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The General Assembly Changes the Farm Land Assessment Formula

Larry DeBoer, Professor

The assessed value of farm land is going to go up over the next few years. But not as much as it would have, because of new legislation that passed the Indiana General Assembly in March. Farm land assessments are likely to rise "only" 30%, instead of 45%, from 2010 to 2013.

Farm land assessments start with a base rate, which is a dollar amount per acre. It's recalculated every year by the state's Department of Local Government Finance (DLGF). The base rate is multiplied by a productivity factor, which measures the productivity of each acre for growing corn. Assessments for some acreage are reduced by an influence factor, to account for factors that reduce value, like frequent flooding. The result is the taxable assessed value for each farm acre.

The base rate formula divides a measure of net farm income by an interest rate to get a capitalized value, which is what a prudent investor would pay to receive that net income, if he or she wanted a rate of return equal to that interest rate. Capitalized values for six years are used to calculate the base rate, in order to smooth out fluctuations.

Every year new more recent values for income and interest rates are added to the six years, and an earlier year is dropped. Table 1 shows the data for recent years. Net Incomes are measured by cash rent and a calculation using prices, yields and costs. The capitalization rate is the average of farm real estate and operating loan interest rates. Market value in use is the result of dividing the two net income figures by the capitalization rate. And the capitalized value is the average of these two.

For taxes in 2010, the base rate is the average of the capitalized values for 2001 through 2006, which is $1,250. In 2011, the data for 2001 will be dropped, and the data for 2007 will be added. When the capitalized value that is added exceeds the capitalized value that is dropped, the base rate increases.

Here's the problem for farm land owners. The net operating

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

	Net Incomes			Market Value In Use		
Data Year	Cash Rent	Operating	Cap. Rate	Cash Rent	Operating	Capitalized Value
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	59	7.22%	1,524	817	1,170
2006	110	74	8.18%	1,345	905	1,125
2007	122	182	7.94%	1,537	2,292	1,914
2008	137	221	6.56%	2,088	3,369	2,729
2009	139	110	6.16%	2,256	1,786	2,021

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Table 2. Base Rate Calculations

Tax Year	Data Range First	Data Range Last	Old Base Rate	Percent Change	New Base Rate	Percent Change
2008	1999	2004	$1,140	29.5%		29.5%
2009	2000	2005	$1,200	5.3%		5.3%
2010	2001	2006	$1,250	4.2%		4.2%
2011	2002	2007	$1,400	12.0%	$1,290	3.2%
2012	2003	2008	$1,700	21.4%	$1,500	16.3%
2013	2004	2009	$1,810	6.5%	$1,620	8.0%

2008: First year of the 6-year average. The large increase is from the frozen value of $880.
2008-2010: Base rates set by DLGF based on the 6-year average formula.
2011: New base rate set by DLGF based on 5 of 6 year average, excluding the highest value.
2012-2013: Old and new base rate estimates based on existing data and the old and new formulas.

income figure comes from a calculation that multiplies corn and bean prices by yields, and subtracts costs. Corn prices were especially high in 2007 and 2008. A spike in oil prices increased the demand for ethanol, which increased the demand for corn.

At the same time, the Federal Reserve responded to the recession by reducing interest rates. Farm loan rates fell with most other rates. The higher net incomes, and the lower interest rates, produced very high capitalized values for 2007, 2008 and 2009. The 2008 value was particularly high at $2,729 per acre.

Capitalized values enter the base rate formula with a four year lag. The base rate for 2011 taxes will be based on data from 2002 through 2007. That will be the first time the high commodity prices will influence the taxable value of farm land. The very high 2008 capitalized value enters the mix for taxes in 2012.

In December 2009 the DLGF calculated the farm land base rate for 2011 taxes at $1,400, up 12% from the 2010 value of $1,250. The big increase occurred because the 2001 value, $1,019, was replaced in the six-year average by the 2007 value, $1,914.

We know the rents, prices, yields, costs and interest rates for 2008 and 2009, so we can estimate the base rates for taxes in 2012 and 2013, under the old base rate formula: $1,700 in 2012, and $1,810 in 2013. That's a 45% increase in the base rate from 2010 to 2013. These base rates are shown in Table 2.

The General Assembly responded with Senate Bill 396, which proposed a change in the base rate formula. The original version of the bill dropped the highest and lowest capitalized values and averaged the remaining four, so it was called the "Olympic average." It would not have changed the base rate for 2011, since the high and low values to be dropped were equally distant from the average of $1,400. But it would have reduced the 2012 value to $1,590, and the 2013 value to $1,750. The bill passed the Senate unanimously.

Perhaps because the bill had so much support, it became a vehicle for jobs legislation in the House. It was amended eight times. What had been a bill with two sections was now a bill with 53. It passed the House unanimously.

The two versions of the bill went to a House-Senate conference committee, where all of the jobs sections were stripped from the bill. What was left, however, was a bit different. Now the new base rate formula eliminated just the highest capitalized value, and averaged the remaining five. The Senate held the bill until negotiations on unemployment insurance taxes reached a compromise. It passed on the last day of the session, and the Governor signed it on March 25 (as Public Law 112). It amends Indiana Code 6-1.1-4-4.5.

With just the highest of six capitalized values dropped, the new formula reduces the future base rates by more than the Olympic average formula. The DLGF has already recalculated the base rate for 2011 taxes. The 2007 capitalized value is dropped, and the remaining five years average to $1,290. That's a 3% increase over 2010, instead of a 12% increase (see Table 2).

The very high 2008 capitalized value will be dropped from the average for taxes in 2012 and 2013 (and probably for every year through 2017). The base rate for 2012 is likely to be $1,500 instead of $1,700. The base rate for 2013 is likely to be around $1,620 instead of $1,810. These two figures are estimates, but since we know the data and the formula, they are likely to be very good estimates.

