
Vigo	24.0	23.8	52.2	15.9	63.1	21.1
Wayne	43.4	30.6	26.0	14.8	71.1	14.1
Indiana	32.2	39.4	28.4	13.9	64.8	21.3

Table 4. Industrial sectors of Indiana's immigrant workforce (ages 25 to 65)			
Industry Sector	1990	2000	2006
Manufacturing	27%	31%	31%
Professional and Related Services	30%	26%	21%
Retail Trade	16%	14%	16%
Construction	4%	5%	8%
Agriculture, Forestry, And Fisheries	2%	2%	4%
Other Industries	21%	21%	22%

for citizenship, but leaves the burden of integration and naturalization on the immigrants themselves.

Immigrants' Human Capital

Immigrants' human capital is of particular importance for the impact of immigration on local economies. Compared to the nonimmigrant population of Indiana, migrants from abroad have a larger share of persons without a high school degree (32.2% vs. 13.9% in 2006). But, as shown at the bottom of Table 3, Indiana's immigrants also have a larger share of persons with a graduate or professional degree than the nonimmigrant population (28.4% vs. 21.3% in 2006). This unusual distribution can be attributed to US immigration policies that provide for special visas for highly-skilled, temporary workers, the H-1B nonimmigrant visas. At the local level, however, the immigrant composition by educational level can be quite different. In some northern counties (Lake, LaPorte, Elkhart) that specialize in manufacturing, the poorly educated are over-represented whereas the share of highly educated immigrants is exceptionally low. In contrast, in counties specializing in knowledge, such as Monroe and Tippecanoe counties, the share of highly educated immigrants is remarkably high, exceeding 60% in Tippecanoe County and exceeding 70% in Monroe County. Other counties in which more than 50% of the immigrants have a bachelor's, graduate or professional degree include Bartholomew, Delaware, Grant, Hamilton, Hendricks, Morgan and Vigo counties.

The Majority of Indiana's Immigrants Work in Manufacturing

Many immigrants move into rural counties where they work in agriculture or in meat processing plants. For example, in Daviess County there is a large immigrant community working for the Perdue Farms, Inc. turkey processing plant. Given that Daviess County is small in size, the immigrants are very visible. But they certainly do not represent the vast majority of immigrants in Indiana. In fact, most immigrants in Indiana work in industries connected to manufacturing as well as in the professional and related services sector (Table 4). In 2006, around three out of ten immigrants were employed in the manufacturing sector and most of them work in industries related to motor vehicles and equipment as well as metal processing. From 1990 to 2006, the percentage of immigrants employed in the motor vehicles and equipment industries grew from 3% to 7%. On the other hand, roughly two out of ten immigrants work in the professional and related services sector in 2006. This sector generally includes colleges and universities as well as hospitals. However, from 1990 to 2006, the percentage of immigrants working in colleges and universities has dropped from 11% to 6%. In addition to these sectors, the retail trade sector – mainly eating and drinking establishments – has also been a major employer of immigrants during 1990 to 2006. Only a few immigrants find work in construction and agricultural sectors. Within the agricultural sector, immigrants are typically employed in the crop and livestock sectors.

The Diverse Occupations of Indiana's Immigrants

In 2006, roughly five out of 20 immigrants in Indiana were employed as operators, fabricators or laborers (Table 5). Occupations under this category typically include machine operators and packers in the manufacturing sector. From 1990 to 2006, the percentage of immigrants working as operators, fabricators or laborers has increased. On the other hand, five out of 20 immigrants were employed in managerial or professional positions in 2006 and most of these positions are teaching and managerial positions. However, the percentage of immigrants employed in these positions has been declining. For example, the

Table 5. Occupations of Immigrants in Indiana: Ages 25 to 65			
	1990	2000	2006
Operators, Fabricators, and Laborers	18%	26%	26%
Managerial and Professional Specialty Occupations	35%	30%	26%
Technical, Sales, and Administrative Support	24%	18%	19%
Service Occupations	13%	14%	14%
Other Occupations	10%	13%	15%

percentage of immigrants who are employed as instructors and teachers has declined from 10% to 6% from 1990 to 2006.The percentage of immigrants employed in the services sector has been steady and most of them work in food preparation and services occupations.

