



Contribution of Agribusiness to the Magic Valley Economy, 2013

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Executive Summary

IRRIGATION HAS TRANSFORMED the Magic Valley desert (Cassia, Lincoln, Minidoka, Gooding, Jerome, and Twin Falls counties) into the epicenter of Idaho’s agribusiness industry. Agriculture in the Magic Valley has grown from family farmsteads into a giant agribusiness industry, providing jobs for the valley’s residents and food for national and international markets. In 2013, total output (sales of goods and services) from the Magic Valley economy exceeded \$17 billion, gross regional product (GRP) was \$6.8 billion, and employment totaled 95,000 jobs.

The Magic Valley economic pie can be sliced two ways: 1) by using a **gross** (accounting) **measure**, or, 2) by using a **base** (export-driven) **measure**. Using the gross measure, Magic Valley agribusinesses sold almost \$9 billion (50%) of goods and services, generated \$2.43 billion (36%) in GRP, and directly supported over 18,000 jobs (20%).

Agribusiness exports ripple throughout the Magic Valley economy, creating indirect economic activity for other regional businesses. Using the economic base analysis, which accounts for these ripple effects, agribusiness contributed close to \$12 billion (67%) of total sales, close to \$4 billion (58%) of the GRP, and almost half (46,000 jobs) of all jobs in the Magic Valley.

HIGHLIGHTS

- Ag processing (cheese, fish fillets, fries, sugar, etc.) constitutes over half of agribusiness industry output.
- Magic Valley milk production alone comprised 23% of Idaho’s total farm gate receipts.
- Almost half (48%) of the 95,000 jobs in the Magic Valley are directly or indirectly created by agribusiness.
- Idaho ranks 4th in the nation in dairy cow numbers, and the Magic Valley is home to 71% of those cows.
- Agribusiness generates, directly or indirectly, over 50% of the Magic Valley gross regional product (figured using an economic base measure).
- Virtually all (97%) of the Magic Valley’s 982,669 acres of harvested cropland is irrigated.
- Magic Valley farm gate receipts comprised 47% of Idaho’s total farm gate receipts.
- The Magic Valley produces over half (60%) of Idaho’s sugar beets.
- The Magic Valley produces about 75% of the food-sized trout consumed in the U.S.

What is Agribusiness?

Agribusiness is a vertically integrated industrial complex engaged in the production and processing of food. The production and marketing channels of the agribusiness industry extend from farm suppliers to farmers and ranchers, food processors and food retailers, and end with domestic consumers or international markets. The farm is the intermediate link in the Magic Valley agribusiness complex, with backward linkages to farm suppliers and service providers (fertilizer and seed suppliers, farm equipment dealerships, accountants, etc.) and forward linkages to food processors (fries, cheese, and sugar processors, etc.). In turn, food retailers and restaurants are linked to processors, but they are excluded from the measure of agribusiness's contribution to the Magic Valley economy.

Gross and Base: Two Ways to Measure Economic Contribution

The contribution of agribusiness, or any other sector, to the Magic Valley economy can be measured two ways: (1) **the gross measure**, which simply counts the economic activity (sales or output, number of jobs and value added) of an industry; and (2) the **base measure**, which credits to an exporting industry the amount of sales, number of jobs, or value added, of its backward

linkages to area businesses. Industries whose gross measures exceed the base measures (Figure 1) are non-base, or supporting, industries. Conversely, industries whose base measures exceed the gross measures create the export base of the economy.

Both the gross and base measures of economic activity tally every dollar of sales, every job, and every dollar of value added in the Magic Valley economy. Their measures of total Magic Valley economic activity are equal, but they differ in how they slice the Magic Valley economic pie.

Measuring the gross economic activity for a region is a straightforward accounting task: tallying the number of people employed, the total sales, or the total value added of each industry. Magic Valley employment figures and farm sales are regularly published measures of the region's gross economic activity.