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The base rate formula change will affect other taxpayers. As farm land assessments rise, total assessed value increases, especially in rural communities where farm land is a big part of the tax base. With higher total assessed value, tax rates can be lower and still raise the revenues that local governments need. That means lower tax bills for non-farm taxpayers. Under the new formula total assessed value won't increase as much, so rural non-farm taxes won't fall as much. The shift of the property tax burden to farm land will be smaller.

When tax rates are low, tax bills are less likely to exceed the new tax caps. Taxpayers whose tax bills exceed the caps receive tax credits, and local governments collect less revenue. A reduction in tax rates reduces revenue losses for local governments. If tax rates don't fall as much, revenue losses won't fall as much either.

Is the new base rate formula a tax cut for farm land owners? Farm land taxes will go up substantially with the rising base rate. But not as substantially as they would have. This is a frequent problem encountered in policy analysis. Do we compare the policy change to what exists now, or to what would have existed without the policy change? Since what exists now was going to change in any case, the effect of the policy is measured better by the latter comparison. But taxpayers might see this as a smaller tax increase, not a tax cut.

For further information: Indiana Local Government Information Website, www.agecon.purdue.edu/crd/Localgov

Indiana Manufacturing: The Changing Face of a Manufacturing State

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Manufacturing is an important part of Indiana's economy. Manufacturing investment provides jobs that lower unemployment, provides personal income that enters the local economy through spending, increases government revenues, and creates cost saving benefits that make that geographic location more attractive to other firms. The presence and investment of manufacturing firms varies across space. Understanding manufacturing growth patterns can help communities understand potential growth opportunities and develop policies to attract or retain manufacturing firms.

In Indiana, the manufacturing sector contributed 25 percent, $64 billion, of the state's $255 billion gross domestic product (GDP) in 2008 (US Department of Commerce's Bureau of Economic Analysis). GDP is a measure of the valued goods and services produced within a geographic area. Indiana manufacturing contributes a larger percentage to state GDP than the sector does in any other state. Iowa and Wisconsin follow Indiana's lead with manufacturing adding 21 percent and 20 percent to their state economies, respectively. Nationally, the share of GDP manufacturing provides is 12 percent, 13 percentage points less than in Indiana. Indiana was also the state receiving the highest portion of its GDP from manufacturing in 2004. This suggests that the

Table 1. Number of New Manufacturing Investments in the United States, 2004-2008[1]

	YEAR						
REGION[2]	**2004**	**2005**	**2006**	**2007**	**2008**	**TOTALS**	**Total per 1,000 residents[3]**
East North Central	311	250	292	300	271	1424	0.031
Illinois	48	55	68	88	30	289	0.023
Indiana	58	16	65	56	30	225	0.036
Michigan	73	72	56	51	100	352	0.035
Ohio	89	102	70	79	89	429	0.037
Wisconsin	43	5	33	26	22	129	0.023
New England	15	8	23	21	23	90	0.006
Middle Atlantic	156	149	111	134	117	667	0.016
West North Central	121	115	168	192	112	708	0.035
South Atlantic	248	274	301	223	225	1271	0.022
East South Central	139	146	155	151	126	717	0.040
West South Central	177	141	122	153	150	743	0.021
Mountain	31	23	59	68	57	238	0.011
Pacific	40	41	66	79	48	274	0.006
TOTALS	1238	1147	1297	1321	1129	6132	0.020

1. *Source: Conway Data, Inc., 2005, 2006, 2007, 2008, 2009.*
2. *East North Central includes: IL, IN, MI, OH, WI; New England includes: CT, ME, MA, NH, RI, VT; Middle Atlantic includes: NJ, NY, PA; West North Central includes: IA, KS, MN, MO, NE, ND, SD; South Atlantic includes: DE, DC, FL, GA, MD, NC, SC, VA, WV; East South Central includes: AL, KY, MS, TN; West South Central includes: AR, LA, OK, TX; Mountain includes: AZ, CO, ID, MT, NV, NM, UT, WY; Pacific includes: AK, CA, HI, OR, WA.*
3. *Population numbers from the US Census Bureau's 2006-2008 American Community Survey 3-Year Estimates*

Table 2. Number of Manufacturing Expansion Investments in the United States, 2004-2008[4]

REGION[5]	YEAR 2004	2005	2006	2007	2008	TOTALS	Total per 1,000 residents[6]
East North Central	681	520	442	449	386	2478	0.054
Illinois	105	75	60	79	57	376	0.029
Indiana	104	15	66	71	49	305	0.048
Michigan	159	180	89	114	79	621	0.062
Ohio	253	244	199	143	169	1008	0.088
Wisconsin	60	6	28	42	32	168	0.030
New England	9	4	16	21	13	63	0.004
Middle Atlantic	191	179	145	154	175	844	0.021
West North Central	251	208	194	296	136	1085	0.054
South Atlantic	387	427	387	366	246	1813	0.031
East South Central	361	493	234	402	232	1722	0.096
West South Central	183	173	222	140	123	841	0.024
Mountain	16	14	9	18	13	70	0.003
Pacific	52	16	27	20	24	139	0.003
TOTALS	2131	2034	1676	1866	1348	9055	0.030

4. *Source: Conway Data, Inc., 2005, 2006, 2007, 2008, 2009.*
5. *East North Central includes: IL, IN, MI, OH, WI; New England includes: CT, ME, MA, NH, RI, VT; Middle Atlantic includes: NJ, NY, PA; West North Central includes: IA, KS, MN, MO, NE, ND, SD; South Atlantic includes: DE, DC, FL, GA, MD, NC, SC, VA, WV; East South Central includes: AL, KY, MS, TN; West South Central includes: AR, LA, OK, TX; Mountain includes: AZ, CO, ID, MT, NV, NM, UT, WY; Pacific includes: AK, CA, HI, OR, WA.*
6. *Population numbers from the US Census Bureau's 2006-2008 American Community Survey 3-Year Estimates*

ongoing change from labor-based to capital intensive manufacturing over the last five years is not reducing the relative importance of the manufacturing sector to Indiana's economy.

