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ECONOMIC CONTRIBUTION OF MAINE'S FOOD INDUSTRY\*

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## ECONOMIC CONTRIBUTION OF MAINE'S FOOD INDUSTRY

### 1. INTRODUCTION

Food is one of life's basic necessities and, as such, people devote a large share of their budget to spending on groceries and dining out. According to the Consumer Expenditure Survey of the U.S. Bureau of Labor Statistics, the typical U.S. household spent \$3,753 on groceries and \$2,619 on food away from home in 2009.<sup>1</sup> This spending by U.S. households, along with expenditures made by businesses and foreign visitors, supported 10.1 million and 3.0 million jobs in the "food services and drinking places" and "food and beverage stores" industries, respectively.<sup>2</sup> The combined employment in these two sectors accounted for about nine percent of total private, nonfarm U.S. employment in 2009. Clearly, the food industry is a significant part of the U.S. economy.

The food industry, however, is more than just grocery stores and restaurants –that is, businesses that sell food. Food processors are a relatively large part of the U.S. manufacturing industry. In 2009, U.S. food manufacturers employed 1.5 million people, which accounted for 12 percent of all manufacturing employment in the United States.<sup>3</sup> The food manufacturing sector also contributed \$189.5 billion to U.S. Gross Domestic Product in 2008. Yet, with these impressive statistics for food sellers and processors, the backbone of the U.S. food industry is the farming and fishing sectors. According to the most recent U.S. Census of Agriculture, there were 2.2 million farms operating in the

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<sup>1</sup> These figures were reported by the U.S. Bureau of Labor Statistics on October 5, 2010, in a news release (USDLE-10-1390) titled "Consumer Expenditures – 2009." Spending amounts are per "consumer unit," which includes families, single persons living alone, and individuals who live together and share expenses.

<sup>2</sup> These figures, from the U.S. Bureau of Economic Analysis, include full- and part-time employment.

<sup>3</sup> Employment and Gross Domestic Product information for U.S. food manufacturers is from the U.S. Bureau of Economic Analysis.

United States as of 2007.<sup>4</sup> These farms occupied 922 million acres, which is about 41 percent of the total U.S. land area. In 2007, U.S. farms generated \$297 billion worth of food and other agricultural products. According to U.S. Census data from 2008, fisheries provided employment (or self-employment opportunities) to 70,837 workers nationwide.<sup>5</sup> U.S. fisheries generated about \$3.9 billion in revenue in 2009.<sup>6</sup>

The purpose of this study is to examine the economic contribution of Maine's food industry. By economic contribution, we mean the sales revenue, employment and labor income associated with food products produced, manufactured, served or sold in Maine. Our definition of the food industry includes farms and fisheries that grow, raise or catch food products; food processing companies; restaurants; and grocery stores. The analysis starts by looking at the linkages between Maine's farms and fisheries, and food processors. These components of the overall sector are referred to as "food makers." As a separate analysis, we look at the economic contribution of Maine's grocery stores and restaurants. These two components of the industry are referred to as "food sellers." The paper ends with a discussion of how the food industry, examined within the context of the economic base model of regional growth, is both a "driver" and "supporter" of economic activity in the state.

Before proceeding with the analysis, we note that our results are based on secondary data from a variety of federal and state government sources. These figures allow us to provide a broad overview of the food sector in Maine, but more detailed

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<sup>4</sup> These figures are from the 2007 U.S. Census of Agriculture and the Economic Research Service of the U.S. Department of Agriculture.

<sup>5</sup> This includes 5,600 workers who are employed by fisheries, based on 2008 County Business Patterns data from the U.S. Census Bureau, and 65,237 non-employers in the fishing sector, based on 2008 non-employer statistics from the U.S. Census Bureau.

<sup>6</sup> Information on the value of fishery landings is based on personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, Maryland.

information collected through surveys or other methods of primary data collection would be needed to understand some of the nuances of the food sector and its value chain. Future research, beyond the scope of the current study, can provide information about specific segments of the food sector and other aspects of this important industry.