Implications

The immigrant population is increasingly important for the State of Indiana where some rural communities struggle with the outmigration of the younger population, leaving the aging baby boomers behind. Immigrants can compensate for the losses and rejuvenate the community. In fact, immigrants and their children can contribute to healthy communities, increase the productivity and

ensure continued demand for goods, education and health services.

This report has shown that Indiana's immigrant population is quite diverse and "the" immigrant most certainly does not exist. There are, however, a few trends that should be noted by policy makers and planners at the state and local levels. First, the immigrant population has been growing in absolute size and as a percentage of the total population. Second, the immigrant population has become more diverse with immigrants from Mexico and various Asian countries increasing at a faster rate than, for example, immigrants from Europe and Canada. Third, many newcomers entered the country only recently and are not as established as those who came

decades ago. Increasing the number of English-as-a-second-language classes seems a worthwhile investment as many of the newcomers are not yet proficient in the English language. Speaking and understanding English is the key to immigrants' upward mobility. It also enhances immigrants' integration into the US civic context and provides opportunities for multi-cultural activities. As such, local and state initiatives that help immigrants' assimilation and integration also foster the social coherence of local communities. This is particularly important in small communities where a sudden influx of immigrants can lead to misunderstandings, tensions, prejudice, and even discrimination.

Weather Disasters in Indiana and Taxes

George F. Patrick, Professor and Linda Ethridge Curry, Associate Faculty Member, Kelley School of Business IUPUI

Indiana suffered three weather-related events in 2008 that resulted in federally declared (formerly presidentially declared) disaster declarations covering major portions of the state. Taxpayers in these areas may be eligible for some additional federal income tax deductions because Congress enacted legislation in October that provides new tax benefits for taxpayers who suffer losses in federally declared disaster areas during 2008 and 2009. The legislation involves two programs, with somewhat different provisions. However, each program provides special treatment for losses of property located in these disaster areas. As a further complication, individuals outside the specified disaster areas may qualify for increased higher education tax credits if they or their dependents attend a post-secondary educational

institution located in the Midwest (Heartland) disaster area.

Disaster Areas

Storms and flooding in January 2008 primarily affected northern Indiana. Twenty-one counties were designated by the Federal Emergency Management Agency (FEMA) for assistance to individuals in FEMA-1740-DR, Indiana Major Disaster Declaration, originally issued January 30, 2008, and last updated May 20, 2008. Maps showing disaster areas are available on the web at http://www.fema.gov/news/disasters.fema. The Indiana counties designated for individual assistance in the January disaster area are Allen, Benton, Carroll, Cass, DeKalb, Elkhart, Fulton, Huntington, Jasper, Kosciusko, Lake, LaPorte, Marshall, Newton, Noble,

Pulaski, Stark, St. Joseph, Tippecanoe, White, and Whitley.

The June storms and flooding that affected central and southern Indiana are included in the Midwest (Heartland) disaster area that comprises parts of ten states. The Indiana counties are identified in FEMA-1766-DR, initially issued June 8, 2008, and last amended on August 8, 2008. The counties designated for individual assistance in this disaster area are Adams, Bartholomew, Brown, Clay, Daviess, Dearborn, Decatur, Gibson, Grant, Greene, Hamilton, Hancock, Hendricks, Henry, Huntington, Jackson, Jefferson, Jennings, Johnson, Knox, Lawrence, Madison, Marion, Monroe, Morgan, Owen, Parke, Pike, Posey, Putnam, Randolph, Ripley, Rush, Shelby, Sullivan, Tippecanoe, Vermillion, Vigo, Washington, and Wayne. Ten other counties (Benton,

Boone, Fountain, Franklin, Jay, Montgomery, Ohio. Switzerland, Union, and Wabash) qualify only for limited public assistance.

The September storms and flooding that affected northwestern and southern Indiana are covered in FEMA-1795-DR, originally issued on September 23, 2008, and most recently amended on November 7, 2008. The affected counties are Clark, Crawford, Daviess, Dearborn, Decatur, Dubois, Fayette, Floyd, Franklin, Gibson, Harrison, Jackson, Jasper, Jefferson, Jennings, Knox, Lake, LaPorte, Lawrence, Martin, Ohio, Orange, Perry, Pike, Porter, Posey. Ripley, Rush, Scott, Spencer, St. Joseph, Switzerland, Union, Vanderburgh, Washington, Warrick, and Wayne.