Manufacturing Investment in Indiana

Indiana is a leader in attracting manufacturing investment. This is important because of the employment, financial, and fiscal benefits that result from the establishment of new manufacturing facilities or the expansion of existing facilities. Indiana had .036 new manufacturing investments per 1,000 people over the 2004 to 2008 time period, more than all census divisions except the East South Central division of the United States (Table 1). This places the state eighth in the country for new manufacturing investments and well above the national rate of .02. While Indiana (.048) ties with North Carolina for thirteenth in terms of manufacturing expansions per 1,000 people, the state is again greater than the national .03 (Table 2).

Indiana attracted 225 new manufacturing investments between 2004 and 2008 (Table 1). This is 16 percent of the East North Central census division total, slightly more than the state's regional population share (14%). The East North Central division's 1,424 new investments account for 24 percent of investments in the United States over this time period. Ohio leads the division's new investments over the five-year time period, followed by Michigan and Illinois. This follows a historical pattern for the region.

Indiana had 305 manufacturing expansions from 2004 to 2008 (Table 2). This accounted for 13 percent of divisional growth. While this figure is slightly smaller than the state's divisional population share, it is three percent of growth in the United States, larger than Indiana's two percent national population share. From this analysis we find that, despite the shift from labor-based to capital intensive manufacturing, Indiana continues to attract more manufacturing investments than most of the United States. It is possible that this is due to policies that are already in place as well as the cost savings firms receive from locating near similar facilities or firms for which they provide products or from which they purchase inputs.*

Distribution of Manufacturing Jobs in Indiana

Indiana's 521,059 manufacturing jobs represent 19 percent of the 2,806,039 jobs in the state. Marion County (65,660) and Elkhart County (53,048) have the largest number of manufacturing jobs (Table 3). Generally, the north and northeastern regions of the state have larger concentrations of manufacturing occupations (Figure 1) due to a long tradition of third tier automotive and recreational vehicle manufacturing and, more recently, medical devices.

Manufacturing employment growth in Indiana between 2004 and 2008 was uneven across the state. Twenty-four of Indiana's 92 counties had an increase in the number of manufacturing jobs and 68 counties lost jobs (Table 3). Job growth tended to occur in clusters on the western side of the state. The largest gains in employment occurred in Franklin County (69%) and Hendricks County (68%).

Eighteen counties lost 25 percent or more of their manufacturing jobs. Fayette County (-61%) and Madison County (-43%) experienced the largest declines in manufacturing jobs. These losses also tended to occur in county clusters (Figure 2). In this analysis of the growth and losses of manufacturing jobs, it is important to note that percent change was

** The data for this analysis were obtained from Conway Data, Inc. These data are self-reported and, therefore, may not contain all new facilities and expansions. Population data were from the United States Census Bureau's American Community Survey.*

used. With percent change, counties may experience a large loss or gain in jobs with the birth or death of one facility if they have a small total number of employees.

Manufacturing employment is the largest sector in some Indiana counties, accounting for as much as 46 percent of jobs (Elkhart and Noble Counties) (Table 3). Two large strips of heavy manufacturing employment

Table 3. Indiana Employment Statistics by County[7]

County	Total Employ 2008	Mfg Employ 2008	Mfg as a % Share of Total Employ 2008	Change in Mfg Employ 2004-2008	County	Total Employ 2008	Mfg Employ 2008	Mfg as a % Share of Total Employ 2008	Change in Mfg Employ 2004-2008
Adams	12,886	4,791	37	-1,779	Madison	39,532	4,024	10	-3,088
Allen	180,713	28,532	16	-972	Marion	577,474	65,660	11	-5,948
Bartholomew	44,459	16,042	36	1,955	Marshall	18,975	6,259	33	-345
Benton	2,402	400	17	-127	Martin	6,772	1,162	17	-46
Blackford	3,695	1,313	36	-323	Miami	10,140	2,534	25	-305
Boone	19,614	2,192	11	-2	Monroe	62,117	7,285	12	-349
Brown	3,064	225	7	-7	Montgomery	15,724	5,395	34	-574
Carroll	5,316	2,012	38	63	Morgan	14,761	2,188	15	-90
Cass	15,433	4,533	29	-622	Newton	3,867	865	22	-420
Clark	48,179	7,763	16	326	Noble	17,829	8,204	46	-1,931
Clay	6,903	1,906	28	-646	Ohio[8]	1,655	-	-	0
Clinton	11,041	4,016	36	-313	Orange	7,654	1,496	20	78
Crawford	2,163	362	17	-172	Owen	5,122	1,978	39	479
Daviess	11,104	1,989	18	-106	Parke	3,445	478	14	-7
Dearborn	14,514	1,579	11	-334	Perry	6,269	1,910	30	96
Decatur	12,295	4,750	39	-237	Pike	3,083	143	5	8
DeKalb	19,536	7,749	40	-2,537	Porter	57,090	9,717	17	714
Delaware	46,519	4,918	11	-2,326	Posey	8,766	2,974	34	163
Dubois	28,189	11,698	41	-202	Pulaski	4,525	1,257	28	-24
Elkhart	114,313	53,048	46	-9,708	Putnam	12,127	2,240	18	-630
Fayette	6,923	1,178	17	-1,818	Randolph	7,153	2,062	29	-275
Floyd	29,178	6,291	22	264	Ripley	12,705	2,719	21	-496
Fountain	5,662	2,487	44	255	Rush	4,991	1,106	22	-258
Franklin	4,449	616	14	251	St. Joseph	122,078	16,422	13	-2,055
Fulton	6,604	2,300	35	-204	Scott	6,955	2,187	31	-442
Gibson	15,684	6,361	41	-238	Shelby	16,566	4,925	30	-601
Grant	27,002	4,187	16	-1,699	Spencer	7,098	1,350	19	-261
Greene	7,508	324	4	40	Starke	4,323	939	22	-64
Hamilton	112,394	5,647	5	-41	Steuben	13,934	4,243	30	-1,231
Hancock	19,811	3,022	15	74	Sullivan	5,332	632	12	129
Harrison	11,309	1,571	14	-916	Switzerland	2,346	74	3	-40
Hendricks	47,661	3,263	7	1,322	Tippecanoe	76,199	14,336	19	-293
Henry	13,200	2,402	18	-290	Tipton	4,212	842	20	-136
Howard	38,169	11,359	30	-3,634	Union	1,435	235	16	-11
Huntington	14,801	4,361	29	-334	Vanderburgh	107,333	13,308	12	-2,248
Jackson	19,686	6,265	32	-541	Vermillion	4,647	785	17	-187
Jasper	12,268	1,553	13	147	Vigo	51,548	8,403	16	483
Jay	8,196	3,183	39	414	Wabash	12,474	3,149	25	-1,292
Jefferson	12,711	3,262	26	-465	Warren	1,937	507	26	4
Jennings	7,694	1,936	25	-285	Warrick	14,381	2,782	19	-300
Johnson	43,015	5,502	13	-233	Washington	5,852	1,615	28	-416
Knox	16,747	1,994	12	222	Wayne	32,158	6,687	21	-1,185
Kosciusko	35,529	15,149	43	244	Wells	10,904	2,416	22	-262
LaGrange	11,515	5,138	45	-702	White	8,543	1,945	23	74
Lake	194,203	26,106	13	-232	Whitley	12,031	4,767	40	896
LaPorte	44,315	8,869	20	-327	Indiana Total	2,806,039	521,059	19	-50,495
Lawrence	13,405	2,710	20	-1,014					