## 2. ECONOMIC CONTRIBUTION OF MAINE'S FOOD MAKERS

Figure 1 provides a simple illustration of the economic contribution of Maine's food producers and processors. The arrows pointing up and away from food processors and producers represent sales of processed and unprocessed food products, and raw food products that are shipped to out-of-state processors (e.g., lobsters that are processed in Canada). The arrow pointing from food producers to processors represents sales of raw food products from Maine's farms and fisheries to food manufacturers operating in the state. Finally, the arrows connecting food processors and producers to the rest of the Maine economy represent the backward linkages (i.e., purchased inputs and services) between Maine's food makers and other industrial sectors.

According to the 2009 Maine IMPLAN model, a state-of-the-art input-output economic modeling system developed by the U.S. Forest Service, food manufacturers in the state generated \$2.2 billion in sales revenue. The IMPLAN model, which traces the flows of expenditures among economic sectors, shows that Maine's food processors purchased \$365 million of food products from Maine farms and fisheries. In addition, food producers sell their products directly to consumers through a variety of marketing channels. To estimate the sales volume of agricultural and fisheries food products that are not processed in Maine, we subtracted the \$365 million in purchased raw food products

by in-state food processors, estimated by the Maine IMPLAN model, from the total sales volume of farms and fisheries that grow, raise or catch food products.

Table 1 shows the value of agricultural sales in Maine for selected commodity groups from the 2007 U.S. Census of Agriculture. These commodities were chosen –and not the entire sales value of all Maine agricultural products –because of their close connection to food products. The largest commodity groups in Maine, in terms of value of products sold, are vegetables (e.g., potatoes), dairy (e.g., milk) and fruits (e.g., blueberries and apples). Table 2 presents information, estimated using data collected by the Maine Department of Marine Resources and National Marine Fisheries Service, on the value of selected fisheries landings in the state. These figures, which are preliminary 2010 “ex-vessel values” as of early 2011, show that the largest fisheries (including aquaculture) in Maine are lobsters, salmon, shrimp and clams. The total sales volume of the food producers shown in Tables 1 and 2 equaled \$919 million, which –after accounting for estimated sales in the amount of \$365 million to Maine food processors – suggests that farmers and fisheries in Maine sell about \$554 million in food products directly to consumers or to processors located outside of the state.

Table 3 summarizes the statewide economic contribution of Maine’s food makers. We find that, including multiplier effects, food producers and processors in Maine have a total statewide economic contribution of \$5.0 billion in sales revenue, 37,569 full- and part-time jobs, and \$1.1 billion in labor income. The direct output of \$2.8 billion is the sales revenue generated by food manufacturers (i.e., \$2.2 billion) as well as the value of food products from Maine farms and fisheries that are not further processed in the state (i.e., \$554 million). In other words, it is the estimated market value of processed and

unprocessed food products that are manufactured, grown, raised or caught in Maine. The \$2.2 billion in sales revenue to the food processing sector is associated with 6,341 jobs in Maine food manufacturers and \$241 million in labor income.<sup>7</sup> The \$554 million worth of food products that are grown, raised or caught in Maine, but not processed in the state, is associated with 10,716 jobs on Maine farms and fisheries and \$225 million in labor income.<sup>8</sup>

The direct employment of 17,057 full and part-time jobs shown in Table 3 is a combination of employment in Maine's food processors (i.e., 6,341 jobs) and the portion of the fisheries' jobs and food-related employment on Maine's farms (i.e., 10,716 jobs) that is associated with products that are not processed in the state. Likewise the direct labor income figure of \$466 million is made up of earnings in the food processing sector (i.e., \$241 million) and the portion of labor income (i.e., \$225 million) that is associated with the \$554 million in food products that are not processed in Maine. The multiplier effects shown in Table 3 are the sales revenue, employment and labor income that are supported by the purchases of Maine's food processors and producers. As shown in Figure 1, a significant portion –about 16 percent –of the output multiplier effects of \$2.3 billion is made up of \$365 million in sales among food makers. The remaining \$1.9 billion represents the purchases made by food processing companies and their employees, as well as the expenditures made by Maine's farms and fisheries, and their workers.