Federal Income Tax Legislation
The Emergency Economic Stabilization Act (EESA), which was enacted in October 2008, modifies the federal income tax procedures for deducting losses and expenses incurred in most federally declared disasters occurring in 2008 and 2009. The January and September storms and flooding in Indiana are covered by these provisions. Different rules apply to taxpayers affected by the June storms and flooding because the EESA extended a number of the Hurricane Katrina and Gulf Opportunity Zone provisions to the ten-state Midwest (Heartland) disaster area. These special provisions apply only to taxpayers in the Midwest counties declared federal disaster areas as a result of storms and flooding occurring in May through August 2008, and these taxpayers are not eligible to claim the national disaster relief tax benefits. The following discussion summarizes the provisions likely to be most important for many taxpayers.

National Disaster Relief
The new national disaster relief rules, which apply to January and September 2008 disasters in Indiana,

increase the potential deduction for losses of personal-use property. An individual's net disaster loss is the excess of his or her personal casualty losses attributable to the disaster minus any personal casualty gains. The net disaster loss is not subject to the 10 percent of adjusted gross income (AGI) limit that is generally applicable on Form 4684, Casualties and Thefts. In addition, a qualifying taxpayer can deduct a net disaster loss even if he or she is not itemizing deductions, because the individual's standard deduction can be increased by the amount of the net disaster loss. Any portion of a casualty loss that is not a disaster loss is still deductible only as an itemized deduction, after reduction by 10 percent of the taxpayer's AGI. All losses are subject to the $100 reduction, which is increased to $500 for 2009 losses.

A taxpayer may also deduct as a qualified disaster expense some costs incurred in a trade or business that would otherwise be capitalized. This includes expenditures paid or incurred to:

1. abate or control hazardous substances;

2. remove debris from, or demolish structures, on real property; and

3. repair business property damaged as a result of the federally declared disaster.

Additional first-year depreciation equal to 50 percent of the adjusted basis of qualified replacement property is also available. Qualified property is MACRS property with a recovery period of 20 years or less, as well some nonresidential real property and residential rental property, that rehabilitates or replaces property that was damaged, destroyed, or condemned as a result of the federally declared disaster. Substantially all of the replacement property's use must be in the active

conduct of a trade or business in the designated disaster area. Although used property may qualify, original use of the property in the disaster area must start with the taxpayer. The purchase and placed-in-service period to qualify for this provision begins on the date of the disaster and ends on December 31 of the third calendar year following the date of the disaster (the fourth year for real property).

A five-year carryback period is provided for qualified disaster net operating losses (NOLs) occurring in 2008 and 2009. This compares with a three-year carryback period for many other NOLs. The disaster loss NOL is limited to the taxpayer's total NOL for the year. For a fuller discussion of these provisions see IRS Publication 547, "Casualties, Disasters and Thefts," available at www.irs.gov.

Midwest Disaster Relief
Several individual tax relief provisions associated with Hurricane Katrina and the Gulf Opportunity Zone were extended to disasters occurring between May 2 and August 1, 2008, in Arkansas, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, and Wisconsin. The IRS issued Publication 4492-B, "Information for Affected Taxpayers in the Midwest Disaster Area," in January 2009 to explain these provisions, which include relaxation of the retirement plan distribution rules. It is available at www.irs.gov.

The deduction for personal-use property losses incurred in the Midwest disaster area is not subject to either the $100 or the 10 percent of AGI limitations that generally apply to personal casualty and theft losses. However, these losses do not increase the taxpayer's standard deduction. Thus, taxpayers must itemize deductions to deduct Midwest disaster area casualty losses of personal-use property.

Midwest disaster area business loss provisions are similar to the national disaster relief provisions for the additional first-year depreciation of qualifying replacement property and NOL allowances and carrybacks. Environmental remediation costs resulting from the disaster are fully deductible, but businesses may deduct only half of their demolition and debris cleanup costs—the other half must be capitalized. The replacement period for postponing gain on property destroyed in the disaster is five years after the year any gain is realized. Employers who continued to pay their employees while their businesses were inoperable are eligible for a wage credit.

