



**The Economic Impact of Exempting
Farm Equipment Parts from Nebraska Sales Taxes**

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Preface

Nebraska agriculture operates in a highly competitive environment. This is true of agricultural producers but also of key suppliers such as seed and fertilizer dealers, bankers, and agricultural equipment dealers. Any difference in cost can have a large affect on sales in these highly competitive industries. In particular, differences in cost, and therefore industry performance, can emerge when Nebraska policy is out of step with that of neighboring states. Such a situation currently exists in the case of taxes on repair and replacement parts for agricultural equipment in Nebraska. These parts are currently sales tax exempt in surrounding states, but taxable in Nebraska.

This difference in tax policy between Nebraska and surrounding states has a significant impact on the sale of repair and replacement parts for agricultural equipment in Nebraska. Given that in 2006, South Dakota began exempting these parts from sales taxes, the impact of this differential is expected to grow. Specifically, a portion of the parts purchases of Nebraska farmers are lost to other states and Nebraska equipment dealers have difficulty attracting business from agricultural producers in neighboring states. The impact does not stop here, however. There is also a significant repair component for any agricultural equipment dealer, so when parts sales decline, so does the sale of repair services. Even sales of new and used equipment suffers as farmers who travel out of state for parts and repairs build a business relationship with equipment dealers in other states.

This all points out the substantial economic development that could occur in Nebraska from standardizing Nebraska tax policy with adjacent states by exempting repair and replacement parts for agricultural equipment from the sales tax. Such an exemption would spur jobs and sales at Nebraska agricultural equipment dealers. There also would be a “multiplier” effect on the overall economy for non-metropolitan Nebraska communities where agricultural equipment dealers are located. Greater income and employment at equipment dealers would spill over into new sales at businesses throughout these communities.

The total impact could provide an economic boost in the parts of the state that need it the most. Most rural, agriculturally dependent counties in Nebraska have been losing population for decades with population losses between 20 percent and 30 percent for most of these counties since 1970. Exemption of the sales tax on repair and replacement parts for agricultural equipment would generate an economic impact in these economically underperforming counties. This would complement the benefits that metropolitan counties and larger micropolitan counties have been receiving from the tax credits offered as part of the *Nebraska Advantage* program.

The dynamic economic response from exempting the sales tax also would bring new state and local tax revenue to Nebraska. In particular, property and income taxes would grow as a result. Even sales taxes would grow due to the “multiplier” effect. The increase in revenue from the dynamic economic growth would be sufficient to offset all, or a substantial share, of the state and local sales tax revenue (\$12.3 million per year) currently raised from the sales taxes levied on repair and replacement parts for agricultural equipment.

The study that follows was produced by Goss & Associates and the Bureau of Business Research at the University of Nebraska, Lincoln. Any errors or misstatements are solely the responsibility of the authors. Biographies of the principal investigators are contained in Appendix 3.

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The Economic Impact of Exempting Farm Equipment Parts From Nebraska Sales Taxes

Executive Summary

This study examined the economic and fiscal implications of exempting repair and replacement parts for agricultural equipment from sales tax in Nebraska. Our main findings were as follows:

- Nebraska is one of only eight U.S. states that do not exempt farm equipment parts from the imposition of a sales tax.
- Sales tax collections on farm equipment parts extract funds from agriculturally dependent counties in Nebraska.
 - Between 1969 and 2005, the state's 20 most agriculturally dependent counties **lost** 23.7 percent of their population while the state's 20 least agriculturally dependent counties experienced an 18.3 percent **gain** in population.
 - Between 1969 and 2005, the state's 20 most agriculturally dependent counties **lost** 0.5 percent of their private companies while the state's 20 least agriculturally dependent counties experienced a 9.3 percent **gain** in private firms.
 - Between 1998 and 2005, the state's 20 most agriculturally dependent counties **lost** 17.1 percent of their agriculture parts supply firms while the state's 20 least agriculturally dependent counties experienced a 12.1 percent **loss** in their agriculture parts supply firms.
 - Between 1998 and 2005, all of the farm parts suppliers in Brown, Dixon, Furnas and Johnson Counties closed. Two of the counties border states that exempt sales from taxes. This resulted in a loss of almost \$900,000 in annual payroll (2007 dollars) from the four counties.
- The sales tax reduces the sale of farm equipment parts in Nebraska. Currently, merchant wholesalers of farm equipment have substantially less sales per million dollars of agricultural production than farm equipment dealers in surrounding states.

- Based on the U.S. Census of Agriculture, sales of merchant wholesalers of farm equipment in Nebraska would grow by \$131 million if sales relative to farm output reached the levels found in nearby states.
- Between 1999 and 2005, fifty of Nebraska's 334 agricultural parts suppliers closed their doors.
- Given that South Dakota began exempting parts sales from sales taxes in 2006, this will become a larger issue especially for Nebraska parts suppliers in counties bordering South Dakota
- Nebraska border counties also have lower levels of sales in farm equipment dealers per million dollars of agricultural production than equipment dealers in border counties in surrounding states.
 - The latest available data show that Nebraska employment in the farm and garden machinery wholesale industry is approximately 25 percent less in the border county region of Nebraska.
 - Past research has found that each 1 percentage point increase in the state sales tax rate for general sales (all taxable sales) leads to a 4 percent decrease in taxable sales in border counties.
- Exemption of the sales tax on repair and replacement parts for agricultural equipment would generate:
 - A total impact of \$51.5 million for scenario 1 and \$146.4 million for scenario 2.¹
 - An addition to wages and salaries of \$14.1 million for scenario 1 and \$41.0 million for scenario 2.
 - An addition to self-employment income of \$2.9 million for scenario 1 and \$7.6 million for scenario 2.
 - An increase in jobs of 495.9 for scenario 1 and 1,428.9 for scenario 2. These jobs pay on average \$28,356 for scenario 1 and \$28,702 for scenario 2.

¹Scenario 1 is based on an impact concentrated in border counties while scenario 2 is based on significant impacts occurring in all counties in the state.

- The dynamic economic impacts from exempting the tax would generate additional tax revenue for state and local government in Nebraska of:
 - \$4.3 million for scenario 1 and \$14.0 million for scenario 2 for 2009.
 - Thus, the exemption would generate substantial economic impacts for rural Nebraska yet state and local government would end up recovering a substantial share of its lost revenue for scenario 1, and all of the lost revenue for scenario 2. This makes the exemption an efficient economic development policy, especially for rural Nebraska.

Chapter 1: The Economic Gains from the Exemption of Sales Taxes on Farm Equipment Parts in Nebraska

Introduction

Nebraska is one of only eight states in the nation that currently levies a sales tax on farm equipment replacement parts. Furthermore, all of the states that surround Nebraska have sales tax exemptions on sales tax on farm equipment parts. The rationale for the exemption is simple. Across the U.S., states and the U.S. government do not levy a sales or use tax on factors of production. That is, taxing authorities typically exempt from sales tax items purchased items that go into the production of a final product. Taxes are then collected on the value of the final product. In the case of agriculture, this means an exemption on parts that are used in the production of farm products such agriculture commodities and livestock. Nebraska's current tax thus places Nebraska parts dealers and farmers at a competitive disadvantage to their counterparts in surrounding states.

As a result of the differences in tax policies, a significant number of Nebraska farmers are going out of state to purchase farm equipment parts and to service their farm equipment. Other farmers buy on-line to avoid the tax. Nebraska's lack of a sales tax exemption has several impacts including:

1) Nebraska farmers pay higher prices for parts than farmers in surrounding states or travel greater distances and/or spend more time shopping for farm equipment parts.

2) Nebraska parts suppliers must charge a higher price than their competitors, some of whom are just across the state line. The higher price is shared by the farmer in terms of higher price and by the Nebraska supplier in terms of lower profitability.

3) State tax collections are reduced due to the decline in the size and number of parts suppliers in the state. That is, indirect tax losses accrue to the state due to the movement of parts suppliers from the state and the reduction in size of suppliers in the state. This has resulted in the closure and out-migration of Nebraska farm equipment parts suppliers. This reduces both local taxes in the form of property taxes and local option sales taxes and state taxes in the form of sales, individual income and corporate income taxes.

Figure 1.1 shows the location of agricultural machinery and parts suppliers that have closed or left the state since 1999. Figure 1.2 shows current farm equipment parts for Ne-

braska and for surrounding states in their border counter. Two factors are clear from the two figures. First a high share of the parts suppliers that closed since 1999 were located in counties on the Nebraska border. Second, border states have a large number of agriculture parts suppliers close to Nebraska's border. This will likely lead to further losses in agriculture parts suppliers in the state of Nebraska, especially for Nebraska counties on the state border.