7. *Data from US Bureau of Labor Statistics Quarterly Census of Employment and Wages, 2008*
8. *Manufacturing employment data not available for Ohio County due to disclosure issues*

are apparent in Figure 3. One cluster is in northeast Indiana where a large number of recreational vehicle and auto-related manufacturers are located. The other is in the southern region of the state. This southerly band of manufacturing is anchored on both ends by car manufacturing, Honda in Decatur County and Toyota in Gibson County. The share of employment devoted to manufacturing is smaller in and around Indianapolis. This reflects more diversification in the local economy.

Summary

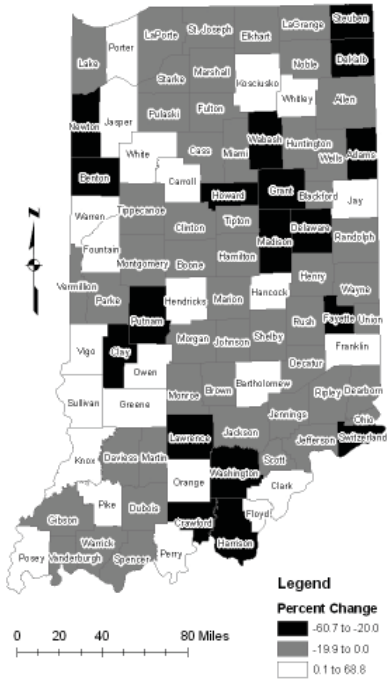
Manufacturing accounts for 25 percent, or $64 billion, of Indiana's $255 billion GDP and roughly 19 percent (520,000) of Indiana's three million jobs. Growth rates in manufacturing facilities and expansions are above the national rate and place Indiana firmly in the middle of the states in the East North Central region. The number of employees and the change in manufacturing employment varies among Indiana's counties. For example, Marion county has 65,000 manufacturing employees, contrasting with Switzerland County's 74 employees. This large spread between the counties also appears in a 69 percent increase in manufacturing employment in Franklin County and a 61 percent decrease in manufacturing employment in Fayette County. The share of total employment dedicated to manufacturing is also quite disparate among Indiana's counties. Counties in northeast and in southern Indiana have economies where manufacturing jobs dominate employment. Through the patterns of growth and loss highlighted by the maps, communities and counties may band together to implement policies to attract further manufacturing employment.

While remaining a national leader in manufacturing with rates of new manufacturing investment and facility expansions well above the national averages, Indiana manufacturing will likely continue its shift from labor-based to more capital intensive manufacturing in response to international competition as well as the availability of new technologies. As the economy recovers from the current recession, slow or declining employment growth might continue, along with positive changes in manufacturing GDP. Rural communities, a long time base for Indiana manufacturing, are unlikely to see a return of high-wage manufacturing jobs. In fact, rural communities will probably face increased difficulty competing with urban areas for new manufacturing investment. Exceptions like the Honda plant in Decatur County might occur, however, the urban shift will likely remain as the defining trend.

Figure 1. Number of Manufacturing Employees in Indiana by County, 2008

Data Source:
U.S. Bureau of Labor Statistics
Quarterly Census of Employment & Wages
Note: Data not available for Ohio County

Figure 2. Percent Change in Number of Manufacturing Employees by Indiana County, 2004-2008



Data Source:
U.S. Bureau of Labor Statistics
Quarterly Census of Employment & Wages
Note: Data not available for Ohio County

Figure 3. Share of Employment in Manufacturing by Indiana County as a Percentage, 2008

Data Source:
U.S. Bureau of Labor Statistics
Quarterly Census of Employment & Wages

Location Determinants of Food Manufacturing in the United States: The Competitiveness of Nonmetropolitan Counties

*Elizabeth Dobis, Graduate Student, Dayton Lambert, Assistant Professor and Kevin McNamara, Professor**

The location of a new food manufacturing firm in a rural county brings employment opportunities to communities which can increase farm household access to off-farm employment. The location of a food processor also can positively impact farm income if the processor purchases local or regional agriculture products for processing. For instance, corn growers selling to a local wet corn miller might increase their income from price premiums, reduced marketing costs, or lower transportation costs. However, food manufacturers, like other manufacturers, make location decisions to minimize costs. Leaders in communities seeking to attract food manufacturing or other manufacturing investment would benefit from understanding what influences manufacturing location investment decisions. The following discussion describes firm investment decisions and the factors affecting them. These factors are divided into market factors, agglomeration economies, infrastructure, labor, and fiscal policy. The discussion draws on research on food manufacturing and other firm location decisions.