Education Credits

The Hope and lifetime learning credits are doubled for 2008 and 2009 for individuals attending eligible educational institutions in Midwest disaster area counties designated for individual assistance. The location of the taxpayer's principal residence is not a factor for the increased credit: All that matters is that the student be attending an eligible post-secondary educational institution that is located in a designated county in any of the ten states.

1. The Hope credit for 2008 generally is 100 percent of the first $1,200 of qualified higher education expenses and 50 percent of the next $1,200 of qualified education expenses, for a maximum credit of $1,800. Both $1,200 figures are doubled, to $2,400, for students attending an eligible school in a Midwest disaster area county, so that the maximum credit becomes $3,600.

2. For the lifetime learning credit, the limit is 40% (rather than 20%) of up to $10,000 of qualifying expenses.

   The definition of qualified expenses for both credits is expanded from just tuition and fees required for enrollment to include books and supplies and, for those attending on at least a half-time basis, room and board. The regular income limits for phase-out of the education credits still apply.

Summary

Many counties in Indiana were declared disaster areas in 2008 and many taxpayers may be eligible for special treatment of personal casualty losses and business losses. The new laws have significantly different provisions, depending on which disaster declaration is involved. Individuals who attend institutions of higher education in disaster areas may qualify for increased education credits. Review your situation carefully to determine if you can take advantage of the recent disaster-related tax legislation. Further information is available at the IRS website www.irs.gov. Seek competent professional assistance if you are uncertain how to proceed.

Economic Impacts of Foreign Animal Disease

Philip L. Paarlberg, Professor; Ann Hillberg Seitzinger, Agricultural Economist,
U.S. Department of Agriculture's Animal and Plant Health Inspection Service;
John G. Lee, Professor and Kenneth H. Mathews, Jr., Agricultural Economist,
U.S. Department of Agriculture's Economic Research Service

Disease eradication from the U.S. livestock and poultry population has a long history. Research funded by the Program of Research on the Economics of Invasive Species Management (PREISM) uses a quarterly economic model of U.S. agriculture along with a disease spread model to examine hypothetical Foot-and-Mouth Disease (FMD) outbreaks. Economic impacts are determined by introducing animal de-population generated from epidemiological disease-spread modeling, NAADSM (Harvey et al.), and export restrictions. The complete analysis is available at www.ers.usda.gov/Publications/ers57/.

Initial cases are assumed to result from contaminated garbage fed on four small Midwestern swine operations. Few animals are infected initially. Off-farm movements are limited, so the most important vector for spreading FMD is local spread.

Three alternative control strategies are considered:

(1) direct-contact slaughter destroys only herds having direct contact with infected herds;

(2) direct- and indirect-contact slaughter destroys direct-contact herds plus those herds indirectly exposed to an infected herd; and

(3) destruction of all herds within a 1 km ring around infected herds.

The maximum number of animals killed is 77,582 head reflecting the assumption that the initial cases are in small swine operations with few off-farm animal movements. For the direct-contact slaughter control strategy, the shortest outbreak lasts 16 days, with the longest at 186 days. The average length is 56 days.

Results for the direct- and indirect-slaughter strategy are similar. Ring-destruction scenario results differ. The mean length is 37 days and the longest outbreak is 64 days.

De-population shocks are inserted into the quarterly model of U.S. agriculture and the model is solved from the first quarter of 2001 through the fourth quarter of 2004. Several assumptions influence the results. One assumption is that U.S. exports of beef, pork, lamb meat, cattle, swine, and lambs and sheep are halted during the outbreak and for one quarter after the last case. Another assumption is that live-stock grower expectations of future returns are constant. Finally, U.S. consumers are assumed to know that transmission to humans is so rare that it is virtually nonexistent so there is no reduction in demand.

The results can be grouped into two sets:

♦ Standard outbreak scenario: Of the nine outcomes, seven are similar and are summarized using the results of the mean direct- and indirect-destruction.

♦ High outbreak scenario, consists of two outcomes that differ from the standard-outbreak scenario, but that are themselves similar.

The high results are from the direct-contact destruction and indirect-contact destruction outcomes.

The primary factor separating the nine outcomes into the two groups is the duration. The out-comes of the standard outbreak scenario have durations shorter than one quarter. The high-outbreak scenario outcomes have outbreaks lasting into quarter 3.