The base economic measure results in dividing businesses in the Magic Valley economy into two types: (1) industries that primarily sell to other local industries and consumers (**non-base industries**) and (2) industries that primarily sell to customers outside the Magic Valley (export) and therefore bring new dollars into the region (**base industries**). The output of any base industry is the sum of its exports plus sales of the non-base businesses that support the base industry.

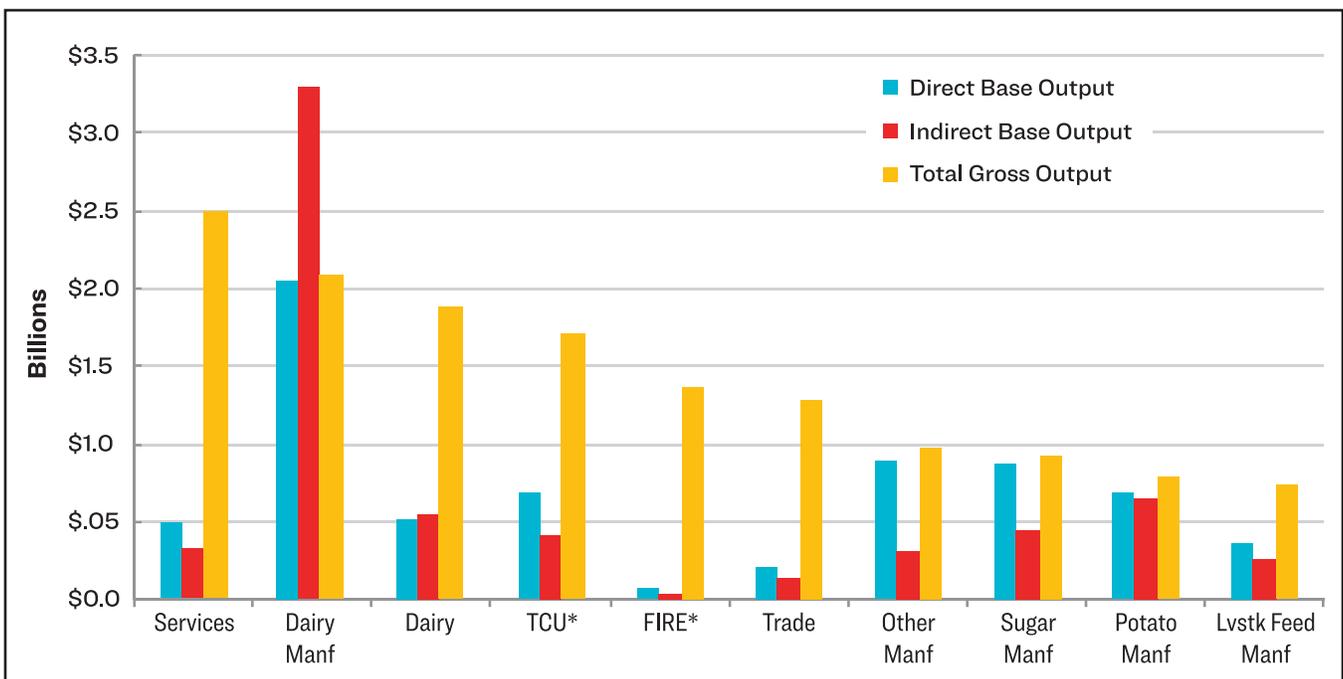


Figure 1. Base and gross outputs of the top 10 sectors of the Magic Valley economy, 2013.

*See Glossary for term definitions.

The following example of a local store selling a tire to a cheese plant clarifies the difference between gross and base measures of economic activity. The gross measure would attribute the tire sale (and the associated job and value added) to the *non-base* tire store. The base analysis, however, credits the tire sale to the cheese industry since the sale was possible only because the *base* industry cheese plant brought new dollars (through cheese exports) into the Magic Valley economy.