Figure 1.1: Number of closures by county since 1999 (source: INEDA)

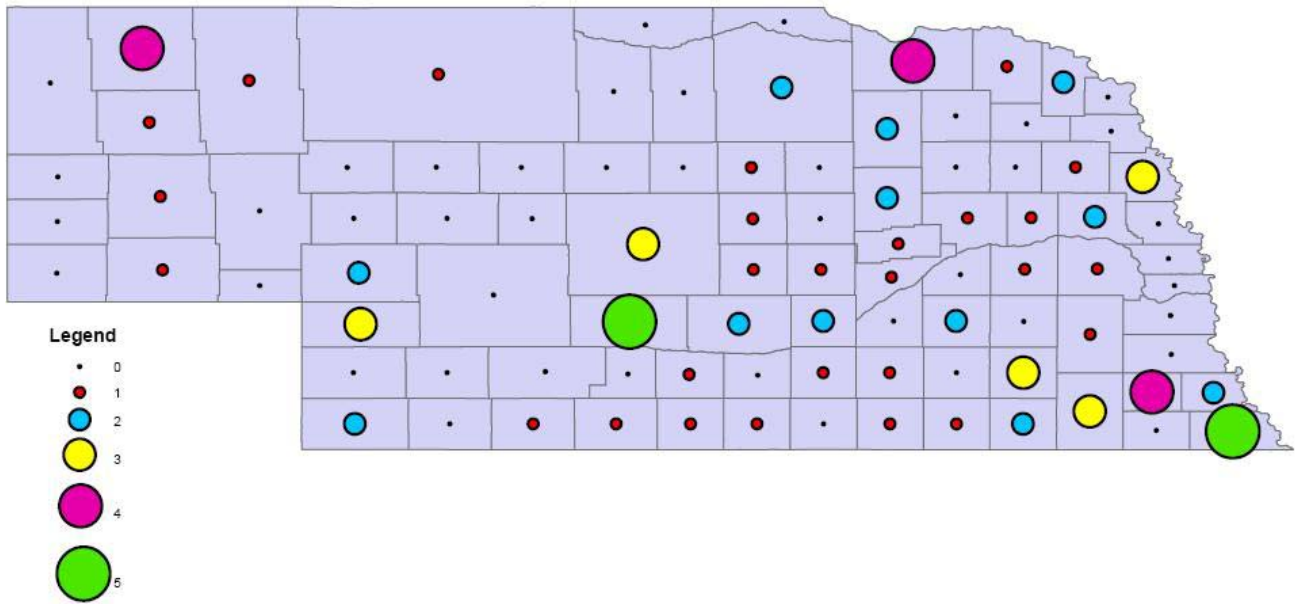
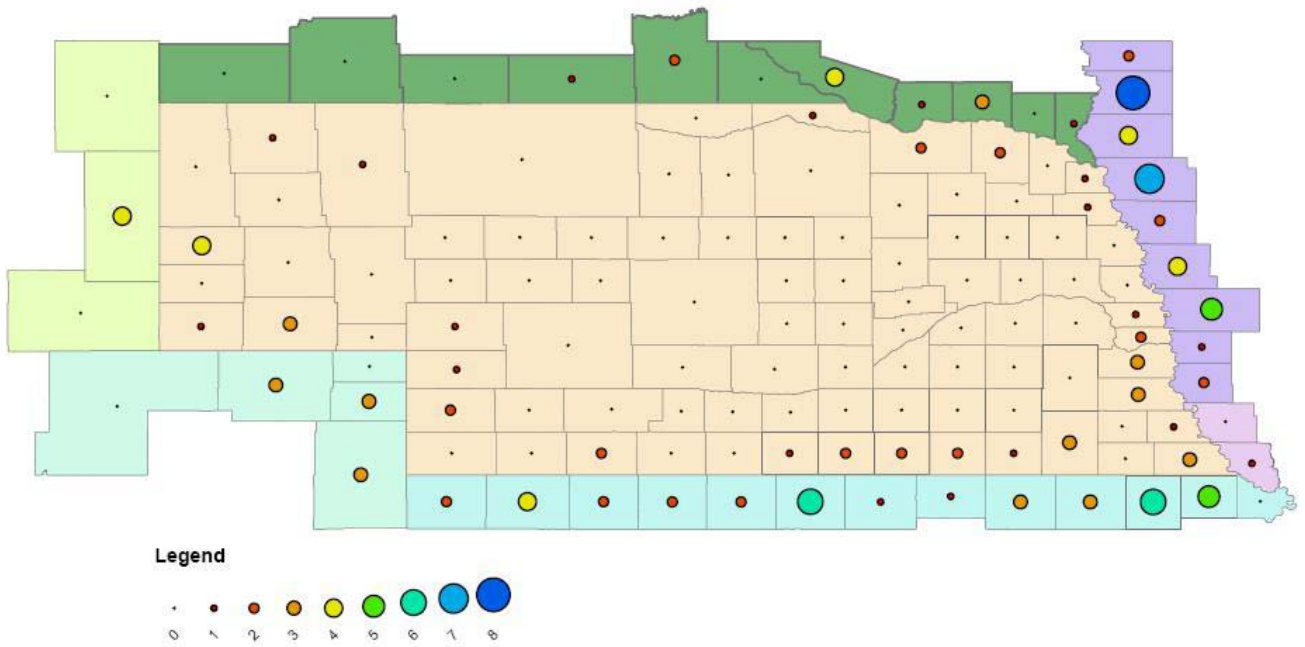


Figure 1.2: Number of agriculture parts suppliers in Nebraska and border counties, 2007 (source: INEDA)



In the 2007 session of the Nebraska Legislature, Senator Lavon Heidemann of Elk Creek introduced a bill, LB159, that would have exempted the repair or replacement parts for agricultural equipment from sales taxes. It was estimated by the Nebraska Department of Revenue in a STATIC analysis that the exemption would reduce state sales tax revenues by approximately \$6.7 million in fiscal year 2007-08 and \$10 million in FY2008-09. Furthermore, the Department of Revenue estimated that the amount of sales and use taxes returned to municipalities would decrease by an estimated \$1.5 million in FY08 and \$2.3 million in FY09.

The analysis failed to consider the dynamic nature of taxes in the sense that higher taxes encourage the location and relocation of businesses, families and individuals. Furthermore, the analysis failed to consider that Nebraska farmers currently physically travel out-of-state to pick up the parts or take their equipment to be serviced, and many purchase their parts by mail order or over the internet from out of state sources, and have the parts shipped into the state. This, of course, means that the current system costs the state and local jurisdictions tax revenues and financially penalizes Nebraska farmers and agricultural equipment parts suppliers.

Below are listed how surrounding states treat sales taxes on replacement parts for farm equipment:

Colorado: “Effective July 1, 1999, and as modified effective July 1, 2000, and again on July 1, 2001 a sales tax exemption is provided for certain qualifying farm, dairy and ranch equipment and shipping aids. [§39-26-716 C.R.S.] This exemption applies to state sales and use tax only. Colorado sales tax exempts many non-registered farm vehicles, towed equipment, trailers, and the attachments to these vehicles, irrigation equipment, dairy equipment, aircraft used in crop dusting, and repair and maintenance parts for these exempt items. The statute also exempts farm use of bailing wire, binders twine, surface wrap, pallets and crates.”²

Iowa: Generally, self-propelled implements, implements customarily drawn or attached to a self-propelled implement, or grain dryers used directly and primarily in agricultural production and not subject to registration are exempt. Also exempt are auxiliary attachments which improve the performance, safety, operation or efficiency of the farm machinery or equipment. Certain purchases of non-self-propelled machinery or equipment are exempt from the Iowa sales tax if they are used directly and primarily in dairy or livestock production.³

Kansas: The Kansas Legislature has granted sales and use tax exemptions specifically for agribusiness. These are the exemptions for: Agricultural Animals Farm Machinery and Equipment Propane for Agricultural Use Soil Erosion Prevention. Like all Kansas businesses, persons engaged in agribusiness may also purchase without tax those items that make up all or part of the taxable goods or services produced or sold. These are the sales tax exemptions for: Resale Ingredient or Component Parts Consumed in Production. .Repair and replacement parts .mean any part which replaces an existing part, or which is necessary to maintain the working condition of a piece of farm machinery and equipment. Items which would be found on a manufacturer’s parts list, service parts list, or similar parts listing for a given piece of machinery or equipment, or the generic equivalent of such listed part, are exempt. Parts that are not included in such a listing do not qualify for exemption as repair and replacement parts of farm machinery and equipment.

Missouri: Farm machinery and equipment are exempt from tax if used exclusively for agricultural purposes, used on land owned or leased for the purpose of producing farm products, and is used

² <http://www.revenue.state.co.us/fyi/html/sales75.html>

³ <http://www.iowaccess.org/tax/educate/faqsales.html#8>

directly in the production of farm products to be ultimately sold at retail.⁴

South Dakota: As of Jan. 1, 2006, the sale of parts and repair services for farm and irrigation equipment became exempt from sales tax; an exemption for maintenance items for farm and irrigation equipment went into effect March 3. Jan Talley, Director of the Business Tax Division, says although the law is very specific on what qualifies for the tax exemption, the department has been receiving numerous calls from farmers and retailers who mistakenly believe everything is exempt from the tax.⁵ The sales tax exemption applies to the following:

- Parts that replace a part used on farm machinery, attachment units, and irrigation equipment which have a specific or generic part number assigned by the manufacturer.
- Repair work performed on farm machinery, attachment units, and irrigation equipment.
- Maintenance items purchased to be used on farm machinery, attachment units, and irrigation equipment. Such items would include antifreeze, batteries, belts, detailing or cleaning, hoses, tires, nuts and bolts, oil, and windshield washer fluid. If the items are purchased to be used on equipment not classified as farm machinery, attachment units or irrigation equipment, sales tax applies at the state rate of 4% as well as applicable city tax.

⁴ <http://www.dor.mo.gov/tax/business/faq/exempt.htm#q12>

⁵ <http://www.state.sd.us/news/showDoc.aspx?i=7574>

Sales Tax Exemption Is a Rural Economic Development Tool

Agriculturally dependent rural counties in Nebraska have underperformed urban and metropolitan counties over the past several decades in terms of income and population growth (see Table 1.2). In fact the top twenty counties in the state, in terms of agriculture dependence, lost an average of 23.7 percent of their population between 1969 and 2005.⁶ On the other hand, the twenty counties that are the least agriculturally dependent gained an average of 18.3 percent in population between 1969 and 2005.