Results

Because most of the animals destroyed are hogs, and exports of pork and hogs are restricted, those sectors show large impacts. The prices of pork and hogs fall because trade impacts are larger than depopulation shocks. First quarter pork prices fall from $63.33 to $53.26 per cwt, while prices of live hogs fall from $56.52 to $45.20 per cwt. Recovery to the baseline is completed by the sixth quarter.

Lower pork prices mean reduced return to capital and management in pork packing. By quarter 5 both scenarios converge on the baseline. Returns to capital and management for hog growers show large reduc-tions in the first quarter. The second quarter decline is larger. By the

seventh quarter returns to hog growers recover.

The beef and beef cattle sectors effects of the FMD outbreak are similar to those for pork and swine. The outbreak causes declines in the prices for beef and cattle. First-quarter cutout value for beef drops from $129.69 to $109.57 per cwt. The live-steer price falls from $79.17 to $64.69 per cwt. Ending export restrictions causes a price recovery.

Lower prices for beef and cattle lowers beef industry returns to capital and management. Returns to capital and management for beef cattle producers fall. With the end of U.S. export restrictions, returns begin to climb back to the baseline. By quarter 10, little differ-ence remains.

The number of lambs and sheep destroyed is negligible and the United States exports little meat or live animals. Thus, the impact on these sectors is not large.

The FMD outbreak has little impact on the price of milk because few dairy animals are destroyed rela-tive to the size of the national herd, and no exports of dairy products are assumed banned. Net returns to capital and management in the dairy sector are largely unaffected.

Spillover effects on other com-modities are not large because most of the effects are caused by export disruptions. Poultry meat and eggs are not directly affected. Prices weaken some in sympathy with beef and pork. Corn, wheat, and soybean prices decline slightly.

The changes in net returns to capital and management, summed over 16 quarters, give the cost to agriculture and (Table 1). Most effects occur in the first four quar-ters. The beef packing/processing and beef cattle sectors show the largest losses, with the combined losses ranging from $1,951 million to $3,075 million. Pork and swine sectors experience losses in returns of between $1,652 million and $2,358 million. Total losses to capital and

Table 1. Changes in aggregate net returns to capital and management		
Sector	Standard outbreak	High outbreak
	-- million dollars --	
Beef processing	7	3
Beef cattle	-1,958	3,072
Pork processing	-93	-279
Swine	-1,559	-2,079
Lamb and sheep meat	18	31
Lamb and sheep	-10	-14
Poultry meat	-77	-118
Eggs	2	4
Milk/dairy	781	1,272
Soybean crushing	4	3
Crops	112	193
Total	-2,773	-4,062

management amount to between $2,773 million and $4,062 million.

Conclusions

This article reports estimates of the economic impacts of hypothetical FMD outbreaks. The initial outbreaks arise from using garbage as feed in four small swine operations in the Midwest. Three alternative control strategies and three levels of disease-outbreak intensity are examined. Exports of beef, pork, lamb meat, cattle, hogs, lambs, and sheep are halted during the outbreaks, and for one quarter beyond the last case.

Epidemiological model results show small numbers of animals are destroyed. Nevertheless, the economic model results show large losses to capital and management

resulting from the increased domestic supplies that occur with the loss of trade.

Because the loss of U.S. exports is linked to the length of an outbreak, control strategies reducing the duration of the outbreak dominate. Ring destruction reduces the length of an outbreak to less than one quarter. The mean- and low-outbreak cases for direct-contact slaughter and direct- and indirect-contact slaughter also reduce the outbreak to one quarter. But these control strategies exhibit situations where outbreaks last beyond two quarters. Total U.S. loss of net returns to capital and management ranges from $2,773 million to $4,062 million.

Variations could alter the results. Animal losses and length of outbreak

are sensitive to assumptions about the type of outbreak. Under different assumptions, other control strategies could yield different results.

References

Harvey, N, A., Reeves, M.A. Schoenbaum, F.J. Zagmutt-Vergara, C. Dubé, A.E. Hill, B.A. Corso, W.B. McNab, C.I. Cartwright, and M.D. Salman. The *North American Animal Disease Spread Model*: *A simulation model to assist decision making in evaluating animal disease incursions*, Preventive Veterinary Medicine (2007), doi:10.1016/j.prevetmed.2007.05.019, in press.

