OHFOOD: An Ohio Food Industries Input-Output Model

(Year 2010, Version 13.0, June 2012)

by Thomas L. Sporleder¹

Abstract

OHFOOD, an acronym for Ohio food, is a sophisticated input-output model. The model is designed specifically to capture the interdependencies and linkages among various sectors and industries composing the complex economy of Ohio. The input-output model of Ohio's economy also maintains substantial detail on the food and agricultural sectors, referred to as the agrifood supply chain. The interindustry model describes the linkages among various sectors of the economy and is designed specifically to provide estimates of the economic importance of the food and agriculture-related cluster, along with the general manufacturing and service sectors, of the Ohio economy. In addition, OHFOOD provides several types of economic multipliers for detailed food and agriculture-related sectors of the economy.

This abstract is a brief overview of the importance of food and agriculture to the state's economy, based on the interindustry model. The analysis indicates that for 2010 the food and agricultural cluster of Ohio's economy contributed 11.7 percent of the output, added 10.7 percent to Ohio's gross state product, and accounted for 14.0 percent of the total employment in the Ohio economy. The agrifood cluster of the Ohio economy accounts for 1 of every 7 jobs in Ohio. Of these, over 93,000 jobs are in production agriculture with over an additional 59,000 just in food processing.

In 2010, the Ohio economy generated a gross state product (GSP) of \$477.7 billion. The food and agricultural cluster's share of this GSP was \$51.0 billion, or \$10.70 of each \$100 of Ohio GSP. For 2010 the contributions to GSP for the five components of the agrifood cluster are \$2.0 billion for farm inputs, machinery, and professional services; over \$3.0 billion from agricultural production; about \$22.0 billion from processing; an additional \$13.1 from food wholesaling and retailing; and another \$10.8 billion in food services.

Of these five major components comprising the food and agricultural-related cluster, the food processing component is the largest in terms of contribution to GSP, contributing \$21.3 billion, or nearly 42% of the total contribution to the \$51.0 billion GSP by the entire agrifood supply chain. Grocery retailing and wholesaling is the second largest sector in terms of GSP, accounting for another \$13.1 billion, or nearly 26 percent to the total GSP of \$21.0 billion by the entire food and agriculture cluster. The food service sector is notable for its contribution to employment. This sector accounts for over 419,000 jobs, or about 47 of every 100 jobs within the entire agrifood cluster.

Total GSP improved by 1.3 percent in Ohio from 2008 to 2010. GSP attributable to the agrifood supply chain grew from \$39.0 billion in 2008 to \$51.0 billion in 2010, an increase of around 30 percent. Total employment declined over this period about 3 percent while the agrifood cluster gained 1 percent to over 900,000 jobs during this same period.

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Table 1. Ohio: Output, Gross State Product, and Employment, 2010.