Table 1.2: Agricultural dependence and growth among Nebraska counties

	Nebraska's 20 most agriculturally dependent counties	Nebraska's 20 least agriculturally dependent counties
Population growth 1969-2005	-23.7%	+18.3%
Growth in private employment, 1998-2005	-4.9%	+4.3%
Growth in private establishments, 1998-2005	-0.5%	+9.3%
Percent change in the number of agriculture parts suppliers, 1998-2005	-17.1%	-12.1%
Source: U.S. Census Bureau, County Business Patterns & U.S. Bureau of Economic Analysis		

Study Objectives

The objective of this study is to estimate the impact of the a sales tax exemption on the sale of farm equipment parts on the state of Nebraska and local jurisdictions via the local option sales tax.⁷ The study estimates overall impacts and also calculates the impacts across twenty industries. Using input-output multipliers and multivariate analysis, the study will estimate the impact of the

⁶Agricultural dependence is measured in terms of agriculture income as a percent of total county personal income (source: U.S. Bureau of Economic Analysis).

⁷Nebraska law requires that sales that are exempt from the state sales tax are also exempt from the local option sales tax.

implementation of a sales tax exemption on farm equipment parts on Nebraska sales, earnings, jobs and tax collections.⁸

In addition to providing jobs for citizens of the state, the farm equipment supply industry draws business visitors, conventions and corporate relocations to the state. Business visitors generate another economic return to the area through the purchase of food, retail items, entertainment and lodging. The indirect impact of these purchases is considerable and will be estimated.

The multiplicative effects of the farm equipment parts suppliers on the state on local communities will be estimated using input-output multipliers. Basically, input-output multipliers show how spending changes initiated in one industry, in this case parts suppliers, are filtered throughout the local economy. For each dollar of revenue generated by parts suppliers, there are direct effects, for the initial spending, plus the spillover impacts into the rest of the state economy. Input-Output multiplier models are the most frequently used type of analysis tool for economic impact assessment. Input-output analysis assumes that each sector purchases factors of production from other sectors and then sells its output to other sectors and/or final consumers.⁹

Study Outcomes

The research study provides the following estimates:

- direct revenues brought into the area from other communities and states and from farm equipment parts suppliers.
- reduction in spending by Nebraska farmers in other states with the implementation of a sales tax exemption.¹⁰
- added direct sales, earnings, jobs and tax collections resulting yearly from the implementation of a sales tax exemption on farm equipment parts sales.
- spillover sales, earnings, jobs and tax collections resulting yearly from the implementation of a sales tax exemption on farm equipment parts sales.
- impacts by industry so that the public policymakers will more fully know the major beneficiaries of the implementation of a sales tax exemption on farm equipment parts sales.

⁸Estimates of state and local tax collections will be provided. The study will provide estimates of the impact on income, sales and property tax collections.

⁹A discussion of Input-Output multipliers is contained in Appendix 1.

¹⁰Leakages result in the loss of sales, earnings, jobs and tax collections to Nebraska as dollars flow to other locations. Having resident parts suppliers reduces these leakages.

- historical impact on the number and size of farm equipment parts suppliers in the state due to the lack of a sales tax exemption.
- economic gain to the Nebraska farmer from the implementation of a sales tax exemption on farm equipment parts sales.
- added investment in the state due to the implementation of a sales tax exemption on agriculture equipment parts.

Chapter 2: Dynamic Effects of Implementing a Sales Tax Exemption

Introduction

One way to improve growth trends for agricultural parts wholesalers would be to improve the tax climate in the state. Nebraska does exempt agricultural machinery from the sales tax, but it is currently one of the few states in the region, and one of only eight nationwide, that continues to tax repair and replacement parts (and depreciable replacement parts) for agricultural machinery. In particular, all surrounding states partially or fully exempt sales taxes on repair and replacement parts with South Dakota exempting sales beginning in 2006. The State of Nebraska currently offers a refund for depreciable repairs and replacement parts, but not an exemption.

Matching the tax structures of surrounding states would aid the agricultural machinery wholesale industry by discouraging agricultural producers from purchasing parts from other states. It would also aid agricultural producers in Nebraska by lowering their costs, and allowing them to increase production. These dynamic effects would grow the economy, producing additional economic activity and state tax revenue. This dynamic effect would mitigate some of the loss in state sales tax revenue due to exempting sales of repair and replacement parts for agricultural machinery. In its fiscal note on a 2007 exemption proposal (LB 159), the Nebraska Department of Revenue estimated losses in revenue resulting from the proposed exemption for FY 2008 and fiscal year 2009. In terms of state taxes, the Department of Revenue estimated lost revenue of \$6.7 million in FY 2008, and \$10.0 million in FY 2009. The impact in fiscal year 2009 represents the full impact of the tax exemption on revenue.

The fiscal note estimates, however, focused on the loss in existing sales tax revenue currently coming to the state of Nebraska. By design, such analysis for a fiscal note does not attempt to estimate the dynamic implications of tax exemptions, cuts, or increases. Such an approach is practical given the great volume of fiscal notes that the Department of Revenue must produce in a short-time frame. However, there are dynamic effects associated with tax changes. In particular a tax exemption would increase

economic activity in the state, generating state tax revenue that would mitigate much of this projected revenue loss.

The dynamic effect on the economy occurs from three sources. First, by eliminating the tax, Nebraska can capture sales of repair services and parts that currently go to surrounding states. Second, eliminating the tax will reduce the total production costs of farmers operating in Nebraska. Lower production costs would allow the farmers to expand production. Third, the tax exemption, by increasing income of the industry and farmers, would ultimately spill over into the rest of the economy. In other words, the initial income increase would be multiplied in the overall economy.

Dynamic Economic Impacts

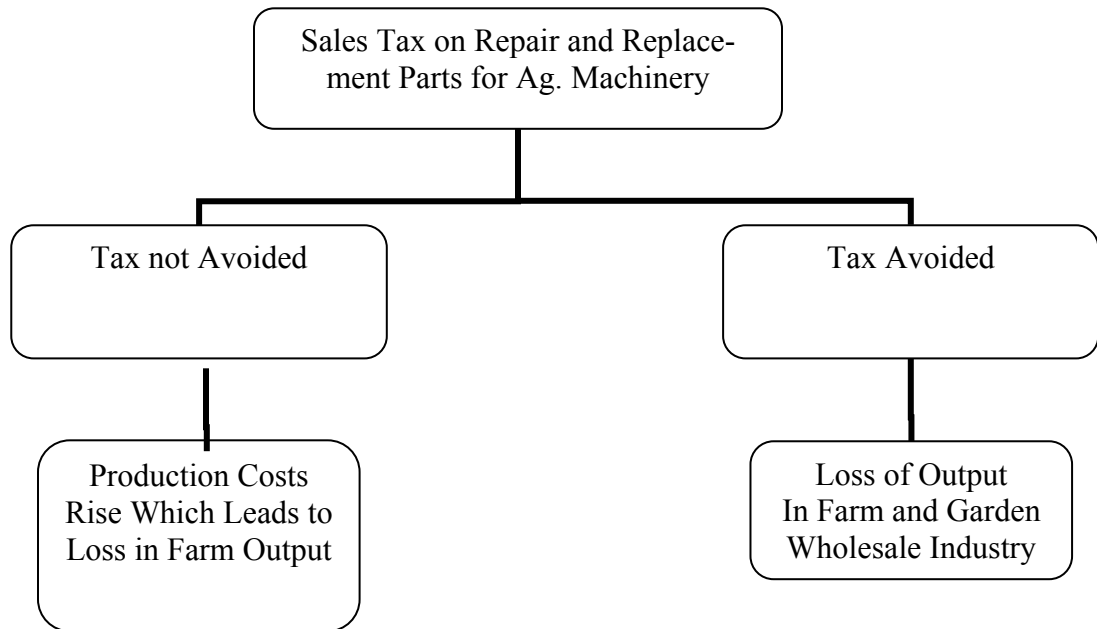
Figure 2.1 shows the dynamic impacts on the economy from exempting repair and replacement parts for agricultural machinery from sales tax. Producers on the left of the figure are not able to avoid the tax. These producers have higher production costs due to the tax, which limits production at the margin. Exempting the tax on repair and replacement parts for agricultural machinery would lower their production costs and put additional acres into production, leading to an additional economic and fiscal impact on Nebraska. Later in this chapter, we estimate the additional production that could occur in Nebraska with the exemption of the sales tax on repair and replacement parts for agricultural machinery.¹¹

Agricultural producers on the right of the graph are able to avoid the tax by purchasing repair and replacement parts in adjacent states, or through alternative methods, such as the Internet. Agricultural producers located near the border of the state would have on average the best opportunity to shop in adjacent states. For these producers able to avoid the tax, there is no increase in their production costs, and therefore, no reduction in their agricultural production. There is a significant loss to the economy,

¹¹ Exempting the tax also would increase the income of agricultural producers on acres that are currently in production. This increase in income would come as government revenue is reduced. Thus, any economic impact from increased income would be offset approximately by the reduced economic impact from government spending. For this reason, the economic impact analysis focuses on the economic impact from additional production that would result from the exemption of the sales tax on repair and replacement parts for agricultural machinery and equipment, and does not consider any impact as revenue stays with farmers rather than going to government as a result of the exemption.

however. Businesses that sell agricultural repair and replacement parts would lose a portion of their potential customer base to competitors in adjacent states. Later in this chapter, we estimate the additional sales of agricultural repair and replacement parts that could occur in Nebraska with the proposed sales tax exemption.

Figure 2.1



Agricultural Producers That Avoid the Sales Tax

We begin by analyzing business that can avoid the tax. These agricultural producers avoid the tax by choosing not to purchase parts or by purchasing repair and replacement parts for agricultural machinery repair in nearby states instead of in Nebraska. Such producers are found throughout the state but may be concentrated in the border regions of the state. These producers may regularly travel to neighboring states for an off-farm job, or un-related personal or shopping trips. Purchasing parts during these trips would incur no additional cost. Even if a special trip is required, travel costs and time to the adjacent state would be relatively low in the border county area.