Just as the sales of food producers to food manufacturers in the state account for a sizable amount of the sales revenue multiplier effects shown in Table 3, full- and part-

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<sup>7</sup> Employment and labor income information for Maine food processors is from the U.S. Bureau of Economic Analysis.

<sup>8</sup> These employment and compensation figures are from NOAA Fisheries Service, and the Maine IMPLAN model.

time workers on Maine’s farms and fisheries make up a significant share of the employment multiplier effects. Table 4 illustrates how we accounted for the employment of food agricultural producers, fisheries harvesters and food processors in the economic impact analysis. The total employment of 25,129 shown in Table 4 includes the full- and part-time workers in the food manufacturing sector, as well as the number of people, including the proprietor, working on farms and in harvesting fish – both food- and non-food related –in Maine. We adjusted this total employment figure to avoid double-counting food production workers accounted for in the multiplier effects –again, food processors purchased an estimated \$365 million worth of food products from Maine farms and fisheries, which supported a significant number of jobs –and to remove non-food related farm workers. After making these adjustments, we arrived at the employment figure of 17,057 full- and part-time workers that represent the direct employment of food makers in Maine.

Economic impact multipliers are a measure of the extent to which a one-unit increase in a direct impact –say, a one-dollar increase in sales output or a one-person increase in employment –leads to an increase in total economic activity. For example, the output multiplier of 1.82 (\$5.0 billion in total sales divided by \$2.75 billion in direct sales) suggests that every \$1.00 in revenue to Maine’s food makers is associated with an estimated \$1.82 in total statewide economic activity. This \$1.82 in sales includes the “original” \$1.00 in revenue to food makers and an additional \$0.82 in sales activity in other sectors of the Maine economy. As mentioned previously, part of this \$0.82 in additional economic activity represents revenue to Maine farms and fisheries that sell commodities to food processors.



As shown in Table 5, the employment multiplier estimated in this study of 2.20 (37,569 total jobs divided by 17,057 direct jobs) suggests that for every one person employed as a food maker in Maine, there are an estimated 1.20 additional workers in the state whose jobs are supported by the activities of food processors or producers. It is important to note that the relatively large magnitudes of the employment and labor income (multiplier of 2.35) multipliers are explained by the fact that, as described above, a large share of the direct sales output is manufactured food products. An employment multiplier in excess of 2.0 suggests that output per worker (i.e., productivity) is high – often the case in manufacturing –meaning that firms spend considerable amounts on purchased inputs (and, hence, generating a large multiplier) per employee.

To put these figures into perspective, Table 5 also reports multipliers from the Maine IMPLAN model for the sectors of “crop farming,” “livestock,” “fishing, hunting and trapping,” and “food products manufacturing”. The food maker employment multiplier estimated in our study is notably larger in magnitude than those for “crop farming,” “livestock,” or “fishing, hunting and trapping,” which is –again –not too surprising given that food processors, which have a high employment multiplier, account for \$2.2 billion of the \$2.75 billion in sales generated by food makers in Maine. The IMPLAN sales revenue multipliers shown in Table 5 are generally similar for the four sub-sectors of food makers, while the labor income multiplier for “food products manufacturing” well exceeds the corresponding figures for the “crop farming,” “livestock” and “fishing, hunting and trapping” sectors.

With all of this as a background, it is interesting to compare food manufacturers and farm and fish harvesting operations in Maine to similarly-defined industries

elsewhere in New England. As indicated in Table 6, Maine has more farms (8,136) than any other state in New England and, with 10,025 full- and part-time workers, Maine is a very close second to Massachusetts (10,092) in terms of total farm employment.<sup>9</sup> Maine also ranks high in New England in the value of agricultural products sold off the farm. In 2007, Maine (\$617.2 million) ranked behind only Vermont (\$673.7 million) in the value of agricultural products marketed, accounting for approximately 25 percent of the total value of agricultural products sold in New England.

