

Economic Impact of NDSU Growth, FY 2000-2007

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Exported services is one of the fastest growing sectors of the North Dakota economy. As the U. S. economy is increasingly driven by technological advances, research and education have become critical to economic growth. Public and private research and educational activities and related manufacturing and professional services now make an important contribution to the state's economic base. Foremost among these are the university-based research and education activities centered at North Dakota's research universities. Supported in large part from the federal government and/or from other out-of-state sources, these programs constitute an important component of the state's economic base.

North Dakota State University (NDSU) has experienced substantial growth in both research and teaching programs over the past few years. The purpose of this report is to estimate the economic impacts associated with the growth that has occurred since FY 1999.

Methods

The initial task in any impact assessment is estimating the direct impacts (or "first-round effects") of the activity being studied. In this study, NDSU operating budgets were analyzed to determine the growth in direct expenditures that had occurred since FY 1999. The capital improvements budget was also examined to identify expenditures during this period (that would also be included as direct impacts), and data on changes in enrollments were used to estimate growth in student spending (excluding tuition and fees) in the Fargo-Moorhead area. The North Dakota Input-Output Model was used to estimate the secondary economic impacts based on these data.

The North Dakota Input-Output Model consists of interdependence coefficients or multipliers that measure the level of business activity generated in each economic sector from an additional dollar of expenditures in a given sector. (A sector is a group of similar economic units, e.g., the firms engaged in retail trade make up the retail trade sector.) For a complete description of the input-output model, see Coon and Leistritz (1989). The model estimates the changes in gross business volume (gross receipts) for all sectors of the area economy resulting from the direct expenditures associated with the growth of NDSU programs. The increased gross business volumes are used to estimate secondary employment and tax revenues based on historic relationships. The procedures used in the analysis are parallel to those used in estimating the impact of other facilities and activities (Leistritz 1995; Bangsund and Leistritz 2004, Hodur et al. 2006). Empirical testing has confirmed the model's accuracy in estimating changes in levels of economic activity in North Dakota; over the period 1958-2004, estimates of statewide personal income derived from the model averaged within 4 percent of comparable values reported by the U.S. Department of Commerce (Leistritz et al. 1990, Coon and Leistritz 2006).

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Results

The NDSU operating budget grew from \$156 million in FY1999 to \$297.8 million in FY2007, an increase of \$141.8 million or 91 percent. General fund revenue increased \$17.3 million, and non-general fund revenue increased \$124.5 million. After examination of the operating budget, it appeared that the Capital Equipment line item represented items that generally would be purchased from vendors located outside North Dakota (e.g., computers, laboratory equipment). Therefore, Capital Equipment was excluded from the economic impact calculations (\$7.3 million in FY2000; \$11.6 million in FY2004; and \$5.6 million in FY2007 -- general fund and non-general fund sources combined). After adjusting for Capital Equipment, increased NDSU operating expenditures based on non-general fund sources represented a direct economic impact of \$10.6 million in FY2000 and \$102.8 million in FY2007 (Table 1). Including general fund revenues, the direct economic impacts of NDSU growth were \$12.4 million in FY2000 and \$119.6 million in FY2007 (Table 2).

Capital improvements added substantially to the economic impact of NDSU growth. Over the period FY2000-FY2007, capital improvements totaled \$141.8 million, of which \$128.6 million were non-general fund resources and \$13.2 million were general fund revenues. Several major projects, including the Research I and Research II buildings in the NDSU Research and Technology Park, the Downtown Campus, the Equine Center, and the Criminal Justice building were completed during this time period.

Student enrollments have also been increasing steadily over the past eight years. In 2006-07, student FTE totaled 11,096, compared to 9,083 in FY 1998-99. In addition to tuition and fees paid to the University, student spending in the Fargo-Moorhead area was estimated to be \$8,800 per student, per academic year.