Table 2.1 demonstrates that Nebraska does have lower levels of sales activity than surrounding states. The table shows the ratio of sales of farm and garden machinery and equipment wholesalers (NAICS 423820) to the ratio of agricultural sales in Nebraska and key surrounding states. This industry accounts for a substantial share of agricultural parts sales. The industry also includes repair services and new and used equipment sales, two activities that are also influenced by the sales tax on repair and replacement parts. Repair services are often part of a parts purchase, and producers may be more inclined to consider buying new equipment from dealers that handle their repairs.

Table 2.1 also provides data on the sales of the farm dealer sub-component of the larger industry. This is the group that is most directly affected. For both the overall industry, and for the farm dealer sub-component, Nebraska has less sales activity than surrounding states, after adjusting for total farm sales. The gap ranges from \$131 million to \$193 million annually. This represents economic activity that is lost to Nebraska.

Table 2.1 Sales in farm and garden machinery and equipment wholesale (NAICS 423820) per dollar of agricultural sales: 2002

	Jobs/\$ Sales	
	Nebraska	Other States (KS, IA)
NAICS 423820		
Industry Sales (millions \$)	\$1,117.5	\$2,812.2
Agricultural Sales (millions \$)	\$9,703.7	\$20,816.8
Ratio	11.5%	13.5%
Nebraska Sales if Reached	\$1310.9	
Ratio of Neighboring States (millions \$)		
Implied Growth in Sales (millions \$)	\$193.4	
NAICS 423821 (Farm Equipment and Machinery Merchant Wholesalers – Farm Dealers)		
Industry Sales (millions \$)	\$935.6	\$2,288.4
Agricultural Sales (millions \$)	\$9703.7	\$20,816.8
Ratio	9.6%	11.0%
Nebraska Sales if Reached Ratio of Neighboring States (millions \$)	\$1,066.7	
Implied Growth in Nebraska Sales (millions \$)	\$131.1	

Source: 2002 Census of Agriculture and 2002 Census of Wholesale.

Table 2.2 focuses more on the loss of activity in border regions. Wholesale industry sales data are difficult to obtain from multiple states at the county level, so we utilize employment data from the *County Business Patterns* publication produced by the U.S. Bureau of Census. Data are presented as a ratio of industry employment to agricultural sales by county cohort. First Tier counties are border counties, while Second Tier counties that are one county removed away from the border. Third Tier and Fourth Tier counties are still further from the border. Data are presented for 1997 and 2002, as these were the last years for which agricultural Census data are available. In Table 2.2, results for all counties show that Nebraska has less farm and garden machinery wholesale employment (NAICS 423820) per dollar of agricultural sales than in neighboring states. The difference is most pronounced, however, in border regions. Employment per dollar of farm sales is substantially lower in both the First, Second, and Third Tier border counties in Nebraska, but not in the Fourth Tier. The All County results include these four tiers plus other counties even further in the interior of the state.

Table 2.2: Employment in farm and garden machinery and equipment wholesale (NAICS 423820) per dollar of agricultural sales: 1997 and 2002¹²

	1997		2002		2002	
	Industry Jobs/\$ Ag. Sales Other States		Industry Jobs/\$ Ag. Sales Other States		\$ Industry Sales ¹ / \$ Ag. Sales Other States	
	<u>Nebraska</u>	(KS, IA)	Nebraska	(KS, IA)	Nebraska	(KS, IA)
First Tier	0.000403	0.000603	0.000387	0.000452	.118422	.143736
Second Tier	0.000435	0.000540	0.000377	0.000421	.115362	.133878
Third Tier	0.000431	0.000599	0.000410	0.000658	.125460	.209244
Fourth Tier	0.000463	0.000360	0.000615	0.000360	.188190	.114480
All	0.000421	0.000521	0.000436	0.000460	.133416	.146280

Source: 1997 and 2002 Census of Agriculture and County Business Patterns.

¹² Note: Estimate made by applying statewide 2002 sales to employment ratio in NAICS 423820 to the industry jobs/\$ Ag. Sales ratios presented in earlier columns.

Looking over the results in Table 2.2 employment in the farm and garden machinery wholesale industry is approximately 25 percent less in the border county region of Nebraska (First Tier, Second Tier, and Third Tier). Estimated sales is also approximately 25 percent less.

Results in Table 2.2 reflect averages across dozens of individual counties. To focus on individual counties, we also performed a regression analysis of employment in the farm and garden machinery and equipment wholesale industry (NAICS 423820) in counties in Nebraska and the surrounding states of Iowa and Kansas. In the regression model, employment ($E_{i,t}$) in the industry in a county i in time t was a function of agricultural sales ($S_{i,t}$) in the county (a measure of the potential market for repair and replacement parts), the relative price ($P_{NS,t}$) of parts in the county (assumed to be the same except for differences in tax rates), a dummy variable indicating that a county was a Nebraska border county ($D_{nb,i}$), or a border county in a surrounding state ($D_{ob,i}$). Table 2.3 provides the results of the regression analysis.

Table 2.3: Regression results for factors influencing employment in farm and garden machinery and equipment wholesale (NAICS 423820)

	Coefficient Estimate	t-Statistic
Intercept	-0.545	-0.734
Agricultural Sales ($S_{i,t}$)	0.378**	5.925
Relative Price ($P_{NS,t}$)	0.492**	6.814
NE Border County ($D_{nb,i}$)	-0.345**	-2.185
IA or KS Border County ($D_{ob,i}$)	-0.149	-0.795

** Statistically significant with 5% confidence.

As noted above, the variables are defined as follows:

$E_{i,t}$: Employment in farm machinery and equipment in county i at time t .

$S_{i,t}$: Agriculture sales in county i at time t .

$P_{NS,t}$: Relative after-tax price between NE and IA or KS of farm machinery and equipment.

$D_{nb,i}$: Dummy variable indicating whether the county is a Nebraska border county or not

$D_{ob,i}$: Dummy variable indicating whether the county is a IA or KS border county or not

Results indicated that counties with greater agricultural sales also had more employment in the farm and garden machinery wholesale industry. The result was significant even without accounting for sales in adjacent counties. This validates the use of the ratios presented in Tables 2.1 and 2.2. Results were positive and significant for the price variable, indicating higher sales for Nebraska counties away from the border area. Farm equipment wholesalers in the interior of the state may be relatively successful compared to equipment dealers in border regions because they are better able to retain their local customer base.

An effect also was identified for Nebraska border counties at the 5 percent level of significance. The value for Nebraska border counties was negative and statistically significant suggesting less economic activity in farm and garden wholesale than would be expected given the agricultural sales in each county.

As with Table 2.2, results in Table 2.3 provide evidence to support the expectation that the sales taxes on repair and replacement parts for agricultural machinery and equipment reduces sales and employment among equipment dealers in Nebraska, particularly for border counties. Further, the results in Tables 2.1, 2.2 and 2.3 are very consistent with other economic research into the effect of state and local sales taxes on taxable sales. This research has found a pronounced impact of sales taxes on sales tax base. For example, Bruce, Deskins, and Fox (2007)¹³ statistically estimated a sales tax elasticity of 0.5. Based on this result, the elimination (a 100 percent reduction) of a sales tax on repair and replacement parts would increase sales of these parts by 50 percent. Each 1 percent reduction in sales tax rate, for example from 7 percent to 6 percent, would increase the sales tax base by approximately 8 percent. These types of statistical estimates of sales tax elasticity always include a portion of the “multiplier” effect as well as the direct loss in sales. Given this, a 40 percent increase would be a more appropriate estimate. Such an increase would amount to \$72.8 million in additional sales in Nebraska. In particular, the Fiscal Note of the Nebraska Department of Revenue estimated that by FY 2009 \$10 million of state sales tax on repair and replacement parts of agri-

¹³ Bruce, Donald, John Deskins, and William Fox, 2007. On Relative Distortions of State Sales, Corporate Income, and Personal Income Tax. Working Paper.

cultural machinery and equipment would be lost if sales tax was exempted. Given a 5.5 percent sales tax rate, this implies an estimate of \$182 million in these repair and replacement parts in Nebraska in a current year. Applying a 40 percent increase to \$182 million would amount to \$72.8 million

Other research, however, suggests a smaller response. This research has particularly examined the effect of tax code differences on the border, where states and localities with relatively high taxes lose sales and employment to adjacent areas. Walsh and Jones (1988) found that each 1 percentage point drop in a state sales tax rate (for example from a 5 percent sales tax rate to a 4 percent sales tax rate) for food lead to a 5.9 percent increase in sales among border counties.¹⁴ Fox (1986) found that each 1 percentage point increase in state sales tax rate for general sales (all taxable sales) lead to a 2.0 percent decrease in taxable sales in border counties.^{15, 16} The average result of this research is a 4 percent increase in sales for each 1 percentage point decline in tax rate. These findings suggest a 25 percent increase in sales Nebraska border counties from the elimination of Nebraska's 5.5 percent sales tax rate, which averages well over 6.75 percent given local option sales taxes.¹⁷

Significantly smaller effects would be found in "Second Tier" border counties that are one county removed from the state border. We assume the effect is half as large, or 12.5 percent. Modest out-of-state purchases are modeled for Interior counties. Following Bruce and Fox (2004)¹⁸, we estimated that the untaxed portion of Internet sales accounts for approximately 3.0 percent of all taxable sales in Nebraska. These estimates do consider voluntarily compliance by some Internet sales firms, and are based on the

¹⁴ Walsh, Micheal and Jonathon Jones, 1988. "More Evidence of the "Border Tax" Effect: The Case of West Virginia 1979-1984," *National Tax Journal*. 41: 261-265.