In summary, base measures are driven by exports and could be more accurately labeled as the “contribution of exports.” Base measures imply the source of economic growth is exports; thus, base analysis is useful for developing policies that increase sales, jobs, and income through exports. However, both non-base and base businesses are essential to a thriving economy.

Gross and Base Contributions to the Magic Valley Economy

The contributions of agribusiness and other sectors to the Magic Valley economy were measured in terms of output, number of jobs, and value added. In 2013, total

output of the Magic Valley economy was over \$17 billion, GRP was \$6.8 billion, and businesses in the region employed just over 95,000 people (Table 1). Household income and government infrastructure and transfers have no direct contribution to output, employment, or GRP; however, they are responsible for bringing new monies into the region that are then used to create economic activity in other sectors. Households receive income from Social Security, dividends, pensions, etc., that do not require inputs (fertilizer, seed, labor, etc.) to produce. However, this income ripples throughout the local economy to generate output, jobs, and GRP. Similarly, government infrastructure and transfers receive money from the federal government and taxes that do not require direct inputs. These monies also ripple throughout the economy to indirectly generate output, jobs, and GRP.

Output (Sales) Contribution of Agribusiness

Idaho’s 2013 farm cash receipts were more than \$8 billion, and output from Magic Valley farms accounted for almost half (\$3.8 billion) of the state’s total.

Table 1. Output, jobs, and value added in the Magic Valley economy, 2013.

Sector	Output (\$ millions)				Jobs				Value added or GRP (\$ millions)			
	Gross Total	Base Total	Direct Base	Indirect Base	Gross Total	Base Total	Direct Base	Indirect Base	Gross Total	Base Total	Direct Base	Indirect Base
Services	2,498.38	825.28	502.34	322.95	34,546	10,050	6,946	3,104	1,336.72	444.46	268.77	175.69
Dairy Manf	2,079.39	5,344.19	2,055.29	3,288.90	1,625	19,924	1,606	18,319	165.29	1,670.48	163.38	1,507.10
Dairy	1,883.10	1,074.66	521.48	553.19	6,930	5,257	1,919	3,338	850.89	479.34	235.63	243.70
TCU	1,713.97	1,106.77	692.13	414.64	9,823	7,536	3,967	3,569	601.78	456.28	243.01	213.26
FIRE	1,368.81	102.90	69.83	33.08	6,156	586	314	272	834.31	60.75	42.56	18.19
Trade	1,279.90	353.73	213.04	140.69	12,729	3,354	2,119	1,235	753.72	203.26	125.45	77.80
Other Manuf	983.45	1,194.54	884.59	309.95	3,010	5,534	2,707	2,827	205.80	346.87	185.11	161.76
Sugar Manf	928.18	1,318.34	869.21	449.13	1,167	4,849	1,093	3,757	214.50	442.60	200.87	241.73
Potato Manf	790.86	1,337.63	687.36	650.27	1,956	6,158	1,700	4,458	134.52	466.13	116.91	349.22
Lvstk Feed Manf	740.81	621.28	366.55	254.73	477	1,780	236	1,544	83.21	138.29	41.17	97.12
Beef	684.64	663.22	299.14	364.08	1,005	2,432	439	1,993	276.37	283.89	120.76	163.14
Gvt Services	539.79	579.16	393.65	185.51	9,816	8,928	7,158	1,770	539.79	496.11	393.64	102.46
Alfalfa Hay	401.55	128.76	81.43	47.33	1,797	789	364	424	240.89	74.18	48.85	25.33
Grains & Silage	302.56	270.85	160.00	110.85	366	1,077	193	884	20.71	67.30	10.95	56.35
Potatoes	282.98	74.86	50.35	24.51	969	398	172	226	219.35	52.47	39.03	13.45
Lvsk Proc	217.30	435.48	194.45	241.03	368	1,382	330	1,052	30.34	131.71	27.15	104.56
Ethanol	163.00	172.90	128.00	44.90	45	447	35	412	35.17	50.72	27.62	23.10
Sugarbeet	160.00	6.06	4.05	2.01	1,214	48	31	18	98.53	3.54	2.49	1.05
Trout Proc	100.16	175.31	92.73	82.58	125	520	116	405	22.31	64.12	20.65	43.46
Misc Animal	94.65	51.72	37.82	13.91	213	193	85	107	52.23	27.49	20.87	6.62
Mining	66.09	74.97	54.56	20.42	410	521	339	182	37.47	41.76	30.93	10.83
Misc Food Manf	62.84	99.57	61.15	38.42	304	583	296	287	13.69	31.66	13.32	18.33
Misc Crops	12.53	14.58	9.66	4.92	52	86	40	46	9.02	9.63	6.96	2.67
Households	0.00	1,328.15	0.00	1,328.15	0	12,670	0	12,670	0.00	733.58	0.00	733.58
Total	17,354.93	17,354.93	8,428.79	8,926.14	95,103	95,103	32,205	62,898	6,776.61	6,776.61	2,386.11	4,390.51

