University of Idaho Extension

CIS 1193

Contribution of Agribusiness to the Magic Valley Economy, 2010

by S. Hines, J. Packham, and G. Taylor

Introduction

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 2010, total output (sales of goods and services) from Magic Valley businesses exceeded $14 billion, gross regional product (GRP) was $5.5 billion, and employment totaled 88,700 jobs.

The Magic Valley economic pie can be sliced two ways: (1) using a gross (accounting) measure or (2) using a base (export-driven) measure. Using the gross measure, Magic Valley agribusinesses sold more than $7 billion (49%) of goods and services, generated $1.4 billion (26%) in GRP, and created almost 15,000 jobs (17%).

Agribusiness exports ripple throughout the Magic Valley economy, creating indirect economic activity for other regional businesses. Using economic base analysis, which accounts for these ripple effects, agribusiness in the Magic Valley contributed close to $9 billion (60%) of total sales, close to $2.5 billion (45%) of the GRP, and 33,000 jobs (more than a third).

2010 highlights

- The six counties of the Magic Valley accounted for more than a quarter of Idaho's gross state product.
- Agricultural processing (cheese, fish fillets, fries, sugar, ethanol, etc.) constituted over half of the agribusiness industry output.
- Over a third of the 88,700 jobs in the Magic Valley were directly or indirectly created by agribusiness.
- Agribusiness generated directly or indirectly over a third of the Magic Valley gross regional product.
- Magic Valley farm gate receipts comprised over half of Idaho's total farm gate receipts.
- Idaho ranked 4th in the nation in dairy cow numbers, and the Magic Valley was home to 70% of those cows.
- Virtually all (97%) of the Magic Valley's 982,669 acres of harvested cropland were irrigated.
- The Magic Valley produced over half of Idaho's sugarbeets.
- The Magic Valley produced about 75% of the food-sized trout consumed in the United States.

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, to food processors and food retailers, and in the end to domestic consumers or international mar-

kets. 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 (of fried potato products, cheese, refined sugar, etc.). Food processors are linked to retailers and even restaurants, but retailers and restaurants are excluded from the measurement of agribusiness's contribution to the Magic Valley economy and instead are accounted for in the trade and restaurant sectors.

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 of an industry (sales or output, number of jobs, and GRP or value added) and (2) the base measure, which credits to an exporting industry the sales, jobs, or value added of its backward linkages to area businesses. 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 valued added of each industry. Magic Valley employment figures and farm sales are regularly published measures of the region's gross economic activity.

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

Businesses in the Magic Valley economy can be divided two ways: (1) industries that primarily sell to other local industries and consumers (nonbase industries) and (2) industries that 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 nonbase businesses that support the base industry. Nonbase and base businesses are both essential to a

Table 1. Output, jobs, and value added in the Magic Valley economy, 2010.