¹⁵ Fox, William, 1986. "Tax Structure and the Location of Economic Activity Along State Borders," *National Tax Journal*. 39: 387-401.

¹⁶ Fox (1986) also found that the size of the economic response was very similar whether measured by retail sales or employment.

¹⁷ In its Fiscal Note, the Nebraska Department of Revenue estimated a tax revenue impact of \$2.3 million in Fiscal Year 2009 associated with the \$10.0 million state fiscal impact. This implies an average local tax rate of 1.25%.

¹⁸ Bruce, Donald, and William Fox, 2004. *State and Local Sales Tax Revenue from E-Commerce: Estimates as of July 2004*. Center for Business and Economic Research, University of Tennessee-Knoxville.

tax rates present in each state at the time of the study. We assumed this aggregate estimate was appropriate for repair and replacement parts. We assumed an overall 4.0 percent of sales lost to out-of-state vendors in interior counties, assuming that another 1.0 percent of sales would be lost by travel to other states rather than Internet sales.

Based on this border county approach, we developed a second scenario for the increase in sales of repair and replacement parts with the elimination of the sales tax. The estimate is a \$24.4 million increase in sales. Table 2.4 shows how this response was calculated. Approximately 33 percent of industry employment was located in Nebraska “First Tier” border counties (those on the border), and 29 percent located in “Second Tier” border counties (one county removed from border). This percentage was applied to the \$182 million in sales each year to estimate that \$60.2 million in sales occurs each year in Nebraska “First Tier” border counties, and \$52.8 in Nebraska “Second Tier” border counties. As noted in the Table 2.4, a 25 percent increase in “First Tier” border county sales, a 12.5 percent increase in “Second Tier” border county sales, and the 4 percent increase in interior counties would yield a \$24.4 million increase in sales in sales of repair and replacement parts for agricultural machinery in Nebraska if sales are tax exempt.

Table 2.4: Potential Increase in Parts Sales Due to Exemption of Sales Tax on Agricultural Parts and Equipment (scenario 1)

First Tier Border counties	
Estimated Sales in Border counties (33% of \$182 million)	\$60.2 million
Percent Reduction	X <u>25%</u>
Reduction in Sales	\$15.0 million
Second Tier Border counties	
Estimated Sales in counties (29% of \$182 million)	\$52.8 million
Percent Reduction	X <u>12.5%</u>
Reduction in Sales (scenario 1)	\$6.6 million
Other counties (Interior counties)	
Estimated Sales in counties (38% of \$182 million)	\$69.0 million
Percent Reduction	X <u>4%</u>
Reduction in Sales	\$2.8 million
Total Reduction in Sales	\$24.4 million

Source: Authors' calculations.

Both sets of estimates, whether a \$72.8 million (scenario 2) or \$24.4 million (scenario 1) increase in parts sales, do not include any impact on related services at farm equipment dealers. In particular, repair activity, and even machinery sales, would be expected to increase as parts sales rise. For example, the Iowa-Nebraska Agricultural Equipment Dealers Association reported that for each three dollars in parts sales there is another two dollars in repair work.

In the second scenario, this would suggest a total increase in parts sales and repair activity of \$121.3 million per year from the elimination of the tax. This figure is approaching the \$131 million gap in sales for farm equipment dealers identified in Table 2.1. Such a result might be expected since the tax on repair and replacement parts is a key competitive difference between Nebraska and surrounding states. Further, part sales and repairs are a key component of sales for merchant wholesale equipment dealers. As noted earlier, the other major component of the industry, sales of new and used machinery and equipment also would benefit as Nebraska recaptures parts and repair activities. Farmers that remain in Nebraska (or come to Nebraska) for parts and repairs have a stronger business relationship with Nebraska equipment dealers. This would at some level impact the sales of new machinery. The size of this effect is difficult

to estimate, however. We assume that this component would add another 10 percent to the increase in activity at farm equipment dealers, leading to a \$133.4 million annual impact. Note again that this is quite close to the gap identified in sales data in Table 2.1. These three components of the annual gain are summarized in Table 2.5 for both scenario 1 and scenario 2.

Table 2.5: Potential Increase in Parts Sales, Repair Activity, and New and Used Equipment Sales Due to Exemption of Sales Tax on Agricultural Parts and Equipment (scenarios 1 and 2)

	Scenario 1	Scenario 2
Increase in Parts Sales	\$24.4M	\$72.8M
Increase in Repair Services	\$16.3M	\$48.5M
Increase in Sales of Equipment	\$4.0M	\$12.1M
Total Increase in Economic Activity	\$44.7M	\$133.4M

Source: Author's calculations.

Agricultural Producers That Pay the Sales Tax

Despite these lost sales, many agricultural producers purchase repair and replacement parts for agricultural machinery and equipment in Nebraska. The tax modestly increases production costs for farmers. At the margin, this increase in production costs will reduce farm output. One way that the tax would influence farm output would be by reducing the number of acres of land in production. The tax on repair and replacement parts reduces expected net returns on production. In particular, lower returns at the margin would on the margin encourage producers to switch crop, pasture, and range land to non-agricultural uses such as the conservation reserve program, or on the fringes of urban areas, urban development.

A recent research study examined the effects of net returns, and changes in net returns, on the allocation of land among alternative uses. Data in the study *Determinants of Land Use Change in the United States 1982 to 1997* were used to calculate that for each 1 percent decrease in net returns per acre, there is a 0.058 percent net increase in the percentage of acres converted to the conservation reserve program or to

development.¹⁹ This elasticity has implications for Nebraska. The Nebraska Department of Revenue indicates that agricultural producers pay approximately \$12.3 million in state and local sales taxes annually on repair and replacement parts for agricultural machinery and equipment that would be effected by the exemption. Given annual farm income in Nebraska of \$3.5 billion, this translates into 0.035 percent decline in net returns to agricultural due to the tax. Combined with the returns-to-acres elasticity mentioned above, this suggests that the sales tax on repair and replacement parts reduces acres in production by 0.020 percent in Nebraska, as presented in Table 2.6.

This modest percentage affects a significant number of acres, however, given the large number of acres in production in the state of Nebraska. The United States Department of Agriculture indicates that there 45.7 million acres in production in Nebraska. Applying the 0.020 percent decline in acres to this figure yields an estimated 7,500 acre decline in agricultural production in Nebraska. The United States Department of Agriculture indicates average agricultural sales of \$212 per acre in Nebraska. The total decline in agricultural sales due to the tax is almost \$2.0 million. Conversely, exemption of the tax would increase agricultural output by an estimated \$2.0 million

This is a reasonable figure indicating that the \$12.3 million tax on the industry leads to a \$2.0 million reduction in industry output, for a ratio of 0.16. Further, this figure may not reflect the total reduction in production related to the tax. Another possibility is that the tax would reduce the output of agricultural production per acre. Farmers faced with the tax on repair and replacement parts may simply choose to not purchase replacement parts, and keep older machinery running at below peak levels. This would affect yield per acre. Unfortunately, we do not have enough information to estimate the size of this reduction in agricultural production due to the tax to include this estimate.

¹⁹ Lubowski, Ruben, Andrew J. Plautinga, and Robert N. Stavins, 2003. *Determinants of Land Use Change in the United States 1982-1997*. Washington, DC: Resources for the Future. Discussion Paper 03-47.

Table 2.6: Change in Agricultural Output Due to Sales Tax on Agricultural Parts and Equipment

Change in Acres in Production Per 1% Decrease in Returns Per Acre		-0.058%
Change in Returns Per Acre in Nebraska Due to Sales Tax	X	<u>-0.35%</u>
% Change in Acres in Production in Nebraska		-0.020%
Number of Acres in Production in Nebraska ¹	X	45,700,000
Change in Number of Acres in Production in Nebraska		-9,200
Output Per Acre ¹		\$212
Change in Agricultural Output Due to Sales Tax		\$1,950,000

¹ United States Department of Agriculture, National Agricultural Statistical Service and authors' calculations

Change in Sales in the Nebraska Economy

The sales tax on repair and replacement parts for agricultural machinery and equipment reduces economic activity in the state of Nebraska. Exemption of the tax would generate both new sales of repair and replacement parts, additional repair activity, and a modest increase in sales of complete equipment. There also would be a modest increase in agricultural production in the state. Table 2.7 shows our estimate for the resulting increase in economic activity in Nebraska under the two scenarios. These increases would represent the direct impact of making the tax exemption. In addition to this direct impact, there is also an additional “multiplier” effect on the economy. These additional multiplier impacts are considered in the next chapter. The chapter considers the total economic impact from exempting the sales tax on repair and replacement parts. The tax revenue impact also is calculated.

Table 2.7: Estimated Increase in Direct Economic Activity in Nebraska from Exemption or Reduction of Sales Tax on Repair and Replacement Parts for Agricultural Equipment and Machinery

	Scenario 1	Scenario 2
Increase in Parts Sales	\$24.4M	\$72.8M
Increase in Repair Services	\$16.3M	\$48.5M
Increase in Sales of Equipment	\$4.0M	\$12.1M
Total Increase in Economic Activity at Dealers	\$44.7M	\$133.4M
Change in Agricultural Output	\$2.0M	\$2.0M

Source: Authors' Calculations.

Chapter 3: Measuring the Economic Impact of Tax Exemption

An Overview

As a result of the widespread distribution of farming operations, the industry's existence in the state affects state and local economies in many ways. As discussed in the previous chapter, the presence of successful farming operations increases the attractiveness of the community and, in the long run, encourages the startup and/or relocation of retail businesses and manufacturing firms to the area. Access to farm equipment and supply vendors also increases quality of life, helping the region to retain and attract individuals, thereby helping to create a "brain gain" for both the metropolitan and non-metropolitan areas of Nebraska.