Idaho has some agricultural “superstars,” ranking first nationally in potato and barley production, and second in alfalfa hay and sugar beets. Idaho ranks fourth in the nation in the number of dairy cows, and the Magic Valley is home to 71% of those cows. The Magic Valley produces 60% of Idaho’s sugar beets. The Magic Valley also produces nearly three-fourths of the food-sized trout consumed in the US. What gives Magic Valley agriculture its huge contribution to the economy is not just sheer size, but also the magnitude of its forward linkages. The Magic Valley’s principal processed agricultural products—potatoes and milk—create additional economic contributions through the processing industries. Using the **gross measure** of output, when processing is added to the output of agricultural production, the total gross output of agribusiness in the Magic Valley in 2013 was just over \$8.7 billion (Table 2).

Using the **base measure**, the contribution of agribusiness to output is \$11.6 billion, 67% of the total output of Magic Valley’s economy. Of that total base output, \$5.5 billion is direct sales from agribusiness to export markets and \$6 billion is from indirect sales to the agribusiness industry through its backward linkages such as tractor dealers, tax accountants, etc.

Dairy processing is the Magic Valley’s largest base industry, contributing over \$5.3 billion (30%) to the base output of the Magic Valley economy (Table 1).

Dairy processing has \$2 billion of output directly from plants plus \$3.3 billion of output indirectly generated in other businesses in the Magic Valley. The second largest base industry is potato processing. This industry contributes 8% of the base output to the Magic Valley economy: \$687 million of direct output and \$650 million of indirect output. The third largest base industry is sugar processing, contributing 8% of the base output to the Magic Valley economy.

The household sector—the new money that households receive in the form of transfer payments, dividends, social security and retirement payments, etc.—while not an agribusiness sector, is the third-ranked base sector. Households make an indirect contribution of 7.6% of the base output to the Magic Valley economy. The trade (retail, parts stores, etc.) and the service sectors (repair shops, professional services, etc.) are largely non-base businesses that support base or exporting businesses such as dairy and potato processing. Thus, the gross sales of the service sector, \$2.5 billion, exceed the service sector’s base sales of \$825 million.

Agribusiness contributes 67% of the base output of the Magic Valley economy. Dairy processing is the largest base output industry, contributing over 31% (\$5.3 billion) in base output. In other words, about one in every three dollars of output in the Magic Valley is contributed by dairy processing. That contribution is the sum of \$2 billion of sales

Table 2. Output, jobs, and value added in the Magic Valley agribusiness sectors, 2013.