In terms of fish harvesting, Table 7 shows that Maine (185.2 million pounds) ranks second to Massachusetts (326.3 million pounds) in the amount of fish harvested in 2008, but ranks first among the New England States in total employment in fish harvesting with 8,763 full- and part-time harvesters. Maine also ranks high in New England in the value of harvested fish sold. In 2008, Maine (\$308.3 million) ranked second to Massachusetts (\$399.9 million) in the value of harvested fish sold, accounting for approximately 38 percent of the total value of harvested fish sold in New England.

While Maine is a major contributor to New England's agricultural food production and fish harvesting, it also plays a significant role in the region's food product manufacturing. As shown in Table 8, Maine ranks third among the New England states in the number of food manufacturing establishments with 183 firms, directly behind Connecticut with 275 firms and the region's leader, Massachusetts with 645 firms. Maine also ranks third in the region in both food manufacturing employment (6,341) and labor income (\$241.1 million).

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<sup>9</sup> For our comparisons to other New England states, we use total farm employment figures, which include food- and non-food related operations. As shown in Table 6, the total farm employment figure of 10,025 workers in Maine represents a part of the direct employment of food makers, as well as positions that are counted in the multiplier effects.

### 3. ECONOMIC CONTRIBUTION OF MAINE'S FOOD SELLERS

Table 9 shows the statewide economic contribution of Maine's grocery stores. The direct output of \$3.0 billion represents the gross sales revenue, according to the 2007 U.S. Census of Retail, generated by grocery stores in the state. The direct employment figure of 18,715 full- and part-time jobs and corresponding \$483 million in labor income are estimated using 2009 data from the U.S. Bureau of Economic Analysis.<sup>10</sup> The multiplier effects, estimated using the Maine IMPLAN model, are the additional sales revenue, employment and labor income that are supported by the spending of grocery stores, their suppliers and employees. The results shown in Table 9 indicate that, including multiplier effects, grocery stores in Maine have a statewide economic contribution of \$3.5 billion in sales revenue, 23,569 full- and part-time jobs, and \$661 million in labor income.

The ratio of total sales revenue to direct sales revenue is 1.18, which suggests that every \$1.00 in spending at a grocery store in Maine generates a total of \$1.18 in sales revenue statewide. The magnitude of this multiplier, which is considerably smaller than the sales revenue multiplier for "food makers," is typical of retail sectors. For many products sold in Maine grocery stores, the only portion of the sales revenue that remains in the economy is the retail gross profit margin, which is typically 29.3 percent of the total sales.<sup>11</sup> This means that, unless a grocery item is produced in Maine or provided by

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<sup>10</sup> BEA employment and labor income figures are reported for "food and beverage stores," which is a broader industrial category than grocery stores. To more accurately reflect activity at grocery stores, we adjusted the BEA employment and labor income figures using the ratio of "grocery stores" sales to "food and beverage stores" sales from the 2007 U.S. Census of Retail.

<sup>11</sup> The average gross profit margin is from Food Marketing Institute, Supermarket Facts: Marketing Costs Fact Sheet, 2010.

an in-state distributor, most of the sales revenue generated by Maine’s grocery stores “leaks” out of the state. This explains the low output multiplier. The relatively low employment and labor income multipliers of 1.26 and 1.37, respectively, are also indicative of the fact that –for most of the commercial grocery store chains –a relatively small amount of revenue generated per employee remains in the state.

The statewide economic contribution of Maine’s restaurants is documented in Table 10.<sup>12</sup> According to taxable retail sales figures from Maine Revenue Services, restaurants in the state generated \$1.9 billion in sales revenue in 2009. In addition, our estimates using data from the U.S. Bureau of Economic Analysis suggest that restaurants directly employed 43,062 people (i.e., full- and part-time positions) and provided \$804 million in labor income.<sup>13</sup> The multiplier effects shown in Table 10 are the additional sales revenue, employment and labor income that are supported by the spending of restaurants, their suppliers and employees. Including these multiplier effects, the total statewide economic contribution of Maine restaurants is \$3.3 billion in sales revenue, 54,246 full- and part-time jobs, and \$1.2 billion in labor income.