In addition to these growth dynamics, there also is economic activity related to the direct expenditures by farm equipment supply vendors, such as payroll, local jobs and income. Furthermore, farm equipment suppliers indirectly affect the overall level of community economic

...farm equipment suppliers contribute to the region's export of retail goods as farmers in other states buy from Nebraska suppliers.

activity. For example, the office supplies industry provides jobs and income for workers in the region as a result of farm equipment suppliers' spending on pens and paper.²⁰

Large portions of farm equipment suppliers are made in the local economy. That portion spent locally adds to community income. Economic impacts that take place

outside the local economy, for example spending in Des Moines, are called leakages and reduce overall impacts. They are excluded when estimating economic impacts of the local area.

²⁰In 1995, the Federal Reserve Bank of Kansas City estimated that the state of Nebraska loses over \$246 million per year as a result of the net out-migration of college educated workers (termed "brain drain").

Additionally, farm equipment suppliers increase retail sales in the region as employees and visitors who reside outside Nebraska spend a portion of their wages in the state. In other words, farm equipment suppliers contribute to the region's export of retail goods. These sales have a positive impact on the local area by adding jobs and income in the retail and related industries. Figure 3.1 demonstrates the three components of the total economic impact: the Direct Economic Impact, the Indirect Economic Impact, and the Induced Economic Impact. Each is defined below.

...farm equipment suppliers contribute to the state's economy by encouraging farmers to purchase in the state.

Direct Economic Impacts

Spending on farm equipment parts flowing into an area has direct economic effects on their local economies by making expenditures for goods and services and by paying employee salaries. The most obvious direct expenditures are payment of wages to workers employed by farm equipment suppliers. In addition, expenditures by business visitors to equipment parts suppliers in the area produce direct impacts on the region affecting primarily the wholesale and retail trade Industries. Direct economic impacts are color coded blue in Figure 3.1.

Indirect Economic Impacts

Farm equipment suppliers also produce indirect economic effects on the area economy. For example, office supply companies supplying farm parts suppliers buy merchandise from area wholesalers. Furthermore, farm equipment parts suppliers encourage the startup and expansion of other businesses. Farm equipment parts suppliers generate indirect effects by increasing: (a) the number of firms drawn to a community, (b) the volume of deposits in local financial institutions and, (c) economic development. Examples of indirect economic impacts are color coded yellow on Figure 3.1.

Induced Economic Impacts

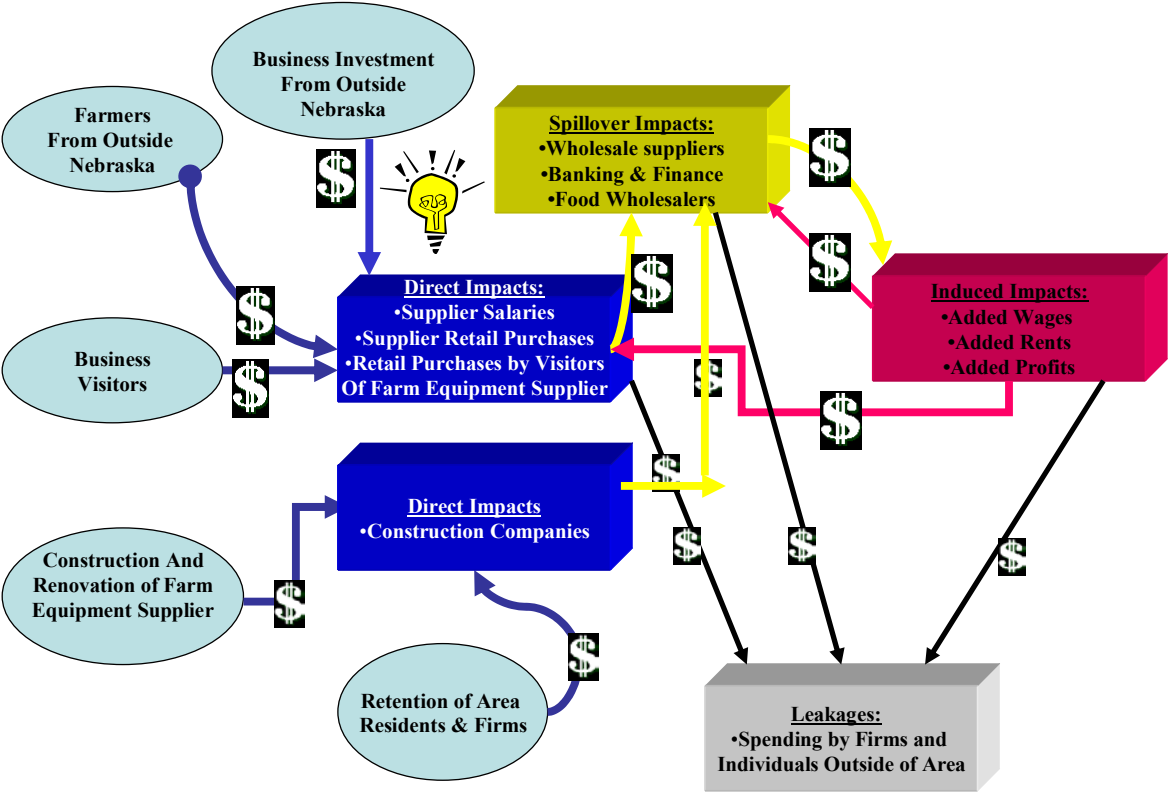
Induced impacts in the region occur as the initial spending feeds back to industries in the

..... farm equipment parts suppliers increase overall area income and population, which produces another round of increased spending adding to sales, earnings and jobs.

region when workers in the area purchase additional output from local firms in a second round of spending. That is, farm equipment parts suppliers increase overall area income and population, which produces another round of increased spending adding to sales, earnings and jobs.

Examples of induced economic impacts are color coded red in Figure 3.1.

Figure 3.1: Direct, indirect and induced Impacts of farm equipment suppliers



Total Impact = Direct + Indirect + Induced - Leakages

In terms of spillover, or indirect plus induced impacts, data indicate that for Nebraska, each \$1,000,000 of spending for agriculture replacement parts in Nebraska generates another \$412,236 across other industries with \$45,767 in health services, \$86,300 in retail trade and \$39,975 in finance and insurance.²¹

Farm equipment parts supplier spending outside the local economy, for example spending in Des Moines, is called a leakage and reduces the multiplier and the overall impacts.

These figures indicate that there is an additional \$0.41 in spillover (or multiplier) for each \$1.00 in expenditures. Thus, the spillover effect creates a large, additional economic impact on the economy. Three factors determine the size of the spillover effect in communities.

Location. Distance to suppliers affects the willingness to purchase locally. If local firms are unable to provide many of the supplies at competitive prices and there are alternative suppliers in Des Moines who are more price competitive, then farm equipment parts suppliers will be encouraged to spend outside the community. This results in greater leakages, lower multipliers and smaller impacts.

Population size. A larger population provides more opportunities for companies and workers to purchase locally. Larger population areas are associated with fewer leakages and larger multipliers. Thus, in general, farm equipment parts supplier dollars flowing into North Platte will have larger impacts than the same level of added spending flowing into Ord, Nebraska.

Clustering. A community will gain more if the inputs required by local industries for production match local resources and are purchased locally. Thus, over time, as new firms are created to match the requirements of parts suppliers, leakages will be fewer, resulting in larger multipliers and impacts. This issue is at the heart of economic development amplifying the impacts of the clustering of agriculture related facilities, investment and jobs. As a community gains more and more ag-

²¹Source: Implan Multiplier System, 2004.

gricultural investment and jobs, educators, training institutions and suppliers become more proficient and focused on meeting the needs of the industry. Furthermore, suppliers unique to parts wholesalers are more likely to locate in close proximity to these organizations. This not only expands income and jobs in the area, it increases the size of multipliers related to agriculture related organizations.

Economic models can be used in order to estimate the direct, indirect and induced impacts of the agriculture parts suppliers on the community and region. These models produce estimates that reflect the characteristics of the industry in question as well as the characteristics of the local economy in terms of location, population size, and clustering. As discussed in Appendix 1, an input-output model is the most appropriate methodology for measuring indirect and induced impacts. Further, the Implan model is the most appropriate software package for conducting the input-output analysis. We utilize Implan to estimate the economic impact of a sales tax exemption on agriculture farms parts supplies. These estimates are contained in Chapter 4.

Chapter 4: Estimated Impacts of Tax Exemption on Nebraska

Introduction

Farming is an engine of economic growth for most of the ninety-three counties in the state. Further, vendors to the farm sector, including farm equipment suppliers, contribute to the economy through their own employment

... direct benefits for the Nebraska taxpayer include the receipt of sales taxes on purchases by farm equipment parts suppliers in local areas of operation.

and payroll, and through purchases from their own vendors. Payments to these vendors are an important source of growth for the area economy.

Thus, farm equipment parts suppli-

ers produce benefits for the Nebraska taxpayer, both directly and indirectly. In the remainder of the chapter, we estimate the potential economic and tax impact on Nebraska from eliminating the sales tax on repair and replacement parts for agricultural

... farm equipment suppliers, by providing area residents with needed equipment locally creates sales, wages, jobs, and taxes for the cities and counties in which it operates in Nebraska.

equipment and machinery. These impact estimates are derived from the change in final demand estimates derived in Chapter 2. Table 4.1 lists farm equipment supply change in sales for 2009 under the scenario 1 and scenario 2. Note that Table 4.1 also includes the economic impact from new construction that would occur as the farm equipment industry expands as a result of the tax exemption. This would lead to new investment in structures and computer and other equipment.