Sector	Output (\$ millions)				Jobs				Value added or GRP (\$ millions)			
	Gross Total	Base Total	Direct Base	Indirect Base	Gross Total	Base Total	Direct Base	Indirect Base	Gross Total	Base Total	Direct Base	Indirect Base
Dairy Manf	2,079.39	5,344.19	2,055.29	3,288.90	1,625	19,924	1,606	18,319	165.29	1,670.48	163.38	1,507.10
Dairy	1,883.10	1,074.66	521.48	553.19	6,930	5,257	1,919	3,338	850.89	479.34	235.63	243.70
Sugar Manf	928.18	1,337.63	869.21	449.13	1,167	4,849	1,093	3,757	214.50	442.60	200.87	241.73
Potato Manf	790.86	1,318.34	687.36	650.27	1,956	6,158	1,700	4,458	134.52	466.13	116.91	349.22
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Sugarbeet	160.00	14.58	4.05	2.01	1,214	48	31	18	98.53	3.54	2.49	1.05
Trout Proc	100.16	435.48	92.73	82.58	125	520	116	405	22.31	64.12	20.65	43.46
Misc Animal	94.65	51.72	37.82	13.91	213	193	85	107	52.23	27.49	20.87	6.62
Misc Food Manf	62.84	175.31	61.15	38.42	304	583	296	287	13.69	31.66	13.32	18.33
Misc Crops	12.53	99.57	9.66	4.92	52	86	40	46	9.02	9.63	6.96	2.67
Total	8,741.56	11,616.53	5,490.66	6,125.86	18,568	45,478	8,620	36,857	2,431.85	3,942.84	1,069.00	2,873.84

directly from the processing plants plus \$3.3 billion of sales indirectly generated in other businesses in the valley (Table 2). The indirect output of dairy processing is the multiplier, or ripple effect, of purchases of milk from local dairies and those dairies' purchases of locally grown hay, etc. Potato processing is the second largest base output industry, with base output of \$1.3 billion.

Comparisons within the agribusiness sector of the Magic Valley economy show that the processing industries of dairy, potato, and sugar comprise over half of the agribusiness industry base output. The top three base output agribusinesses are dairy processing with 46%, potato processing with 12%, and sugar processing with 11%. Dairy production at 9% and beef cattle production at 6% are the only production sectors in the top ten base output agribusiness industries (Figure 2). The beef sector's low contribution is indicative of an industry lacking forward linkages in the Magic Valley.

Value Added (GRP) Contribution of Agribusiness

Value added (VA)—wages, profits, taxes, and the returns to owners—have historically been low for agribusiness. Wages for farm labor have been low and farming has not been extremely profitable. The six counties of the Magic Valley account for 11% of Idaho's

\$64 billion Gross State Product. Agribusiness is the Magic Valley's top ranked value added industry. The **base** contribution of agribusiness to the region's GRP was \$3.9 billion in 2013, 58% of total base value added. Of agribusiness's contribution to GRP, \$1 billion is value added by exports (direct base) and \$2.9 billion is the indirect value added from non-base businesses in the region that support the agribusiness industry.

Agribusiness contributes 58% of the Magic Valley's base VA. Dairy processing is the largest base VA industry, contributing 25% (\$1.7 billion) of base VA to the Magic Valley economy (Table 1). In other words, one in every four dollars of VA in the Magic Valley is attributable to dairy processing. Dairy processing base VA contribution is the sum of \$163 million of VA directly generated by the processing plants plus \$1.5 billion of VA indirectly generated in other businesses in the valley.

Comparisons within the agribusiness sector of the Magic Valley economy shows that the dairy industry alone, through processing and production, makes up 55% value added. Processing industries of dairy, potato, and sugar comprise 66% of agribusiness industry base VA. The top three base VA agribusinesses are dairy processing with 43%, dairy production with 12%, and potato processing with 12%. Beef cattle represents the only other production agriculture industry besides dairy in the top five base VA agribusiness industries (Figure 3).