	Output ($ millions)				Jobs				Value added or GSP ($ millions)			
Sector	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 processing	1,887.70	4,134.40	1,673.90	2,460.50	1,358	12,489	1,204	11,285	103.90	1,046.40	92.10	954.30
Dairy/milk production	1,336.30	81.10	44.70	36.40	4,176	346	140	206	481.10	31.70	16.10	15.60
FIRE	1,302.60	75.00	53.50	21.50	6,995	495	287	208	828.10	47.10	34.00	13.10
Other manufacturing	1,154.40	1,455.60	1,099.60	356.00	2,667	6,256	2,540	3,715	252.30	443.70	240.30	203.40
Trade	962.60	412.80	265.70	147.10	12,971	5,161	3,581	1,581	665.80	273.10	183.30	89.30
Feed processing	710.10	588.10	408.80	179.40	405	1,512	233	1,279	73.80	122.90	42.50	80.40
Government & misc	676.30	238.20	157.60	80.60	11,327	3,492	2,640	853	575.00	181.70	134.00	47.70
Health & social	657.80	296.50	188.70	107.70	9,056	3,715	2,598	1,117	363.50	168.80	104.30	64.50
Construction & mining	586.20	279.60	197.40	82.20	4,919	2,540	1,657	883	230.00	126.50	77.50	49.00
Professional services	571.60	206.80	134.60	72.20	9,508	3,012	2,239	773	376.60	131.70	88.70	43.10
Beef cattle	522.40	723.20	342.40	380.80	1,304	2,767	854	1,913	77.40	193.70	50.70	143.00
Transportation	473.50	233.30	151.30	82.00	4,312	2,248	1,378	870	267.70	134.60	85.60	49.10
Potato processing	471.00	1,016.00	446.20	569.80	1,452	4,781	1,376	3,406	98.10	397.80	92.90	304.90
Forage crops	467.20	167.90	110.20	57.70	765	749	180	568	148.00	70.30	34.90	35.40
Sugar processing	456.00	784.50	453.20	331.30	840	4,584	835	3,749	68.70	245.30	68.30	177.00
Vegetable crops	300.00	74.90	47.00	27.90	313	332	49	283	158.10	41.60	24.80	16.80
Other services	299.70	219.30	138.90	80.40	4,946	3,108	2,292	816	145.60	115.90	67.50	48.50
Motel, restaurant, entertainment	251.30	65.00	42.10	22.90	5,602	1,171	937	234	121.80	33.60	20.30	13.20
Grain crops	247.50	349.80	240.30	109.50	794	1,779	771	1,008	52.70	118.00	51.20	66.80
Information	209.20	99.60	68.80	30.80	1,134	695	373	322	87.00	46.30	28.60	17.70
Utilities	203.30	2.10	1.50	0.59	444	9	3	6	152.70	1.50	1.10	0.33
Vegetable processing	152.70	208.90	144.40	64.60	306	806	289	517	30.80	63.90	29.10	34.80
Livestock processing	150.10	281.50	143.10	138.40	344	1,100	328	772	14.20	63.10	13.50	49.50
Sugarbeet crops	139.90	1.80	1.20	0.53	1,861	21	16	5	58.80	0.83	0.51	0.32
Misc food manufacturing	85.80	88.10	63.20	24.90	149	325	110	215	16.50	24.90	12.20	12.70
Fish processing	77.00	162.90	76.50	86.50	232	916	230	686	10.40	53.40	10.30	43.10
Misc livestock	54.30	1.40	0.75	0.62	406	9	6	4	25.70	0.62	0.35	0.27
Misc crops	24.10	33.20	21.80	11.50	129	235	116	119	12.20	17.90	11.00	6.90
Households	0.00	1,344.80	0.00	1,344.80	0	14,480	0	14,480	0.00	800.50	0.00	800.50
Government infrastructure & transfers	0.00	804.70	0.00	804.70	0	9,583	0	9,583	0.00	499.20	0.00	499.20
Total	14,430.60	14,431.00	6,717.35	7,713.84	88,718	88,717	27,263	61,455	5,496.50	5,496.55	1,615.66	3,880.42

Note

Most sector labels are self-explanatory except:
Government & misc—the operations of any government service that employs people (e.g., public schools, transportation)
FIRE—finance, insurance, real estate, and investment
Government infrastructure and transfers—federal dollars invested in the Magic Valley and local government spending on infrastructure
Trade—wholesale and retail trade
Households—nonlabor income (e.g., Social Security, dividends, food stamps)

thriving economy. However, the base measure implies that the source of economic growth is exports; thus, the base analysis is useful for developing policies that increase sales, jobs, and income through exports.

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 nonbase tire store. The base analysis, however, credits the tire sale to the cheese industry because the sale was possible only because the base industry cheese plant brought new dollars from cheese exports into the Magic Valley economy.

Study findings

The contribution of agribusiness and other sectors to the Magic Valley economy were measured in terms of output, employment, and value added (GRP). In 2010, the total output of the Magic Valley economy was over $14 billion, GRP was $5.5 billion, and business in the region employed close to 88,700 people (table 1).

The households and government infrastructure & transfers sectors have no direct contribution to sales, employment, or value added; 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, primarily labor, to produce. However, this income ripples throughout the local economy to generate sales, jobs, and value added.

Similarly, the government infrastructure & transfers sector receives money from the federal government and taxes that do not require direct inputs. These monies also ripple throughout the economy to indirectly generate sales, jobs, and value added.