Table 4.1: Direct change in spending due to sales tax exemption on spending, 2009

	Scenario 1	Scenario 2
Increase in new farm equipment sales	\$4,000,000	\$12,100,000
Increase in sales of farm equipment parts supplies	\$24,400,000	\$72,800,000
Increase in farm output	\$1,950,000	\$1,950,000
Increase in equipment & software purchases ²²	\$504,961	\$510,181
Increase in construction activity	\$40,049	\$81,432
Increase in repair services for farm equipment	\$16,266,667	\$48,533,333
Total	\$47,161,677	\$135,974,946

Source: estimates from Chapter 2

Economic Impacts

Table 4.2 presents the estimated additional tax collections generated by the exemption of sales taxes on farm equipment parts. These are the taxes that will be generated as the economy expands as a result of the tax cut. The size of this economic increase is described later in the chapter. As indicated, the exemption will create state and local tax collections of \$4,320,656 and \$13,986,769 for scenario 1 and scenario 2, respectively. According to the Nebraska Department of Revenue exempting farm equipment parts from sales taxes would state and local tax collections by \$12.3 million.²³ Of course, their estimate is static and does not include the increase in taxes due to the increase in overall economic activity. Integrating this dynamic element into the estimates, we conclude that the overall tax change for the state and local governments will be a loss of approximately \$8.0 million for scenario 1 and a gain of \$1.7 million for scenario 2.

²²It is assumed that 2009 capital spending per dollar of added output is equal to the industry average from the U.S. Bureau of Labor Statistics.

²³Tax Notes, This is a static estimate of \$2.3 million in local taxes and \$10.0 million in state taxes.

Table 4.2: Impact of sales tax exemption on state and local tax collections, 2009

	Scenario 1	Scenario 2
Corporate Profits Tax	\$104,524	\$294,197
Dividends	\$153,565	\$432,232
Indirect Bus Tax: Motor Vehicle License	\$20,465	\$59,538
Indirect Bus Tax: Other Taxes	\$184,185	\$535,860
Indirect Bus Tax: Property Tax	\$947,844	\$2,757,618
Indirect Bus Tax: S/L Non-Taxes	\$262,407	\$763,438
Indirect Bus Tax: Sales Tax	\$1,266,295	\$3,684,110
Indirect Bus Tax: Severance Tax	\$919	\$2,671
Personal Tax: Estate and Gift Tax	\$0	\$0
Personal Tax: Income Tax	\$338,450	\$962,447
Personal Tax: Motor Vehicle License	\$20,423	\$58,075
Personal Tax: Non-Taxes (Fines- Fees	\$11,721	\$33,329
Personal Tax: Other Tax (Fish/Hunt)	\$11,489	\$32,671
Personal Tax: Property Taxes	\$9,513	\$27,051
Other taxes	\$28,498	\$82,986
Total	\$3,360,297	\$9,726,225
School taxes (property)	\$1,464,757	\$4,260,544
Minus sales taxes on formerly exempted sales included above	\$504,398	\$1,507,866
Total taxes	\$4,320,656	\$13,986,769

However this focus on taxes fails to acknowledge the potentially more important impact of the exemption on the state economy. Table 4.3 presents the impact of the exemption on the state by industry for scenario 1. Scenario 1 estimates show that the impact of the exemption are \$51.5 million in total, \$14.1 million in earnings, \$2.9 million in self-employment income, and 495.9 jobs paying an average wage of \$28,356. Table 4.4 lists results for scenario 2. Scenario 2 estimates show that the impact of the exemption are \$146.4 million in total, \$41.0 million in earnings, \$7.6 million in self-employment income, and 1,428.9 jobs paying an average wage of \$28,702.

Table 4.3: Total impact of sales tax exemption on farm equipment parts sales, 2009 (scenario 1)

	<u>Total or Output</u>	<u>Earnings</u>	<u>Self- employment Income</u>	<u>Jobs</u>	<u>Compensation per job</u>
Agriculture, Forestry, Fish & Hunting	\$2,119,085	\$55,721	\$538,378	13.7	\$4,067
Mining	\$28,315	\$685	\$1,911	0.1	\$6,850
Utilities	\$200,585	\$12,190	\$37,032	0.1	\$121,900
Construction	\$205,191	\$66,451	\$20,745	2.1	\$31,643
Manufacturing	\$2,403,515	\$442,385	\$13,585	9.3	\$47,568
Wholesale Trade	\$1,203,949	\$413,846	\$38,653	7.9	\$52,386
Transportation & Warehousing	\$693,700	\$295,803	\$26,285	7.6	\$38,921
Retail trade	\$10,723,380	\$3,756,204	\$221,535	126.6	\$29,670
Information	\$865,063	\$164,982	\$14,461	3.4	\$48,524
Finance & insurance	\$1,427,262	\$398,028	\$31,275	8.5	\$46,827
Real estate & rental	\$958,920	\$99,927	\$82,419	8.3	\$12,039
Professional- scientific & tech services	\$918,442	\$323,028	\$81,933	8.2	\$39,394
Management of companies	\$631,847	\$275,824	\$51	3.3	\$83,583
Administrative & waste services	\$631,161	\$284,546	\$23,509	12.9	\$22,058
Educational services	\$153,440	\$73,686	\$1,840	3.0	\$24,562
Health & social services	\$1,657,165	\$774,870	\$80,879	20.2	\$38,360
Arts- entertainment & recreation	\$147,916	\$43,081	\$10,595	4.1	\$10,508
Accommodation & food services	\$777,883	\$225,092	\$10,442	16.6	\$13,560
Other services	\$23,984,230	\$6,146,599	\$1,703,858	237.0	\$25,935
Government & non-classified	\$1,807,979	\$208,820	\$0	3.0	\$69,607
Total	\$51,539,028	\$14,061,768	\$2,939,386	495.9	\$28,356

Table 4.3: Total impact of sales tax exemption on farm equipment parts sales, 2009 (scenario 2)

	<u>Total or Output</u>	<u>Earnings</u>	<u>Self-employment Income</u>	<u>Jobs</u>	<u>Compensa- tion per job</u>
Agriculture, Forestry, Fish & Hunting	\$2,392,215	\$69,605	\$557,164	14.9	\$4,671
Mining	\$76,807	\$1,809	\$5,150	0.2	\$9,045
Utilities	\$568,276	\$34,475	\$104,700	0.3	\$114,917
Construction	\$547,487	\$175,852	\$54,916	5.5	\$31,973
Manufacturing	\$5,650,810	\$1,044,989	\$34,702	21.6	\$48,379
Wholesale Trade	\$3,357,511	\$1,154,112	\$107,793	22.1	\$52,222
Transportation & Warehousing	\$1,956,889	\$840,810	\$73,107	21.7	\$38,747
Retail trade	\$31,855,600	\$11,158,289	\$655,254	375.4	\$29,724
Information	\$2,513,271	\$480,056	\$42,083	10	\$48,006
Finance & insurance	\$4,042,371	\$1,129,618	\$88,823	24	\$47,067
Real estate & rental	\$2,693,685	\$281,306	\$231,906	23.2	\$12,125
Professional- scientific & tech services	\$2,632,894	\$928,158	\$235,392	23.7	\$39,163
Management of companies	\$1,841,190	\$803,746	\$150	9.6	\$83,724
Administrative & waste services	\$1,837,333	\$830,093	\$68,646	37.7	\$22,018
Educational services	\$437,595	\$210,164	\$5,248	8.7	\$24,157
Health & social services	\$4,712,537	\$2,203,526	\$229,998	57.3	\$38,456
Arts- entertainment & recreation	\$422,713	\$123,042	\$30,327	11.8	\$10,427
Accommodation & food services	\$2,223,226	\$643,372	\$29,847	47.5	\$13,545
Other services	\$71,451,712	\$18,304,060	\$5,077,462	705.2	\$25,956
Government & non-classified	\$5,142,914	\$595,857	\$0	8.5	\$70,101
Total	\$146,357,036	\$41,012,939	\$7,632,668	1,428.9	\$28,702

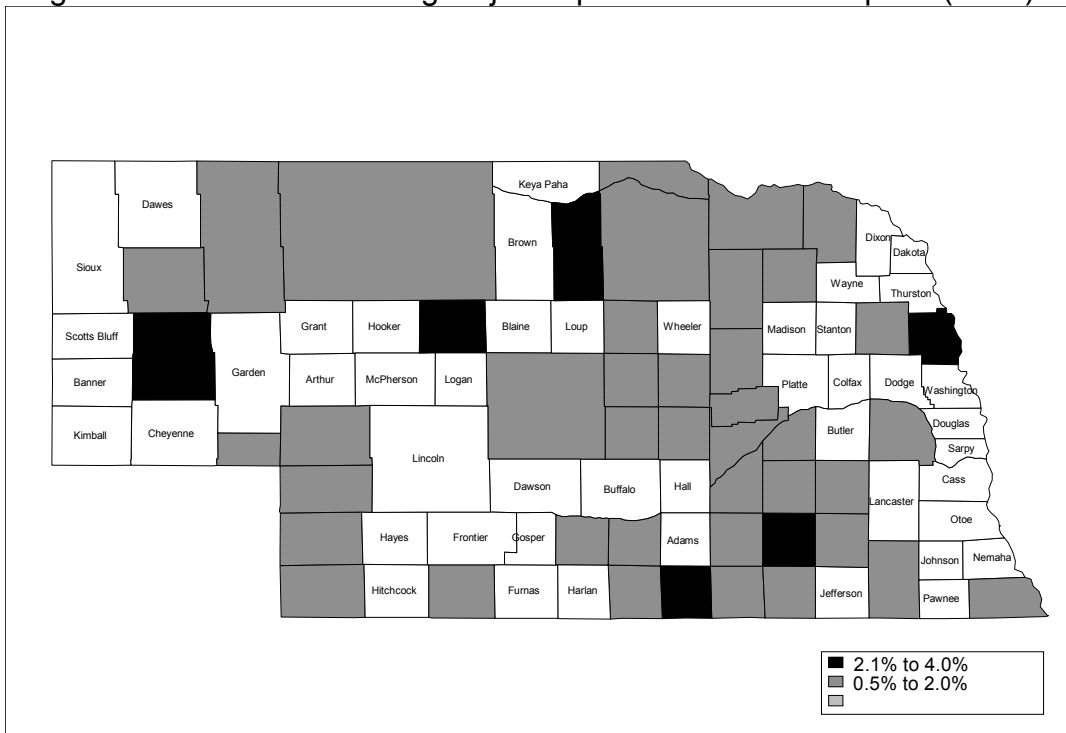
In terms of the geography of the impacts, Table 4.4 shows the job impacts by county for the top 10 beneficiaries. As exhibited, Morrill is expected to experience the largest relative job impact from the sales tax exemption. According to the estimates, Morrill will gain 3.7 percent in jobs. As presented, the average population loss between 1969 and 2005 was 20.0 percent for the top ten counties. Thus, exempting the sales taxes is a form of economic development for those counties that have done relatively poorly.