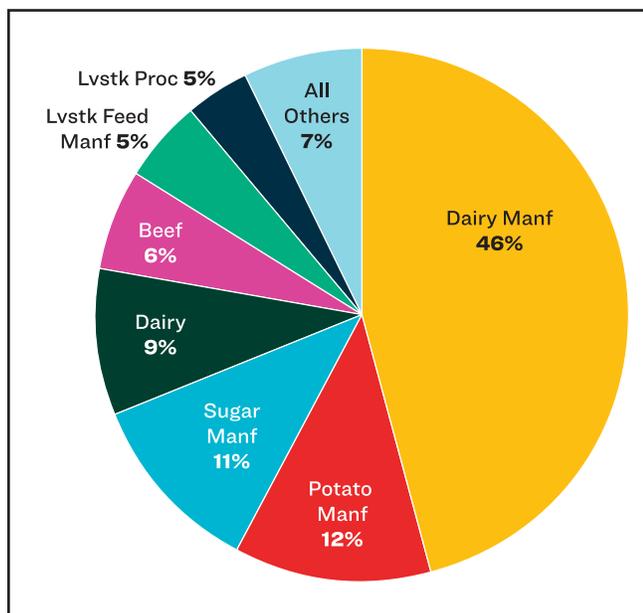


Figure 2. Base output of Magic Valley agribusiness by sector, 2013.

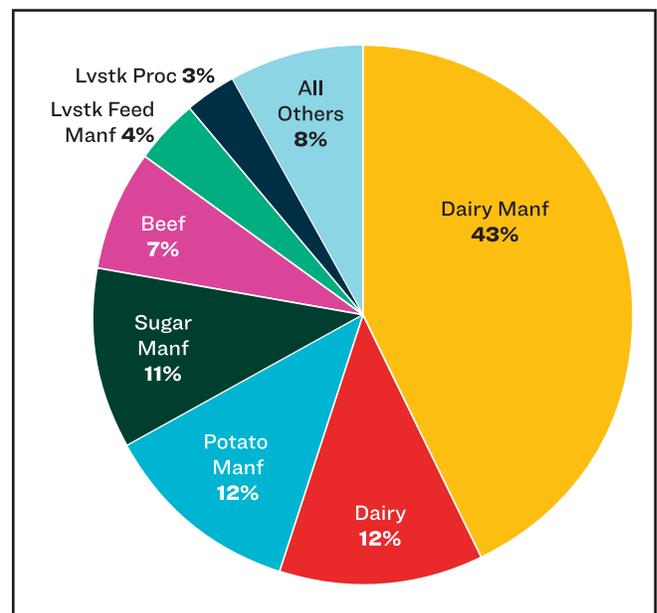


Figure 3. Base value added of Magic Valley agribusiness, by sector, 2013.

Employment Contribution of Agribusiness

Job contributions of agribusiness result in different rankings than those by sales. Farming and processing are highly mechanized and relatively efficient industries that require lower labor input for higher value output. Agribusiness uses labor very efficiently. A decreasing number of farmers continue to produce more crops and livestock. Similarly, food processing continues to use less labor per unit of product. Labor efficiency is reflected in agribusiness's **gross** contribution to Idaho's employment. **Gross jobs** in agribusiness are 20% (18,600 jobs) of total jobs in the Magic Valley. The dairy production industry bucks the trend as the 5th largest overall employer in the Magic Valley economy, providing over 6,900 jobs. Using the **base** measure, agribusiness directly or indirectly supports 48% (46,000) of total jobs in the Magic Valley. Of those **base jobs**, 8,600 are directly in agribusiness firms, and 36,900 are indirect jobs in non-base businesses that support the agribusiness industry. One in every five jobs (21%) in the Magic Valley is directly or indirectly supported by dairy processing. One third (33%) of the jobs in base industries are created by the three major processing sectors: dairy processing (21%), potato processing (6.5%), and sugar processing (5%). Dairy processing base job contribution is the sum of 1,600 jobs directly generated by the processing plants plus 18,300 jobs indirectly generated in other Magic Valley businesses. It should be noted that the dairy industry as a whole, both processing and production, accounts for 26% of Magic Valley's base jobs.