The direct economic impacts associated with NDSU growth (excluding general fund revenue) are summarized in Table 1. Growth in NDSU operating expenditures (based on tuition revenues, research grants, and other non-general fund sources) was steady over the period FY2000 through FY2005, dipping slightly to \$97.8 million in FY2006, but rising to \$102.8 million in FY 2007. Capital improvements added an average of \$16.1 million per year over the eight-year period – \$28.8 million in FY 2007. Student spending also increased over the period, to an estimated \$25 million in FY2007. Thus, the total direct impact of NDSU growth was \$156.6 million in FY2007 and totaled \$713.7 million over the eight-year period.

The total impacts associated with NDSU growth were estimated by applying the input-output model coefficients to these expenditures (Table 1). Total impacts were estimated to be \$42 million in FY2000 and \$435.9 million in FY2007, totaling \$1.99 billion over the eight-year period. Sectors that received major contributions include *households* (i.e., personal income of area residents), *retail trade*, *construction*, and *finance, insurance, and real estate* (FIRE). The increased economic activity from NDSU growth in FY2007 would support about 3,100 FTE jobs in the area economy, in addition to the additional personnel employed directly by the University. The increased economic activity also resulted in additional state tax revenues. The additional retail sales in FY2007 (\$116.7 million) resulted in roughly \$5.4 million in additional sales and use tax collections, while the additional personal income (\$156.3 million) would result in about

\$2.3 million in additional personal income tax collections. Over the eight-year period, additional sales and use tax collections were estimated to total \$24.7 million while additional personal income tax collections totaled \$10.7 million.

Over the past eight years the State of North Dakota has invested roughly \$92.6 million in additional general fund resources to support the growth of the University. The University has leveraged those state resources by securing almost \$693 million from other sources (e.g., research grants, donations). Thus, for every additional dollar of state support, roughly \$7.48 of other funds have been obtained. In fact, if the added state tax revenues are considered, the **net** cost to the State of supporting NDSU growth could be considered to be only \$57.2 million (\$92.6 million of added general fund support less \$35.4 million of added tax collections, collected as a result of NDSU growth).

The direct and total impacts of NDSU growth, *including general fund resources*, are summarized in Table 2. The interpretation of the values in Table 2 is the same as for Table 1. The values in Table 1 represent the economic impact of NDSU growth for the state, the values in Table 2 represent the economic impact of NDSU growth since FY1999 for the local area (i.e., Fargo-Moorhead).

References

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Table 1. Direct and Total Economic Impacts of NDSU Growth, Fiscal Year 2000 to Fiscal Year 2007 (Fiscal Year 1999 = base), excluding General Fund Growth

Item	Fiscal Year								Total
	2000	2001	2002	2003	2004	2005	2006	2007	
----- 000s nominal \$ -----									
Direct Impacts:									
NDSU Operating	10,574	22,579	36,158	51,544	64,627	100,325	97,845	102,817	486,469
NDSU Capital Improvements	3,450	7,846	15,612	29,464	18,913	9,367	15,116	28,791	128,559
NDSU Student Spending	992	2,944	8,288	11,208	14,360	17,672	18,224	24,981	98,669
Total Direct Impacts	15,016	33,370	60,059	92,215	97,900	127,363	131,185	156,589	713,697
Direct Impacts by I-O Sector:									
Construction	3,450	7,846	15,612	29,464	18,913	9,367	15,116	28,791	128,559
Communications & Public Utilities	453	729	1,026	1,348	1,483	2,728	3,496	4,463	15,728
Retail trade	2,302	5,100	10,561	14,332	17,952	32,012	31,826	31,965	146,050
Finance, Insurance & Real Estate	1,564	3,628	6,741	9,476	12,072	16,979	17,238	18,079	85,775
Business & Personal Services	1,601	3,686	6,163	9,117	11,225	17,561	10,747	15,705	75,805
Households	5,645	12,381	19,956	28,479	36,256	48,716	52,761	57,586	261,780