Table 4.4: Top ten counties in terms of job impacts (scenario 2)

<u>County</u>	<u>Percent change In overall employment 2009</u>	<u>Population growth 1969-2005</u>
Morrill	3.7%	-12.6%
Rock	3.3%	-30.9%
Burt	3.2%	-20.1%
Webster	2.9%	-30.8%
Thomas	2.7%	-30.3%
Fillmore	2.5%	-23.1%
Antelope	1.8%	-24.1%
Garfield	1.8%	-25.1%
Howard	1.8%	7.2%
Pierce	1.6%	-10.3%
Average for top ten	2.5%	-20.0%
Average for all counties	0.18%	-9.5%

Source: Implan System & U.S. Census Bureau

Figure 4.1: Counties with largest job impacts from tax exemption (2009)²⁴



²⁴Assumes scenario 2. All counties not shaded experience less than 0.5% impact.

Appendix 1

Choosing a Technique to Measure Impacts

The three most common types of impact models are economic base, econometric and input-output (I-O). Many types of public and private-sector decisions require an evaluation of probable regional effects. Since important impacts are often economic, this requirement has created a need for regional economic impact models. The three most common types of impact models are economic base, econometric, and input-output (I-O). Two of the three impact models have inherent disadvantages that markedly reduce their viability for estimating the impact of medical spending on the economy.

Economic Base Model. The economic base model divides the economy into two sectors--the local/service sector and the export sector. The economic base multiplier is an average for all the economy making it impossible to distinguish, for example, the impact of retail spending from that of a new manufacturing plant.

Econometric Models. Econometric models have two major weaknesses. First, the time series data used in constructing econometric models are often unavailable at the state and metropolitan area

I-O models are the most frequently used analysis tools for economic impact assessment.

level, thus precluding county-level analysis. This is especially true for rural counties and for counties with small populations. Second, econometric models are costly to build and maintain.

Input-Output (I-O) Models. I-O models are the most frequently used types of analysis tool for economic impact assessment. Input-output is a simple general equilibrium approach based on an accounting system of injections and leakages. Input-output analysis assumes that each sector purchases supplies from other sectors and then sells its output to other sectors and/or final consumers.

Historically, high costs development costs precluded the extensive use of I-O models in regional impact analysis. However, with the advent of "ready-made" multipliers produced by third parties, such as the U.S. Forestry Service, I-O multipliers became a much more viable option for performing impact analysis.

All purely non-survey techniques or "ready-made" multipliers take a national I-O table as a first approximation of regional inter-industry relationships. The national table is then made region specific by removing those input requirements that are not produced in the region. This study will use the most widely recognized "ready-made" multiplier system, Implan Multipliers.

IMPLAN Multipliers

The Forestry Service of the U.S. Department of Agriculture developed the IMPLAN multipliers in the 1980s (U.S. Forest Service, 1985). For very populous areas, IMPLAN divides the

IMPLAN and RIMS (Regional Input-Output Modeling System) are two of the most widely used multiplier models.

economy into approximately 500 industrial sectors. Industries that do not exist in the region are automatically eliminated during user construction of the model (e.g. coal

mining in Omaha). IMPLAN uses an industry-based methodology to derive its input-out coefficients and multipliers. Primary sources for data are *County Business Patterns* data and Bureau of Economic Analysis data.

Researchers have used IMPLAN to estimate the impact of changes in military spending on the Washington State economy (Hughes, et. al, 1991).²⁵ IMPLAN and RIMS (Regional Input-Output Modeling System) are two of the most widely used multiplier models. IMPLAN has been compared to other multiplier systems and found to produce reliable estimates (Richman

²⁵ *Data and software*: Minnesota IMPLAN Group, Inc., IMPLAN System (data and software), 1725 Tower Drive West, Suite 140, Stillwater, MN 55082 www.implan.com

and Schwer, 1993). Likewise, Crihfield and Campbell (1991), in estimating the impacts of opening an automobile assembly plant, concluded that IMPLAN's outcomes are, on balance, somewhat more accurate than RIMS.

IMPLAN multipliers possess the following advantages over other I-O Multiplier Systems:

1. Price changes are accounted for in the creation of the multipliers.
2. Employment increases or decreases are assumed to produce immediate in or out-migration.

Appendix 2

Number of parts dealers by county, 2007

Cass	15	Boone	5
Saunders	15	Burt	5
Lancaster	13	Cheyenne	5
Butler	12	Frontier	5
Gage	12	Hall	5
Custer	11	Johnson	5
Knox	11	Kearney	5
Thayer	11	Merrick	5
Cedar	10	Phelps	5
Clay	10	Red Willow	5
Dixon	10	Sheridan	5
Dodge	10	Sherman	5
Otoe	10	Webster	5
Platte	10	Cuming	4
Richardson	10	Greeley	4
Scotts Bluff	10	Hitchcock	4
Seward	10	Perkins	4
Buffalo	9	Polk	4
Jefferson	9	Valley	4
York	9	Blaine	3
Adams	8	Brown	3
Antelope	8	Chase	3
Boyd	8	Dawes	3
Fillmore	8	Garden	3
Furnas	8	Hayes	3
Holt	8	Keith	3
Saline	8	Kimball	3
Cherry	7	Morrill	3
Dawson	7	Nance	3
Douglas	7	Thomas	3
Franklin	7	Box Butte	2
Hamilton	7	Deuel	2
Harlan	7	Dundy	2
Howard	7	Gosper	2
Lincoln	7	Keya Paha	2
Nemaha	7	Logan	2
Nuckolls	7	Rock	2
Sarpy	7	Stanton	2
Thurston	7	Wheeler	2
Colfax	6		539
Dakota	6		
Madison	6		
Pawnee	6		
Pierce	6		
Washington	6		
Wayne	6		

Appendix 3

Researchers' biographies

Ernie Goss

Ernie Goss is currently the Jack MacAllister Chair in Regional Economics at Creighton University. He received his Ph.D. in Economics from The University of Tennessee in 1983 and is a former faculty research fellow at NASA's Marshall Space Flight Center. He was a visiting scholar with the Congressional Budget Office for 2003-04 and in the Fall of 2005, the Nebraska Attorney General appointed Goss to head a task force examining gasoline pricing in the state.

He has published over eighty research studies focusing primarily on economic forecasting and on the statistical analysis of business and economic data. His book, Changing Attitudes toward Economic Reform during the Yeltsin Era was published by Praeger Press in 2003 and his book Governing Fortune: Casino Gambling in America was published by the University of Michigan Press in March 2007.

He is a member of the Editorial Board of The Review of Regional Studies and editor of Economic Trends, an economics newsletter published three times per year. He is the past-president of the Omaha Association of Business Economics, and past-president of the Nebraska Purchasing Management Association.

Goss produces a monthly business conditions index for the nine state Mid-American region and the three state Mountain region. He also conducts a survey of bank CEOs in eight Mid-American states. Survey results from all three surveys are cited each month in approximately 100 newspapers. Newspaper citations have included the New York Times, Wall Street Journal, Investors Business Daily, The Christian Science Monitor, Chicago Sun Times and other national and regional newspapers and magazines. Each month 75-100 radio stations carry his Regional Economic Report.

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Eric Thompson

Dr. Thompson is the Director of the Bureau of Business Research and an Associate Professor of Economics at the University of Nebraska-Lincoln. Dr. Thompson has conducted economic impact studies of the state and local business incentive programs, the arts industry, state parks, sports teams and venues, the equine industry and the coal industry. He has conducted labor market studies on the efficiency of state unemployment insurance programs, the level of underemployment in the economy, and worker benefits within states and industries. Dr. Thompson's research has received support from the United States Department of Labor, the Robert Wood Johnson Foundation, the Greater Omaha Chamber of Commerce, the Lincoln Chamber of Commerce, the Nebraska Department of Economic Development, and the Nebraska Department of Health and Human Services. In his previous employment, Dr. Thompson served as the Director of the Center for Business and Economic Research and a Research Associate Professor of Economics at the University of Kentucky. Dr. Thompson received his Ph.D. in agricultural economics from the University of Wisconsin-Madison in 1992. His research fields include regional economics, economic forecasting, and state and local economic development. His research has been published in *Regional Science and Urban Economics*, the *Journal of Regional Science*, *Regional Studies*, the *Journal of Cultural Economics*, and the *Economic Review of the Federal Reserve Bank of Cleveland*.