Paarlberg, P.L., A. Hillberg Seitzinger, J. G. Lee, and K.H Mathews Jr. *Economic Impacts of Foreign Animal Disease*. Economic Research Service ERR-57. Economic Research Service, U.S. Department of Agriculture. Washington, DC. May 2008.

---

and the implications for management decisions.

Input Costs Still Relatively High

Input costs for 2008 were up around 50% compared to the 2007 crop. Previous cost estimates for the 2009 crop indicated that input costs might raise another 30-40%, depending on the crop. However, the credit crisis, world economic slowdown, and falling commodity prices have affected the prices of many inputs, especially some fertilizers and fuels. Current projections have rotation soybean input costs up $41/acre or 22%, rotation corn up $45/acre or 12%, and continuous corn up $45/acre or 11% (Figure 1).

Farm Energy Costs Mostly Down

Energy costs are highly sensitive to the world supply and demand situation, and at this time appear to be one area where costs will be down for 2009. Diesel prices are forecast by the Energy Information Administration to stay at about the current level of retail prices through the 2009 cropping season, after last

year's exceptionally high prices. Propane was well above $2.00/gallon last fall but is forecast to continue declining in price well into 2009.

Seed Prices Reflect Technology Changes

With more and more traits being developed, farmers will continue to see seed prices occupying a substantial part of their budgets. List

prices for most seed companies were announced in early fall and the general trend was sharply up, with some stacked-trait premier hybrids topping the $300/unit mark and some soybeans exceeding $50/unit. Actual prices paid by farmers reflect quantity, early order, early pay, customer loyalty, and other discounts which may change depending on market conditions, and our budgets reflect

Figure 1. Five-year summary of variable input costs, $/acre, for rotation soybeans, rotation corn, and continuous corn.
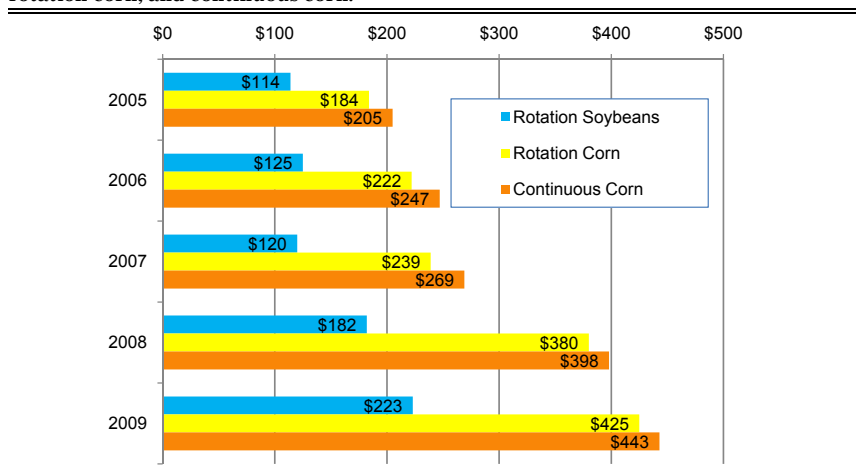
Table 1. Proportion of total variable input costs for fertilizers, seeds, and pesticides in 2005 and 2009.

	2005			2009		
	Continuous Corn	Rotation Corn	Rotation Soybeans	Continuous Corn	Rotation Corn	Rotation Soybeans
Fertilizer	33%	36%	23%	43%	42%	40%
Seed	17%	18%	32%	20%	21%	23%
Pesticides	18%	10%	12%	9%	10%	13%

modest increases in seed prices for 2009.

Fertilizer Prices Adjusting After a Wild Ride

Fertilizer prices have been recalibrating as a result of the financial crisis and the corresponding declines in commodity prices. Past USDA reports show that slightly less than half of the nitrogen and potash fertilizers imported into the U.S. for use on the 2008 crop came ashore from July to December of 2007. This past import pattern suggests that at least some fertilizer suppliers in the Midwest purchased significant quantities of fertilizer for the 2009 crop at wholesale prices much higher than current prices. Last summer local retail prices for potash at some locations were over $900 per ton, anhydrous ammonia over $1000 per ton, and DAP in some cases exceeded $1100 per ton. There is wide variation, but Indiana retail prices are now slightly lower for potash, and some nitrogen and phosphorus sources are reported down by one-third or more.