The ratio of total sales revenue to direct sales revenue is 1.69, which suggests that every \$1.00 in spending at Maine restaurants generates a total of \$1.69 in sales revenue statewide. This includes the original \$1.00 in direct revenue to the restaurant sector and an additional \$0.69 in sales revenue to other Maine industries. The estimated employment multiplier of 1.26, which is similar to the corresponding multiplier for Maine’s grocery

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<sup>12</sup> Maine Revenue Services, the source of sales data for restaurants in Maine, define restaurants as “stores selling prepared food for immediate consumption.”

<sup>13</sup> BEA employment and labor income figures are reported for “food services and drinking places,” which is a broader industrial category than restaurants. To more accurately reflect activity at restaurants, we adjusted the BEA employment and labor income figures using employment and payroll figures from County Business Patterns.

stores, reflects the often part-time nature of working in the restaurant industry. It suggests that the total economic activity generated by a restaurant worker supports 0.26 jobs elsewhere in the state. Whereas the large employment multiplier in the food processing sector is attributed to the fact that each manufacturing employee –many of whom work full-time –generates a substantial amount of revenue, the relatively small multiplier in the restaurant sector is explained by the fact that eating establishments typically employ a larger percentage of part-time workers who –because of fewer hours on the job –generate less revenue per employee.

#### 4. ECONOMIC CONTRIBUTION OF MAINE’S FOOD INDUSTRY

For purposes of our study, we separated the food industry into two broad segments: food makers and food sellers. Within the segment of food makers, we considered the economic interactions between food producers (i.e., farmers and fish harvesters) and processors (i.e., food manufacturers). The sales generated by food processors were counted as a “direct” impact of food makers, while much of the revenue to Maine’s farmers and fisheries—that is, the money received from food processors –was accounted for in the multiplier effects associated with food makers.

In this section of the paper, we examine the statewide economic contribution of the entire food industry, combining food makers and food sellers. The approach used in this analysis is similar to what we employed when examining food makers. That is, we need to make adjustments to our results for grocery stores and restaurants, rather than simply add these sectors to our estimates for the economic contribution of food makers. This is done to account for the fact that grocery stores and restaurants sell products that

are manufactured by Maine food processors, and grown, raised or caught by agricultural food producers and fish harvesters located in the state. For this reason, a portion of the \$2.8 billion in direct sales revenue of Maine food makers shown in Table 3 is captured in the multiplier effects of Maine's food sellers. To account for this, we made the appropriate adjustments to our economic impact figures for each of the sectors individually instead of simply summing them together. The economic impact estimates shown in Table 11 properly account for the flows of expenditures among sub-sectors of the Maine food industry.

Our figures show that the Maine food industry has a direct statewide economic contribution of \$7.5 billion in sales revenue, 77,857 full- and part-time jobs, and \$1.7 billion in labor income. The direct sales figure of \$7.5 billion represents the revenue generated by food sellers, and the sales of food makers to purchasers other than Maine's grocery stores or restaurants. The total economic contribution of Maine's food industry, including multiplier effects, is \$11.5 billion in sales revenue, 112,674 full- and part-time jobs, and \$3.1 billion in labor income. The sales revenue, employment and labor income multipliers are 1.54, 1.45 and 1.81, respectively, which are a blending of the multipliers for the individual components of the overall food industry in Maine.

To put these figures into perspective, it is informative to look at the economic contribution of the Maine food industry relative to the entire state economy. To do this, it is appropriate to look at the percentage of total state employment or labor income that is captured in the direct impacts of the food industry. In this analysis, we do not count the multiplier effects because doing so would result in a situation where the economic contribution of the food industry, when combined with other industries in the state, could

exceed total amounts for the entire economy due to “double counting.” Our approach of simply expressing direct employment or labor income in the sectors of interest –in this case, food producing and processing, grocery stores and restaurants –relative to economy-wide totals provides a reasonable picture of the food sector’s importance to the overall state economy.