Comparisons within the agribusiness sector of the Magic Valley economy show that the processing industries of dairy, potato, and sugar comprise just over two-thirds of agribusiness industry base employment. The top three job agribusinesses by number of base jobs are dairy processing with 44%, potato processing with 13%, and dairy production with 12%. Sugar processing is a close fourth place with 11%, and beef cattle a distant fifth place at 5% (Figure 4).

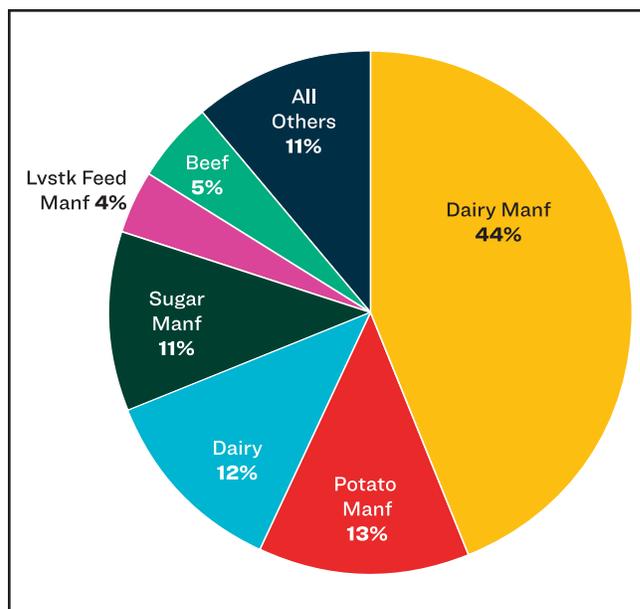


Figure 4. Base jobs of Magic Valley agribusiness, by Sector, 2013.

Multipliers and Impacts

Exports bring in “new money” that drives regional economic activity. To produce exports, a business must buy goods and services from local businesses and/or import goods and services from outside the region. The new money brought into the region by an exporting business circulates among other local businesses that also supply the exporting business, creating a multiplier or “ripple effect” in the local economy. A larger multiplier means that the business directly or indirectly purchases a larger proportion of its inputs from within the local economy instead of importing them from outside the region. Conversely, lower multipliers indicate that the exporting business must purchase a greater proportion of its inputs from outside the regional economy. Low multipliers denote larger “leakages” due to imports, savings, and taxes.

There are three multipliers: output (sales), jobs, and value added (Table 3). The sales, jobs, or value added impact of a business is the multiplier times the exports of that business. Similarly, the impact of a new business, business expansion, or business closure is the product of the multiplier for that respective business times the change in exports that business contributes.

Output Multipliers

Dairy processing, livestock processing, and beef cattle production have the highest sales multipliers: 2.60, 2.24, and 2.22, respectively. These processing businesses rely heavily on locally produced raw products of milk, slaughter animals, and beef calves. For example, for every \$1.00 of cheese exports there is \$2.60 of sales directly or indirectly generated in the Magic Valley economy. Total sales include the \$1.00 of cheese plus \$1.60 in additional sales in the region generated by that sale.

Jobs Multipliers

The service sectors—namely, government services, services, and trade—have the highest jobs multipliers: 22.68, 20.01, and 15.74 per million dollars of exports, respectively. These labor-intensive industries purchase their principal input (labor) from Magic Valley residents. Thus, for every million dollars of exports

from the local grocery store (sales to travelers from outside the Magic Valley), 15.74 jobs are directly or indirectly created in the Magic Valley. Farming and processing are highly mechanized and relatively efficient industries that require low labor input for high value output. Sugar beet farming, with a multiplier of 11.96 jobs per million dollars of sugar beet exports has the largest agribusiness jobs multiplier.

Value Added Multipliers

"Value added" is not merely adding value to a commodity and selling it for a higher price. Value added is wages and salaries; proprietors' income; indirect business taxes; and dividends, interest, and rents. As with sales and employment multipliers, value added multipliers are driven by exports—the new money entering a regional economy. The value added multiplier is defined as the direct and indirect value added created in the Magic Valley economy per million dollars of exports from any given industry. For example, for every \$1 million of government services spending in the Magic Valley there is \$1.26 million of value added generated (\$1 million x 1.26).