The fertilizer market is much different than just a few years ago both from a demand and a supply situation. Increased fertilizer use around the world has resulted in the U.S. consuming a smaller and smaller proportion of world production. Also, while the U.S. continues to dominate phosphorus production and we still import most of our potassium from Canada, more than half of the nitrogen used in the Midwest now comes in from other parts of the world, especially where natural gas is inexpensive. Last summer's huge price run-up was fueled largely by unprecedented demand spurred by high crop prices, but also by supply limitations in fertilizer production. A handful of companies produce most of the world's phosphorus and potassium. Investments in fertilizer manufacturing and transport are often very long-term commitments, and companies may not react to short-term market conditions.

Crop Inputs Have Changed Over Time

While variability in the costs of crop inputs has been the most recent news, the longer-term trend shows some fundamental shifts in where the money goes for inputs. Crop protection dollars have been moving away from chemicals and toward seeds, especially in continuous corn. Fertilizer costs are also a growing percentage of input costs for both corn and soybeans. In 2009 fertilizer and seed costs accounted for 63% of the total input costs for corn and soybean production, up from 50-55% just four years prior (Table 1). The Purdue Crop Cost & Return Guides assign phosphorus and potassium costs to both corn and soybeans based on nutrient removal by those crops, regardless of applications made.

Contribution Margins Down from 2007 and 2008

Contribution margins in the Purdue Crop Cost & Return Guide are based on expected market revenue minus estimated variable costs, and do not include land, machinery replacement, family or hired labor costs. Harvest prices are calculated from December futures for corn and November futures for soybeans minus an estimated basis. These values will certainly change with time and will be different for each operation. The relative contribution margins of corn vs. soybeans are often used by growers to help them decide their mix of crops for the upcoming year. In some past years, contribution margins have strongly favored corn, in other years soybeans. This year contribution margins are similar for rotation corn and soybeans (Table 2).

Margins Sensitive to Variation in Input Prices Paid

When margins are lower, differences in prices paid for inputs can have a greater impact on the percentage of revenue left over after paying variable costs. This year's range of fertilizer prices paid by farmers is significantly affecting the bottom line. Fertilizer costs have become one of the largest expenses of

Table 2. Contribution Margins, $/acre, for Rotation Soybeans, Rotation Corn, and Continuous Corn.

Crop	2005	2006	2007	2008	2009
Rotation Soybeans	$127	$145	$255	$426	$203
Rotation Corn	$119	$118	$342	$405	$207
Continuous Corn	$68	$59	$277	$337	$153

producing a crop. For corn production, fertilizer costs can exceed land rental charges in some instances. Figure 2 shows the sensitivity of contribution margins to a range of anhydrous ammonia prices and corn market prices. With ammonia above $900 per ton, contribution margins can drop below $200 per acre if corn prices are below $4.00. In many farm situations, this leaves little or negative earnings after considering land costs, labor, and machinery overhead.

Fertilizer Costs Can Influence Crop Choice

With fertilizer costs so influential in contribution margins, differences in prices paid could influence crop choice. Tables 3 and 4 portray the contribution margin differences between corn and soybeans at a range of market prices for those crops. Since these numbers are the contribution margin of rotation corn minus the contribution margin of rotation soybeans, a positive number indicates that corn provides a better return, and a negative number indicates that soybeans provide the best return. At a lower fertilizer price (Table 3), $4.00 corn and $9.00 soybeans would favor corn production. At a higher fertilizer price (Table 4), the same corn and soybean prices would favor soybeans.