The direct employment of 77,857 relative to the statewide total employment of 806,631 suggests that the Maine food industry accounts for about 9.7 percent of the state’s economy. Focusing on labor income, we see that the total direct impact of \$1.7 billion accounts for about 3.5 percent of the \$48.9 billion in statewide total personal income. An explanation for the discrepancy between the food industry’s size relative to the overall state economy depending on whether we consider employment or labor income is that Maine’s restaurants –a large component of the food industry –directly employ 44,166 full- and part-time workers, which is about 5.5 percent of total employment in the state. Restaurants, on the other hand, only account for 1.7 percent of total personal income in Maine.

## 5. SUMMARY AND CONCLUSIONS

Our results show that the Maine food industry –that is, restaurants, grocery stores, food processors and food producers –has a direct statewide economic contribution of \$7.5 billion in sales revenue, 77,857 full- and part-time jobs, and \$1.7 billion in labor income. Including multiplier effects, the food industry contributes \$11.5 billion in sales revenue to the Maine economy and supports 112,674 full- and part-time jobs in Maine, which provide over \$3.1 billion in labor income. Although it is informative to consider the food

industry in its entirety as we have summarized above, it is also interesting to examine the distinct role that each major component –that is, food maker and food sellers –plays in the Maine economy.

In terms of its impact on economic activity in the state, the food industry provides a nice illustration of the export base model of regional growth. The general idea underlying the export base model is that a regional economy can be separated into a basic sector, which brings money into the area through the exportation of goods or services, and a residentiary sector, which serves a local market. Food makers –involved in the growing (i.e., farmers), catching (i.e., fish harvesting) or manufacturing (i.e., processors) of food products –are a classic example of a basic activity that exports goods outside the region. Although restaurants, especially those located in areas with large numbers of tourists, can be considered part of a region’s economic base, food sellers are generally thought of as a residentiary activity.

This distinction between a basic and residentiary industry orientation should be kept in mind when comparing the economic contributions of food makers and sellers. Maine’s restaurants and grocery stores, which have a combined economic contribution that exceeds the revenue generated by food processors and producers, sell goods and services to people across the entire spectrum of the Maine economy, as well as to tourists visiting the state. On the other hand, food processors and producers make up only a portion of the state’s export base, which also includes wood products and other manufactured goods. Given the different roles that these industries play in the Maine economy –again, food sellers serve the entire state as well as visitors to Maine, while



food makers are a part of the state's export base –it is not appropriate to use the relative size of their economic contributions as an indicator of “importance” to the economy.

However, it is appropriate to compare segments of the overall food industry in terms of the unique roles they play in the Maine economy. With primarily an export orientation, food makers –along with other manufacturers and primary industries –are a “driver” of the Maine economy. On the other hand, food sellers can be thought of as a “supporter” of the regional economy, given that they largely serve Maine residents. In a seminal journal article on the economic base model, Nobel Laureate economist Douglass North points out that losing sight of the different roles of basic and residentiary industries is a “misunderstanding of the nature of the economy.”<sup>14</sup> He further explains that a region may have a low percentage of employment in basic industries and a high percentage of residentiary activities and “yet be basically dependent upon” the sectors that generate export revenue. This is likely the case in Maine. The food industry both contributes to the state's export base and provides necessary goods and services to the people of Maine.

#### References:

North, Douglass, “Location Theory and Regional Economic Growth,” *Journal of Political Economy* 63 (1955) 243-258.

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<sup>14</sup> This quote and the related discussion is from North's 1955 article “Location Theory and Regional Economic Growth,” published in the *Journal of Political Economy*.