* *Dobis and McNamara are at Purdue University. Lambert is at the University of Tennessee.*

** *Conclusions about new food manufacturing location decisions are based on a national study using county level data completed by Lambert and McNamara in 2009. Data was obtained from the US Census Bureau, Bureau of Economic Analysis, and US Department of Agriculture and used in a spatial econometric analysis.*

Selection Process and Firm Types

Firms employ a two-stage selection process when choosing a location for a new manufacturing facility. The goal of this process is to maximize a firm's profits through obtaining the lowest possible production costs. The first stage is the selection of a region based on broad company objectives such as expanding to a new region of the United States. Once the regional decision has been made, firms seek a low cost site within that region. The attributes of a site that food manufacturers use to make their location decision are access to input and product markets, agglomeration factors, labor attributes, infrastructure, fiscal characteristics, and social capital. Each of these determinants influences the costs firms incur (discussed further in the next section). By evaluating the unique combination of attributes at each potential location, firms are able to identify sites that increase profit potential.

Food processing firms have different needs depending on the products they manufacture. Recognizing this, John Connor and William Schiek classified food processors into three categories based on their cost structure: demand oriented, supply oriented, and footloose (Table 1). These classifications differentiate firms through common production characteristics. Demand oriented firms tend to produce fragile, perishable, or bulky food items. Bakeries, breweries, milk processing facilities, and pasta manufacturing facilities are examples of demand oriented firms. Their cost structure is dominated by distribution costs – costs associated with getting their product to market. They, therefore, tend to locate near consumers to decrease these costs. Supply oriented firms have cost structures dominated by what they use to make their products. They are likely to locate near inputs to reduce their procurement costs. Examples include flour milling, fruit and vegetable canning, animal slaughtering, and cheese manufacturing businesses. Footloose firms do not have cost structures that are dominated by either input or distribution costs. These firms include breakfast cereal, chocolate, cracker, and spice manufacturing. They are inclined to locate where transportation, business services, and capital are easily accessed.

Rural and urban areas offer different mixes of the cost saving characteristics firms desire. For instance, urban counties offer large markets to purchase final goods, whereas rural counties offer easy access to agricultural inputs. Because of this, patterns may be present in the behaviors food processing firms exhibit when selecting new manufacturing sites. Dayton Lambert and Kevin McNamara looked into these patterns and determined that some hold for all firms while others are specific to a food processor's cost category (discussed above).** These patterns are presented below.

Determinants of Firm Location

Location determinants of food manufacturing facilities occur in different combinations over the geography of a state or country. The amenities available in and around Indianapolis, Indiana are very different from the amenities in a rural Indiana county like Fulton. Firms evaluate potential sites for a new manufacturing facility on the basis of how well they meet the firm's production needs and they often evaluate sites in several states. Communities seeking to attract new manufacturing investment, therefore, are often competing with sites

in adjacent states rather than with other sites in the same state.

As mentioned previously, the characteristics food manufacturers use to make their location decisions are access to input and product markets, agglomeration economies, labor attributes, infrastructure, and fiscal characteristics. The site where distribution, procurement, and production costs are minimized is determined by the location and size of individual firms' product and input markets. These low cost sites are ideal for increasing profits.

Agglomeration economies are cost savings related to an accumulation of business activity in and around a geographic area. These cost savings occur because inputs and service providers are nearby. Additionally, when a group of similar manufacturers locates in the same geographic area, such as RV manufacturing in Elkhart County, cost savings occur due to a skilled labor force and infrastructure costs that can be shared among firms.

Infrastructure determinants allow for cost savings due to the physical or natural characteristics supporting community and business activities. Infrastructure determinants can include land availability, transportation networks, and educational institutions. Business schools and junior colleges are an important part of infrastructure because they provide skilled employees and access to technological innovation. Labor quality and availability are important cost saving determinants for manufacturing firms because locations with diverse populations allow better job matches. Higher quality workers are also more productive.

Fiscal determinants include state and county expenditure patterns and tax policies. It is difficult to know how fiscal determinants will influence firm decisions because tax holidays are often given to firms to make a particular location more enticing.

All three food manufacturing types share some common location needs. For instance, urban centers are more likely to attract all types of new food manufacturing firms. Highly populated rural counties and counties with higher per capita income are also more attractive. This is most likely due to labor availability and quality as well as county expenditures. Characteristics of the labor available for hire are very important to firms. Diverse urban counties like Marion County (Indianapolis) draw all firm types due to the variety of employees available. This variety increases the chance of acquiring employees well-suited to positions in the new facility being constructed. This is also the reason why business schools and junior colleges draw all food manufacturing types to urban counties. Agglomeration is important for rural counties to attract all manufacturing firms because of the cost savings it provides. However, contrary to general thought, access to interstate highways may not attract firms of any type to rural counties.