Summary

While input costs for the 2009 crop are generally down from earlier projections, they remain up from the 2008 crop. With grain prices having come down from last summer's highs, contribution margins this year are projected to be lower than for 2007 and 2008. Fertilizer costs occupy a higher proportion of variable input costs than in past years, and this year's smaller margins mean that the differences in prices paid for fertilizer can have a greater impact on returns. The Purdue crop budgets can provide

Figure 2. Contribution margins for rotation corn calculated at varying grain prices and fertilizer prices. Calculations derived from Purdue Crop Cost & Return Guide, average productivity soils. Contribution margins are based on market revenue minus variable costs, and do not include land, machinery replacement, family or hired labor costs.
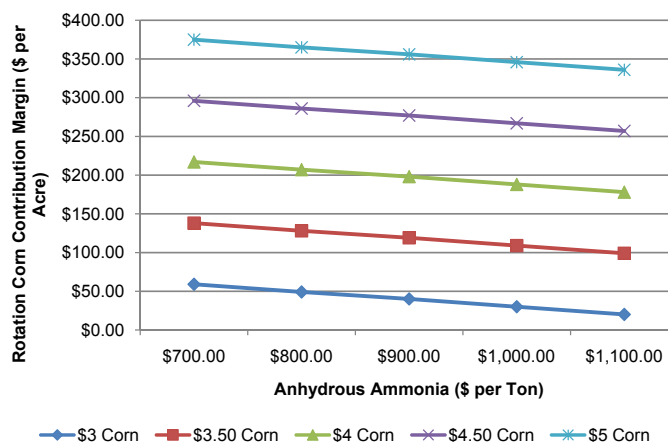
some help in suggesting adjustments to a cropping program, but a better tool is the development of budgets for your particular situation. To see the 2009 crop budgets in their entirety, a breakdown for lower productivity, average, and higher productivity soils, and footnotes that detail many of the assumptions made to construct these budgets, go to: http://www.agecon.purdue.edu/extension/pubs/.

Table 3. Difference between Contribution Margins, Rotation Corn minus Rotation Soybeans at $500/ton Anhydrous Ammonia and $500/ton DAP.

| Corn Price, $/bu | Soybean Price, $/bu | | | | |
	7.00	8.00	9.00	10.00	11.00
3.00	-$39	-$88	-$137	-$186	-$235
3.50	$40	-$9	-$58	-$107	-$156
4.00	$119	$70	$21	-$28	-$77
4.50	$198	$149	$100	$51	$2
5.00	$277	$228	$179	$130	$81

Table 4. Difference between Contribution Margins, Rotation Corn minus Rotation Soybeans at $900/ton Anhydrous Ammonia and $900/ton DAP.

| Corn Price, $/bu | Soybean Price, $/bu | | | | |
	7.00	8.00	9.00	10.00	11.00
3.00	-$81	-$130	-$179	-$228	-$277
3.50	-$2	-$51	-$100	-$149	-$198
4.00	$77	$28	-$21	-$70	-$119
4.50	$156	$107	$58	$9	-$40
5.00	$235	$186	$137	$88	$39

COLLEGE OF AGRICULTURE   *Department of Agricultural Economics*   **PURDUE**
UNIVERSITY

Changing Input Costs and Grain Prices: Implications for Crop Selection and Management

*Bruce Erickson, Director of Cropping Systems Management; Todd Hubbs,
Graduate Student; Alan Miller, Farm Business Management Specialist
and Craig Dobbins, Professor*

With the swings in grain and oilseed prices and with costs for inputs such as fuels and fertilizers varying this year more than their entire price just a few years ago, those planning for 2009 are adapting to a changing playing field and learning to utilize a range of possible inputs and outputs. The Purdue crop budgets are designed to provide farmers, landowners, and those that do business with them a set of benchmark numbers that can be used as a starting point for developing and refining their own cropping estimates, or to help guide decisions regarding crop selection. The following article details the factors that influence Purdue's crop budgets, how these factors have changed in recent years,

Contributors to this issue from the Department of Agricultural Economics:

Uris Baldos
Graduate Student

Lawrence DeBoer
Professor and
Specialist on
Indiana Taxation

Craig Dobbins
Professor

Bruce Erickson
Director of
Cropping Systems
Management

Todd Hubbs
Graduate Student

John Lee
Professor

Tani Lee
Graduate Student

W. Alan Miller
Farm Business
Management
Specialist

Philip Paarlberg
Professor

George Patrick
Professor and
Extension
Economist

Delphine Simon
Graduate Student

Brigitte Waldorf
Professor

Kelley School of Business IUPUI

Linda Ethridge Curry
Associate Faculty
Member

U.S.D.A Economic Research Service

Kenneth H. Mathews, Jr.
Agricultural Economist

PAER Production Staff

Cathy Malady
Layout and Design

Gerald A. Harrison
Editor