Figure 1. Linkages among Maine's Food Makers

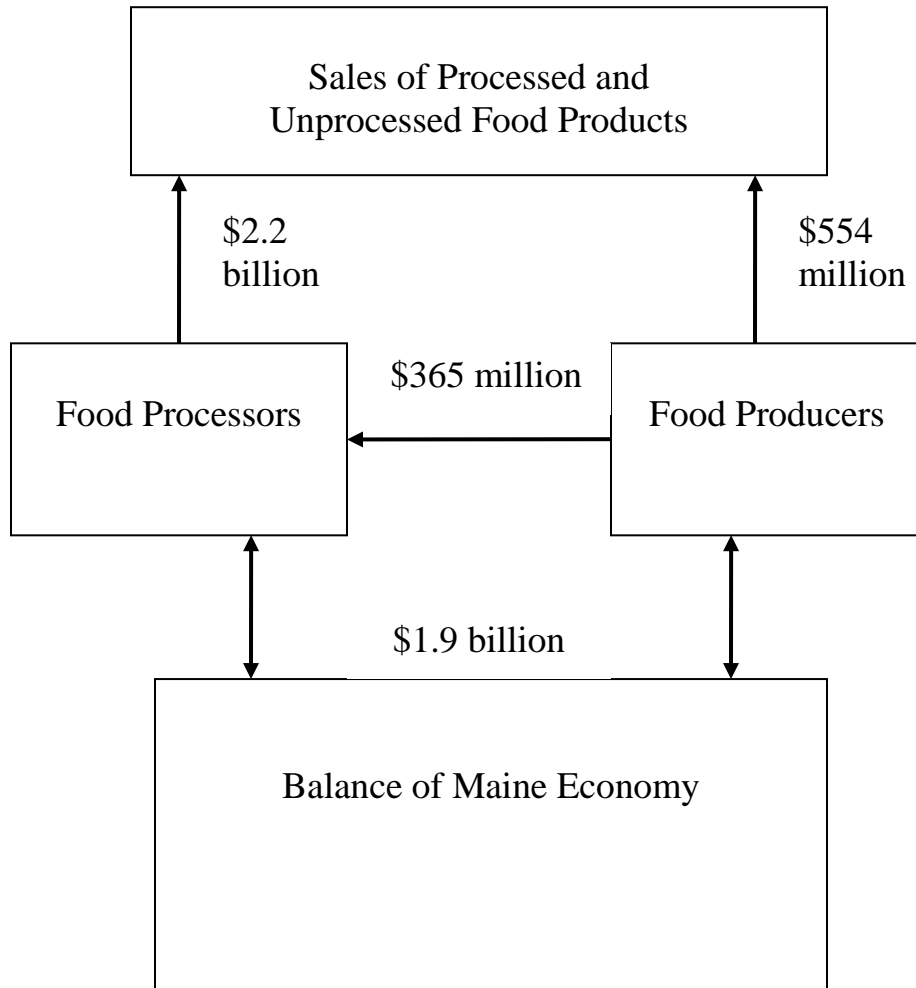


Table 1. Value of Food Agricultural Sales in Maine, 2007

Commodity Group	Market Value of Products Sold
Grains, oilseeds, dry beans, and dry peas	\$9,146,000
Vegetables, melons, potatoes and sweet potatoes	\$155,147,000
Fruits, tree nuts, and berries	\$85,183,000
Poultry and eggs	\$75,831,000
Cattle and calves	\$15,660,000
Milk and other dairy products from cows	\$126,392,000
Hogs and pigs	\$813,000
Sheep, goats, and their products	\$1,979,000
Total	\$470,151,000

Source: 2007 U.S. Census of Agriculture

Table 2. Value of Fisheries Landings in Maine, 2010 (preliminary figures as of 2/17/2011)

Fishery	Ex-Vessel Value of Products Sold
Lobster	\$309,626,512
Salmon	\$76,284,793
Shrimp	\$13,460,022
Clam	\$13,460,022
Other	\$35,902,727
Total	\$448,734,076

Note: Values based on data collected by Maine Department of Marine Resources and National Marine Fisheries Service.

Table 3. Economic Contribution of Maine's Food Makers

	Direct Impact	Multiplier Effects	Total Impact
Sales Revenue	\$2,754,420,900	\$2,269,488,543	\$5,023,909,443
Employment	17,057	20,513	37,569
Labor Income	\$465,587,635	\$629,118,897	\$1,094,706,532

Note: Multiplier effects are estimated using the Maine IMPLAN model.