The three industries of the Magic Valley economy that have the highest value added multipliers are government services, potato production, and miscellaneous crops with multipliers of 1.26, 1.04, and 1.00 per million dollars of exports, respectively. Economic sectors with high labor costs have high value added multipliers because wages and salaries are part of the value added formula and employees are Magic Valley residents. The money employees spend in the region is captured in the output multiplier and is not considered in the value added multiplier. The fact that potato production has a high value added multiplier is explained by the fact that many acres of potato production are on rented property and rent is included in the equation of value added.

Table 3. Export multipliers for output, jobs and value added.

Sector	Output	Jobs ¹	Value Added ¹
Services	1.64	20.01	0.88
Dairy Manf	2.60	9.69	0.81
Dairy	2.06	10.08	0.92
TCU	1.60	10.89	0.66
FIRE	1.47	8.39	0.87
Trade	1.66	15.74	0.95
Other Manf	1.35	6.26	0.39
Sugar Manf	1.52	5.58	0.51
Potato Manf	1.95	8.96	0.68
Lvstk Feed Manf	1.69	4.86	0.38
Beef	2.22	8.13	0.95
Gvt Services	1.47	22.68	1.26
Alfalfa Hay	1.58	9.68	0.91
Grains & Silage	1.69	6.73	0.42
Potatoes	1.49	7.91	1.04
Lvsk Proc	2.24	7.11	0.68
Ethanol	1.35	3.49	0.40
Sugarbeet	1.50	11.96	0.87
Trout Proc	1.89	5.61	0.69
Misc Animal	1.37	5.09	0.73
Mining	1.37	9.54	0.77
Misc Food Manf	1.63	9.53	0.52
Misc Crops	1.51	8.90	1.00
Households	0.00	0.00	0.36

¹Per \$1 million of exported goods or services

Notes

Methods follow E. Waters, et. al. 1999. *The role of agriculture in Oregon's economic base: Findings from a social accounting matrix*. Journal of Agricultural and Resource Economics 24(1):266-280.

Data sources

Micro IMPLAN Group. Dec. 2013, and USDA NASS 2012 Census of Agriculture.

Glossary

base versus **non-base**. Non-base industries primarily sell to local industries and consumers. Base industries primarily sell to customers outside the region (export) bringing new dollars into the region.

direct effect. The economic activity generated by exports of any industrial sector.

exports. Sales of goods and services to customers outside the Magic Valley, to other Idaho regions, other states, and international markets.

indirect effect. The economic activity generated by industries purchasing inputs from other local businesses to support the sales of exports.

jobs. Full and part-time employment, including business proprietors.

multipliers. Output (sales) multiplier is the sum of the direct and indirect output required from all sectors of the local economy to sustain one additional dollar of sales to export from a given industry. Jobs multiplier is the sum of the direct and indirect jobs required from all sectors of the local economy needed to sustain one additional million dollars of sales to export from a given industry. Value added multiplier is defined as the sum of the direct and indirect income

required from all sectors of the local economy needed to sustain one additional dollar of sales to export from a given industry.

output or sales. Output is more accurate than sales because some businesses use goods of their own manufacture. For trade businesses, gross sales are defined as the mark-up, net of the cost of goods.

value added or **gross regional product (GRP)**. The sum of 1) wages and salaries, 2) proprietor's income, 3) indirect business taxes, and 4) dividends, interest and rents.

Industry terms

Most industry labels are self-explanatory, except:

Gvt Services. The operations of any government service that employs people (e.g. public schools, transportation).

FIRE. Finance, Insurance, Real Estate, and investment.

Trade. Wholesale and retail trade businesses.

TCU. Transportation, Communication and Utilities.

Households. Non-labor income (e.g., social security, dividends).