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Table 1. Continued

Item	Fiscal Year								Total
	2000	2001	2002	2003	2004	2005	2006	2007	
	----- 000s nominal \$ -----								
Total Impacts:									
Construction	4,445	10,050	19,463	35,293	25,357	17,735	23,827	39,024	175,194
Communications & Public Utilities	1,808	3,738	6,307	9,284	10,383	14,583	15,474	18,539	80,116
Retail trade	10,528	23,368	42,502	62,656	71,499	101,492	104,048	116,655	532,748
Finance, Insurance, & Real Estate	3,382	7,659	13,755	20,046	23,889	32,428	33,223	36,794	171,176
Business & Personal Services	2,303	5,250	8,889	13,200	15,857	23,687	16,979	22,974	109,139
Professional & Social Services	988	2,190	3,789	5,674	6,437	8,446	8,792	10,185	46,501
Households	15,179	33,634	58,076	86,921	98,766	129,392	135,140	156,343	713,451
Other ¹	3,337	7,412	13,206	19,831	22,079	29,593	30,585	35,348	161,391
Total	41,970	93,301	165,987	252,905	274,267	357,356	368,068	435,862	1,989,716

¹Includes agriculture, mining, manufacturing, transportation, and government.

Table 2. Direct and Total Economic Impacts of NDSU Growth, Fiscal Year 2000 to Fiscal Year 2007 (Fiscal Year 1999 = base), including General Fund Growth

	Fiscal Year								Total
	2000	2001	2002	2003	2004	2005	2006	2007	
----- 000s nominal \$ -----									
Direct Impacts:									
NDSU Operating	12,445	26,438	42,137	59,801	75,854	105,549	110,735	119,643	552,603
NDSU Capital Improvements	5,855	9,271	17,481	31,081	20,139	10,918	16,885	30,187	141,817
NDSU Student Spending	992	2,944	8,288	11,208	14,360	17,672	18,224	24,981	98,669
Total Direct Impacts	19,292	38,652	67,906	102,090	110,353	134,139	145,844	174,811	793,088
Direct Impacts by I-O Sector:									
Construction	5,855	9,271	17,481	31,081	20,139	10,918	16,885	30,187	141,817
Communications & Public Utilities	582	992	1,438	1,894	2,256	3,117	3,748	4,545	18,564
Retail trade	2,430	5,363	10,964	14,882	18,723	32,824	32,034	33,343	150,563
Finance, Insurance & Real Estate	1,981	4,506	8,127	11,422	14,573	18,464	22,333	21,365	102,770
Business & Personal Services	1,720	3,929	6,535	9,625	11,936	18,735	11,874	18,279	82,633
Households	6,724	14,593	23,371	33,186	42,725	50,081	58,970	67,093	296,742

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Table 2. Continued

	Fiscal Year								Total
	2000	2001	2002	2003	2004	2005	2006	2007	
	----- 000s nominal \$ -----								
Total Impacts:									
Construction	7,118	11,851	21,897	37,642	27,529	19,714	26,707	41,784	194,242
Communications & Public Utilities	2,284	4,504	7,468	10,822	12,440	15,617	17,322	20,508	90,965
Retail trade	12,872	26,752	47,604	69,306	80,148	105,882	113,727	129,484	585,775
Finance, Insurance, & Real Estate	4,276	9,224	16,178	23,344	28,145	34,702	40,398	42,630	198,897
Business & Personal Services	2,601	5,762	9,668	14,244	17,264	25,191	18,993	26,576	120,299
Professional & Social Services	1,240	2,569	4,363	6,429	7,423	8,865	9,963	11,613	52,465
Households	19,059	39,480	66,930	98,571	113,996	135,718	153,070	178,365	805,189
Other ¹	4,199	8,621	15,025	22,191	25,124	31,083	32,258	39,750	180,251
Total	53,649	108,763	189,133	282,549	312,069	376,772	414,438	490,710	2,228,083

¹Includes agriculture, mining, manufacturing, transportation, and government.