Farm Inputs, Equip & Prof Services 7,916.3 2,003.2 32,415 Farming	-	Total Output	Gross State Product (GSP)	Employment
Farming	Food & Polated Agricultural Cluster	\$ Millions	\$ Millions	Person Years
Dainy Cattle & Milk Production		7,916.3	2,003.2	32,419
Beef Cattle Production	Farming	8,809.5	3,041.7	93,196
Poulty & Egg Production	Dairy Cattle & Milk Production		359.4	5,813
Hogs & Other Farm Animals	Beef Cattle Production	426.2	70.9	2,871
Grain Production Soybeans & Other Cil Crops Soybeans & Other Cil Crops Soybeans & Other Cil Crops Misc Crops, Hay, Sugar, Tobacco & Nuts Fruits & Vegetable Production Greenhouse, Nursey & Floriculture Production Greenhouse, Nursey Greensed Meat Fish, Poultry & Eggs Greensed Meat Fish, Poultry & Eggs Greensed Meat Fish, Poultry & Eggs Grain Milling & Flour Floressing Frocessed Meat Fish, Poultry & Eggs Grain Milling & Flour Flats & Oils Processing Grain Milling & Flour Flats & Oils Processing Troduction Grain Milling & Flour Flats & Oils Processing Troduction Grain Milling & Flour Flats & Oils Processing Troduction Grain Milling & Flour Flats & Oils Processing Troduction Grain Milling & Flour Flats & Oils Processing Troduction Total Agrifood Supply Chain (Food & Ag Cluster) General Manufacturing & Service Sectors Mining Sone, Clay & Glass Total Agrifood Supply Chain (Food & Ag Cluster) General Manufacturing & Service Sectors Moring Sone, Clay & Glass Total Agrifood Supply Chain (Food & Grain Milling Section Se		755.9	140.7	1,195
Soybeans & Other Oil Crops Misc Crops Hay, Sugar, Tobacco & Nuts 366.3 115.0 1.57	Hogs & Other Farm Animals ^a	664.3	326.2	13,930
Misc Crops, Hay, Sugar, Tobacco & Nuts 3663 1150 1,57 Fruits & Vegetable Production 284.7 149.9 1,30 Greenhouse, Nursery & Floriculture Production 363.9 228.8 2,41 Forestry, Hunting & Fishing 363.8 155.0 3,81 Processing 49,373.3 21,978.7 110,44 Food Processing 35,087.0 21,317.8 59,03 Processed Meat, Fish, Poultry & Eggs 3,760.3 1,194.4 9,23 Dairy Processing 6,193.8 62.4 7,38 Processed Food & Kindred Products 15,543.6 15,270.0 3,98 Grain Milling & Flour 1,226.9 4,136.8 71 Fats & Oils Processing 1,300.1 146.6 32 Beverage Processing 7,062.3 507.7 7,40 Wood/Paper/Furniture Manufacturing 14,286.2 660.9 51,41 Food & Forestry Wholesale/Retail 18,085.6 13,131.6 245,144 Food Services 21,021.6 10,824.4 419,132 Total Ag		2,267.2	490.7	36,305
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Greenhouse, Nursery & Floriculture Production 363.9 238.8 2,41 Forestry, Hunting & Fishing 363.8 155.0 3,811 Processing 49,373.3 21,978.7 110,447 Food Processing 35,087.0 21,317.8 59,03 Processed Meat, Fish, Poultry & Eggs 3,760.3 1,194.4 9,23 Dairy Processing 6,193.8 62.4 7,38 Processed Food & Kindred Products 15,543.6 15,270.0 33,96 Grain Milling & Flour 1,226.9 4,136.8 71. Fats & Oils Processing 1,300.1 146.6 32. Beverage Processing 7,062.3 507.7 7,0 Wood/Paper/Furniture Manufacturing 14,286.2 660.9 51,41 Food & Forestry Wholesale/Retail 18,085.6 13,131.6 245,14 Food Services 21,021.6 10,824.4 419,132 Total Agrifood Supply Chain (Food & Ag Cluster) 105,206.2 50,979.7 900,333 General Manufacturing & Service Sectors 42,389.2 14,592.7 12,266 <td>Misc Crops, Hay, Sugar, Tobacco & Nuts</td> <td>366.3</td> <td>115.0</td> <td>1,579</td>	Misc Crops, Hay, Sugar, Tobacco & Nuts	366.3	115.0	1,579
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				978,131
2040 Total Ohio Facesony 200 704 4 477 600 0 6 445 700	Total of Mfg & Service Sectors	793,585.2	426,719.3	5,545,393
2010 10tal Onio Economy 696.791.4 477.699.0 6.445.732	2010 Total Ohio Economy	898,791.4	477,699.0	6,445,732

Note: Each sector's output, gross state product, and employment are provided through U. S. Census of Manufacturing information. The wholesaling and retailing sector is one sector in the input-output model definition, but this sector is disaggregated for purposes of Table 1. The procedure used to estimate the percentage of all wholesale/retail payroll and employment that is food and agriculture-related is based on Ohio data (County Business Patterns 2009). The percentage of payroll (24.5%) is used to estimate the proportion of food- and agriculture-related output and GSP. The % of employment (28.5%) is used to allocate employment in a similar fashion.

^a Sheep, goats, horses, and miscellaneous livestock.

^b Excludes hotel/motel food service.

^c Includes diverse service items such as advertising, cleaning, barber and beauty shops, and funerals. Source: Computed