

Economic Impact through Value Chains

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According to the 2012 Census of Agriculture, 2,232 farms harvested more than 100,000 acres of vegetables to supply the fresh food market. Only 127 farms supplied vegetables for further processing, harvesting less than 30,000 acres.

Value added processing converts commodities or raw products into products that meet the time and form characteristics desired by consumers. For example, tomatoes, including seconds that may not be preferred by consumers in raw form, can be stewed and combined with other ingredients to create sauces and salsas with a longer shelf life.



Value added processing extends farmers' value chain in local economies. Instead of selling just fresh vegetables, farmers can now sell processed products that may be worth more than the raw, unprocessed product (e.g., diced bell peppers or baby carrots may command a price premium that exceeds the additional costs of processing) or that gives value to unsold produce (e.g., blemished tomatoes can be used in pasta sauce).

In addition to commanding additional sales, the processing step often requires additional labor and other inputs, at least some of which is procured locally. Economic activity in one industry ripples through the regional economy as firms purchase and pay employees who also make regional purchases, creating a multiplier effect. A longer value chain increases potential economic impacts. Impacts represent backward-linked supply chains, which are enhanced through local purchases. Value added processing may also extend opportunities to maintain a workforce using nonlocal produce in the off-season.

Direct sales by any industry result in two types of effects. **Indirect effects** or business spending effects result when businesses purchase inputs from local suppliers. **Induced effects** or household spending effects result when households employed by directly or indirectly affected firms spend their earnings at local businesses. For example, farmers and employees of the shop that prints jar labels spend part of their wages and profits eating at local restaurants and buying groceries.

Four types of multipliers are commonly reported in economic impact studies. **Output** multipliers measure overall economic activity in the region. Output multipliers provide the largest number but say nothing about the effect on local residents. **Value-added** multipliers measure the contribution to regional gross domestic product (GDP) or the return to local resources used in the production and are a more appropriate measure of regional welfare. **Labor income** multipliers measure the benefit to the incomes of households in the region. Labor income is a component of value added, which is a component of output, so these outcomes cannot be summed within a year. **Employment** multipliers measure the number of workers needed across all industries to support an increase in direct sales. Input-output impact analysis assumes that existing employees are fully occupied and does not distinguish between full-time and part-time workers. It is important to remember that while impacts may occur over multiple years, a job created in year 1 is expected to endure across the horizon, and jobs cannot be summed across years.

For example, selling \$1,000 in vegetables creates an output impact of about \$1,280 in Bastrop County, TX. This includes \$970 in GDP contribution and \$440 in labor income. However, if that same box of vegetables is used to create a canned sauce or salsa, the output impact of selling \$6,900 in salsa is \$9,120, including \$2,540 in

value added and \$1,400 in labor income. Jobs are not calculated for this simple example of just \$1,000. Furthermore, a number of nonagricultural industries are affected by the food processing sales, including management companies, real estate entities, banks, and utility companies.

Economic impacts of selling \$1,000 in vegetables.¹

Impact Type	Labor Income	Value Added	Output
Direct Effect	\$360	\$820	\$1,000
Indirect Effect	\$40	\$50	\$100
Induced Effect	\$40	\$100	\$180
Total Effect	\$440	\$970	\$1,280

Economic impacts of selling salsa processed from using \$1,000 in local vegetables.

Impact Type	Labor Income	Value Added	Output
Direct Effect	\$800	\$1,160	\$6,900
Indirect Effect	\$550	\$1,240	\$1,980
Induced Effect	\$60	\$140	\$250
Total Effect	\$1,400	\$2,540	\$9,120

Top 10 industries affected by processing \$1,000 in vegetables into salsa.

Description	Labor Income	Value Added	Output
Vegetable and melon farming	\$361	\$817	\$1,000
Management of companies and enterprises	\$2	\$39	\$195
Wholesale trade	\$41	\$116	\$188
Owner-occupied dwellings	\$0	\$40	\$56
Electric power transmission and distribution	\$4	\$11	\$52
Nonresidential maintenance and repair construction	\$12	\$16	\$48
Support activities for agriculture and forestry	\$29	\$31	\$46
Petroleum refineries	\$0	\$9	\$43
Real estate	\$1	\$30	\$42
Monetary authorities and depository credit intermediation	\$10	\$20	\$36

¹ Impacts calculated from IMPLAN 2015 data for Bastrop County, TX. Totals may not sum due to rounding, which reflects the fact that impacts are estimates and not precise calculations. Rounding is not shown for the top 10 industries in order to show differences between the industries.

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