Table 4. Maine’s Food Makers Employment

Farm Employment	10,025
Fish Harvesting Sector Employment	8,763
Food Processor Employment	6,341
Total Employment	25,129
Adjustment to Avoid Double Counting and to Remove Non-Food Farm Employment	(8,072)
Direct Employment in Table 3	17,057

Sources: U.S. Bureau of Economic Analysis, U.S. Census Bureau, NOAA Fisheries Service, Maine IMPLAN model, and authors’ calculations

Table 5. IMPLAN Multipliers for Selected Maine Industries

Sector	Sales Revenue Multiplier	Employment Multiplier	Income Multiplier
Crop Farming	1.80	1.74	1.63
Livestock	1.77	1.35	2.60
Fishing, Hunting and Trapping	1.60	1.18	1.43
Food Products Manufacturing	1.87	3.73	3.15
“Food Maker” Multiplier Estimated in Study	1.82	2.20	2.35

Sources: Maine IMPLAN Model and authors’ calculations

Table 6. New England Farm Employment and Sales Data

State	Number of Farms	Total Farm Employment	Value of Agricultural Products Sold (\$MM)
Connecticut	4,916	8,416	\$551.5
Maine	8,136	10,025	\$617.2
Massachusetts	7,691	10,092	\$489.8
New Hampshire	4,166	5,050	\$199.1
Rhode Island	1,219	1,419	\$65.9
Vermont	6,984	8,472	\$673.7
New England Total	33,112	43,474	\$2,597.2

Notes. Number of farms and value of products sold include food and non-food agricultural enterprises. Information on the number of farms and value of agricultural products sold is from the 2007 U.S. Census of Agriculture. Farm employment figures are from the U.S. Bureau of Economic Analysis, 2009.

Table 7. New England Fish Harvesting Employment and Sales Data, 2008

State	Total Fish Harvesting Employment	Pounds of Fish Harvested (Millions)	Value of Harvested Fish Sold (\$MM)
Connecticut	449	7.1	\$16.9
Maine	8,763	185.2	\$308.3
Massachusetts	7,819	326.3	\$399.9
New Hampshire	442	10.5	\$17.5
Rhode Island	1,587	71.9	\$68.9
Vermont	n/a	n/a	n/a
New England Total	19,060	601.0	\$811.5

Notes. The fish harvesting data do not include aquaculture products except for clams, mussels and oysters. Information is from NOAA Fisheries Service, Office of Science & Technology: Seafood Industry Impact Data.

Table 8. New England Food Manufacturing Employment and Labor Income Data

State	Food Manufacturing Establishments with Employees	Food Manufacturing Employment	Food Manufacturing Labor Income (\$MM)
Connecticut	275	7,508	\$362.1
Maine	183	6,341	\$241.1
Massachusetts	645	23,744	\$1,227.6
New Hampshire	105	2,616	\$125.8
Rhode Island	151	3,016	\$111.0
Vermont	142	4,550	\$194.1
New England	1,501	47,775	\$2,261.7

Notes. Information on the number of food manufacturing establishments is from the U.S. Census Bureau, County Business Patterns, 2008. Employment and labor income figures are from the U.S. Bureau of Economic Analysis, 2009.

Table 9. Economic Contribution of Grocery Stores in Maine

	Direct Impact	Multiplier Effects	Total Impact
Sales Revenue	\$2,955,003,000	\$521,560,146	\$3,476,563,146
Employment	18,715	4,854	23,569
Labor Income	\$483,142,794	\$177,415,592	\$660,558,386

Note: Multiplier effects are estimated using the Maine IMPLAN model.

Table 10. Economic Contribution of Restaurants in Maine

	Direct Impact	Multiplier Effects	Total Impact
Sales Revenue	\$1,936,869,000	\$1,333,986,881	\$3,270,855,881
Employment	43,062	11,184	54,246
Labor Income	\$804,095,810	\$417,197,533	\$1,221,293,343

Note: Multiplier effects are estimated using the Maine IMPLAN model.

Table 11. Economic Contribution of the Food Industry in Maine

	Direct Impact	Multiplier Effects	Total Impact
Sales Revenue	\$7,460,376,261	\$4,029,367,685	\$11,489,743,946
Employment	77,857	34,817	112,674
Labor Income	\$1,728,725,371	\$1,396,853,262	\$3,125,578,633

Note: Multiplier effects are estimated using the Maine IMPLAN model.