Demand oriented firms' location decisions are driven by their proximity to consumers. This results in generalized patterns within this production type. Demand oriented firms find that the further rural counties are from the nearest urban

Table 1. Specializations of Food Manufacturing Firm Types

Firm type	Specialization
Demand	
	Fluid Milk Manufacturing
	Ice Cream and Frozen Dessert Manufacturing
	Retail Bakeries
	Commercial Bakeries
	Dry Pasta Manufacturing
	Tortilla Manufacturing
	Other Snack Food Manufacturing
	Mayonnaise, Dressing, and Other Prepared Sauce
	Soft Drink and Ice Manufacturing
	Breweries
Supply	
	Flour Milling and Malt Manufacturing
	Sugar Manufacturing
	Frozen Fruit, Juice, and Vegetable Manufacturing
	Fruit and Vegetable Canning, Pickling, and Drying
	Creamery Butter Manufacturing
	Cheese Manufacturing
	Dry, Condensed, and Evaporated Dairy Products
	Animal Slaughtering and Processing
	Seafood Product Preparation and Packaging
	Coffee and Tea Manufacturing
	Tobacco Manufacturing
Footloose	
	Animal Food Manufacturing
	Breakfast Cereal Manufacturing
	Chocolate/Confectionery Manufacturing from Cacao Beans
	Confectionery Manufacturing from Purchased Chocolate
	Nonchocolate Confectionery Manufacturing
	Frozen Specialty Food Manufacturing
	Frozen Cakes, Pies, and Other Pastries Manufacturing
	Cookie and Cracker Manufacturing
	Flour Mixes and Dough Manufacturing from Purchased Flour
	Roasted Nuts and Peanut Butter Manufacturing
	Flavoring Syrup and Concentrate Manufacturing
	Spice and Extract Manufacturing
	All Other Food Manufacturing
	Wineries
	Distilleries

Source: Connor and Schiek (1997)

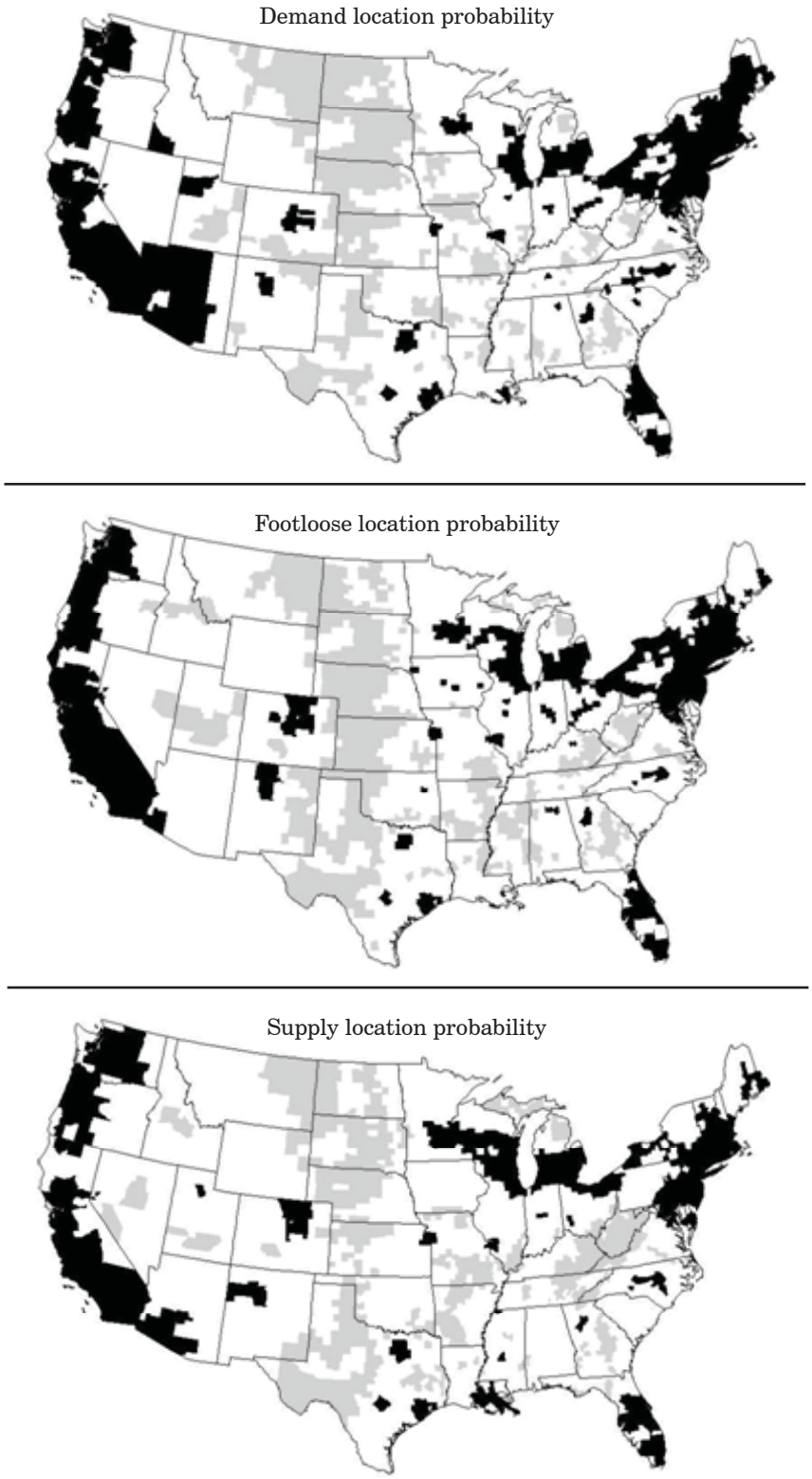
county, the less attractive they are as facility locations. This is because the greater the distance to a firm's product market, the higher the transportation costs. Thus, urban counties, with access to interstate highways, tend to attract demand oriented firms. Counties where a majority of the population belongs to a single racial or ethnic group (as categorized by the US 2000 Census) appear to be more attractive to demand oriented firms in rural counties, but the presence of unions in these counties is a deterrent. Demand oriented firms are also attracted to rural counties where public expenditures are relatively larger than local tax revenue.

Supply oriented firms choose to locate in or near counties that offer ready access to the raw material that dominates their cost structure. Therefore, it might make sense for rural counties with a relatively large supply of the commodity a processor uses to focus on attracting that type of supply oriented firm. Even if the firm does not locate in the county, a location near the county could offer growers lower transaction costs in marketing, increasing farmer net income. This situation may occur because supply oriented firms tend to prefer urban counties as they may provide access to interstate highways and larger unemployed populations.

Footloose firms do not make their location decisions solely on how close they are to their raw materials or consumers. While access to input markets is important for footloose firms, they seem to be most concerned with labor determinants. Labor quality attracts footloose food manufacturers to rural counties. Business schools and junior colleges also draw footloose firms to rural counties. Thus, it seems that footloose food manufacturers prefer to locate in rural counties where business schools and junior colleges provide a pool of trained and productive potential employees. Additionally, the presence of unions discourages the location of footloose firms in urban counties.

Considering the location characteristics that are important for food manufacturing firms, national

Figure 1. High and Low Probabilities of New Food Manufacturing Facility Locations



Key: Black represents locations with a high probability of gaining a new food manufacturing facility. Gray represents locations with a low probability of gaining a new food manufacturing facility.

Source: Lambert and McNamara (2009)

location trends emerge. Figure 1 shows sites where food manufacturing firms are likely to locate in black and sites where they are not likely to locate in gray. These trends indicate demand oriented, supply oriented, and footloose firms are likely to locate in the Northeast. The Corn Belt draws supply oriented and footloose firms as well. In general, urban centers are more likely to attract all types of new food manufacturing firms. The further a county is from an urban center, the less likely a firm is to locate in that county.

Conclusion

The selection of a county as a new site for a food manufacturing firm can increase the economic well-being of that county through higher farm incomes and more employment. Manufacturers make these site selections through a combination of product and input markets, agglomeration economies, infrastructure, labor characteristics, and fiscal policy. Because the preferences of demand oriented, supply oriented, and footloose firms to reduce costs vary, whether they locate in urban or rural counties is unique to individual firms. Access to agglomeration economies, product markets, labor quality, and workforce trainability is especially important to firms locating in rural counties. Additionally, all food manufacturers prefer to locate in and around urban areas or in rural counties with access to product and input markets and agglomeration economies. This indicates that a "one-size-fits-all" approach to attracting and retaining food manufacturing facilities may not work and policies may need to reflect the strengths and weaknesses of individual locations.

References

Connor, J. M. and W. Schiek. *Food Processing: An Industrial Powerhouse in Transition*, 2nd ed. John Wiley and Sons: New York. 1997.

Lambert, Dayton M. and Kevin T. McNamara. "Location Determinants of Food Manufacturers in the United States, 2000-2004: Are Nonmetropolitan Counties Competitive?" *Agricultural Economics*. 40 (2009): 617-630.

New Faculty

Nicole's Olynk's dissertation research at Michigan State focused upon the responses of agricultural producers to changing consumer demand for production process attributes. Her dissertation was a series of papers that identified consumer preferences for production process attributes in livestock production, provided insight for producer responses to verification of production process attributes, and assessed producer welfare implications of altering the set of production practices available for use.

Nicole Olynk

Nicole's research and extension activities at Purdue are focused primarily on farm business management and production economics especially assisting with and providing support for agricultural producer decision making. She has a strong interest in applied research which incorporates both the economic outcomes of an on-farm decision and the intricacies of the biological processes underlying the production system. She will do inter-disciplinary research which provides support for a farmer's decision making regarding technology adoption, analysis of producer costs and benefits associated with alternative production processes. She will gain insight into the implications for agricultural producers of changing consumer demand and preferences.

Continued from page 12.

The Dulls seek to provide their customers with not only products for purchase, but an experience to take home with them. The farm has several enterprises, including a grain operation, Christmas tree production, a unique and growing mix of enterprises intended to enhance the tree purchase experience, a bed and breakfast inn, and a recreational club. The grain operation retains a year-round employee who is driving diversification of the grain operation through the addition of a precision planting business. Spreading the Dull Christmas Tree experience, the Dulls give back to the community via the Statehouse Tree Program and Trees for Troops. Come learn about the Dull's Tree Farm experience!

3) Conference Center, Hendricks County 4-H Fairgrounds – Dinner at 6:30 p.m. and program at 7:00 p.m. on Estate and Succession Planning.

Thursday June 24, 2010

4) Little Ireland Farm, Inc. – Interview at 8:00 a.m. – Mini-tours on crop production systems/ technologies, Bayer CropScience field trials, and farm safety and disability recovery begin at 8:30 a.m.

The increasing number of regulations associated with crop and livestock production practices is often a concern of farmers. Our stop at Little Ireland Farm provides an opportunity to learn how Jack Maloney is positioning his farm to cope with this potential future. See how Jack has combined production practices,

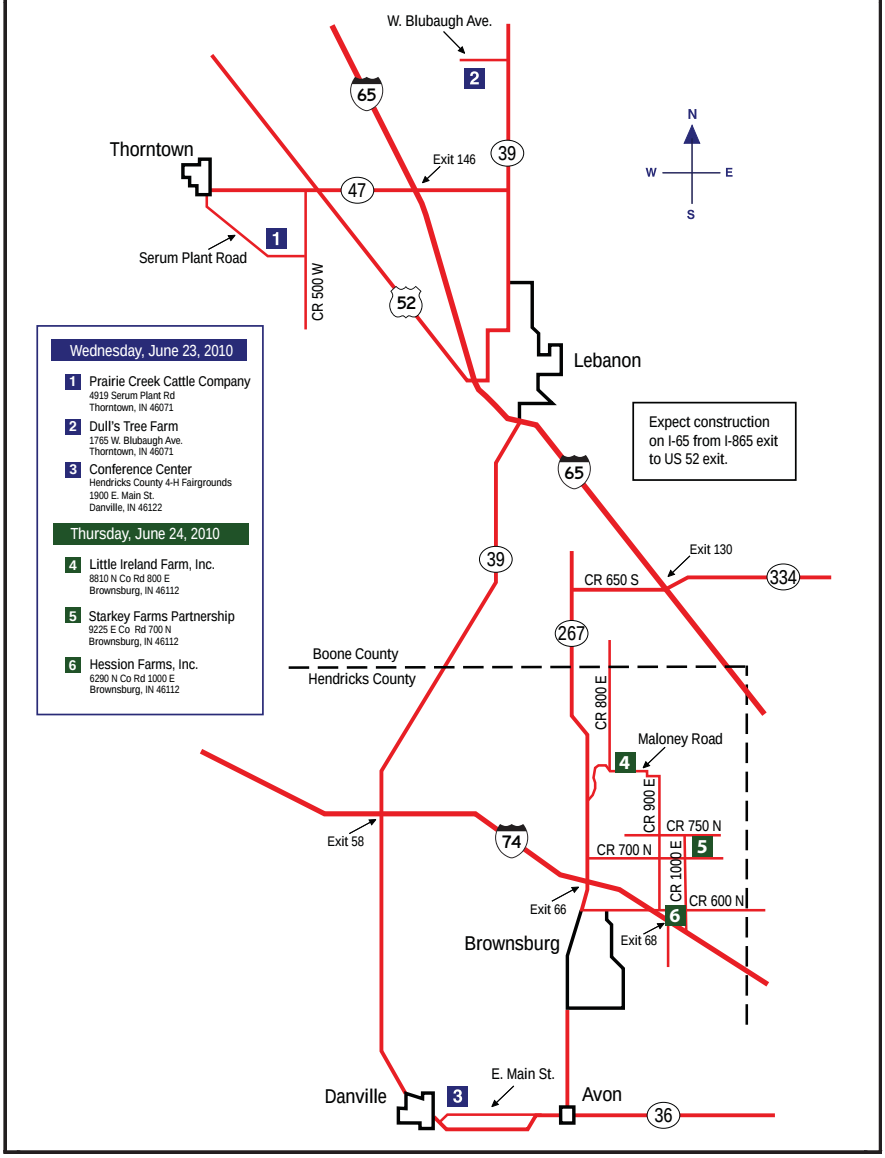
technology, conservation practices, and record keeping to greatly reduce applications of N, P, and K while maintaining strong yields. This stop also provides the opportunity to learn what technologies Bayer CropSciences is field testing. Finally there will be an opportunity to consider farm safety — what can be done to reduce the risks that we are unknowingly taking, and if a disability creating accident does occur, what recovery aids are available.

5) Starkey Farms Partnership – Interview at 10:00 a.m. – Mini-tours on no-till equipment settings, nutrient loss through field tiles, and soil profile changes from prolonged no-till at 10:30 a.m.
Some no-till producers believe it takes several years to realize the benefits from no-till. The Starkey family feels differently. They have no-tilled beans since 1989, but were unsuccessful in no-tilling corn from 1993 thru 1995. Additional education on planter set-up and the timing of nitrogen applications led to better results. They have been very successfully no-tilling corn since 2000. They will discuss what no-till planter and sprayer settings work and don't work for them. They have been involved for five years in a study analyzing nutrient loss from field tiles and using annual rye grass as a nitrogen scavenger. Study results, along with infrared images comparing their farm with conventional-tilled fields, will be presented. Participants will view the soil profile at Starkey Farms and see how no-tilling has changed the soil structure and air and water infiltration.

12:00 p.m. – Sponsored lunch at Starkey Farms 12:30 p.m. – Luncheon speaker: Joe Kelsay, Director of the Indiana Department of Agriculture.

6) Hession Farms Inc. – Interview at 1:30 p.m. – Mini-tours at 2:00 p.m. on land-holding and operational entities, strip-till/corn after corn, and cultivating goodwill in your community. Tour ends at 3:00 p.m.
Anthony and Matt Hession's farming operation focuses on doing the basics very well. They raise food grade corn and commodity soybeans and were one of the first operations to use a GPS-linked yield monitor to map fields. Previously ridge tillers, they now are all strip-till. While other farms have grown through diversifying their activities and outsourcing labor and skills, the Hessions have opted to stick with their basic enterprises and capitalize on their internal resources. They currently exist harmoniously on Indianapolis' western urban fringe, but a future move to a cluster of recent land acquisitions in Clinton County is inevitable. A forward-thinking strategy using both land-holding and operational entities initiated by their parents a generation ago has the brothers and their siblings and families well-positioned for future success.

Map for 78th Annual Indiana Farm Management Tour



COLLEGE OF AGRICULTURE *Department of Agricultural Economics* PURDUE UNIVERSITY

78th Annual Indiana Farm Management Tour

Alan Miller, Farm Business Management Specialist

Boone and Hendricks Counties
June 23 and 24, 2010

Wednesday June 23, 2010

The public is invited. Pre-registration is required to participate in either sponsored meal — dinner on June 23 or lunch on June 24. Please pre-register by Wednesday June 16 by calling 765/482-0750 or 1-888-EXT-INFO. Caterer: A L'OVEN SPOONFUL. Sponsors: Farm Credit Services of Mid-America, Co-Alliance, Hendricks County Farm Bureau Inc., BASF, DeKalb/Asgrow Seed, Dow AgroSciences, DuPont Crop Protection, Monsanto, and Syngenta. All times are EDT.

1) Prairie Creek Cattle Company – Interview at 1:00 p.m. – Mini-tours at 1:30 p.m. on environmentally sustainable pasture management and stream bank protection, beef production and management practices, and beef marketing strategies.
The number of cattle operations in Indiana has declined by nearly 50% over the last 20 years. Prairie Creek Cattle Company has successfully bucked this trend. Come and learn why. This is an excellent example of a beef cattle business that complements the Lawson family's other farming activities and has afforded Donnie and Tammy Lawson and their children the opportunity to truly farm together. Donnie is a leader in the Indiana Beef Cattle Association and will share his perspectives on profitable and environmentally sustainable beef production.

2) Dull's Tree Farm – Interview on opportunities in entrepreneurial agriculture at 3:00 p.m. – Mini-tours at 3:30 p.m. on marketing agritainment, tree production, and a tree shearing demonstration.

Continued, page 10.

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