Output (sales) contribution of agribusiness

Idaho's 2010 farm cash receipts were more than $5.9 billion, and sales from Magic Valley farms accounted for over half ($3.1 billion) of the state's total. Idaho has some agricultural highlights, ranking first nationally in potato production, second in barley, and third in alfalfa and sugarbeets. Idaho ranks fourth in the nation in the number of dairy cows, and the Magic Valley is home to 70% of those cows. The Magic Valley produces 59% of Idaho's sugarbeets. The Magic Valley also produces nearly three-fourths of the food-sized trout consumed in the United States, making Idaho number 1 in the nation.

Forward linkages generated the Magic Valley's large contribution to the economy in 2010. The Magic Valley's principal agricultural products—potatoes and milk—create additional economic benefits in the processing industries. When the gross output of processing was added to the value of agricultural production, the total gross output of agribusiness in the Magic Valley in 2010 was over $7 billion (table 2).

The base contribution of agribusiness to output was $8.7 billion, over 60% of the total output of Magic Valley's economy. Of that total base output, $4.2 billion was direct sales from agribusiness to export markets and $4.5 billion was from indirect sales of agribusiness through its backward linkages to tractor dealers, tax accountants, and so on.

Table 2. Output, jobs, and value added in Magic Valley agribusiness sectors, 2010.

	Output ($ millions)				Jobs				Value added or GSP ($ millions)			
Sector	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 processing	1,887.70	4,134.40	1,673.90	2,460.50	1,358	12,489	1,204	11,285	103.90	1,046.40	92.10	954.30
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Feed processing	710.00	588.10	408.80	179.40	405	1,512	233	1,279	73.80	122.90	42.50	80.40
Beef cattle	522.30	723.20	342.40	380.80	1,304	2,767	854	1,913	77.40	193.70	50.70	143.00
Potato processing	471.00	1,016.00	446.20	569.80	1,452	4,781	1,376	3,406	98.10	397.80	92.90	305.00
Forage crops	467.20	167.90	110.10	57.70	765	749	180	568	148.10	70.30	34.90	35.40
Sugar processing	456.00	784.50	453.20	331.30	840	4,584	835	3,749	68.70	245.30	68.30	177.00
Vegetable crops	300.00	74.90	47.00	27.90	313	332	49	283	158.10	41.60	24.80	16.80
Grain crops	247.50	349.80	240.30	109.50	794	1,779	771	1,008	59.70	118.00	51.20	66.80
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Sugarbeet crops	139.80	1.70	1.20	0.50	1,861	21	16	5	58.80	0.80	0.51	0.32
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Misc livestock	54.30	1.40	0.75	0.62	406	9	6	4	25.70	0.63	0.35	0.27
Misc crops	24.10	33.20	21.80	11.50	129	235	116	119	12.20	17.90	11.00	7.00
Total	7,081.70	8,697.70	4,217.55	4,480.32	14,835	32,752	6,738	26,014	1,437.50	2,492.23	550.46	1,941.99

Dairy processing was the Magic Valley's largest base industry, contributing over $4 billion (28%) in base sales to the Magic Valley economy in 2010 (figure 1). Dairy processing generated $1.7 billion of sales directly from the plant plus $2.5 billion of sales indirectly generated in other businesses in the Magic Valley.

The second-largest base industry was "other manufacturing," which includes all manufacturing other than agricultural processing. This industry contributed 10% of the base sales to the Magic Valley economy in 2010—$1.1 billion of direct sales and $356 million of indirect sales.

The third-largest base industry was households, the new money that households receive in the form of transfer payments, dividends, Social Security and retirement payments, and so on. Households made an indirect contribution of 9% of the base sales to the Magic Valley economy.

The fourth-largest base industry, with base sales of $1 billion, was potato processing.

Trade businesses (stores, gas stations, etc.) are largely nonbase businesses that support the base or exporting businesses such as dairy and potato processing. Thus, the trade sector's gross sales of $1 billion exceeded its base sales of $0.4 billion.

Comparisons within the agribusiness sector of the Magic Valley economy show that the dairy, potato, and sugar processing industries comprised over two-thirds of base output (figure 2). The top three base output agribusinesses in 2010 were dairy processing with 47%, followed by potato processing with 12%, and sugar processing with 9%. Beef cattle and grain were the only production agriculture industries in the top six base output agribusiness industries. In contrast to the top three, beef and grain lack forward-linked processing businesses in the valley.

Value added (GRP) contribution of agribusiness

Value added—the returns to wages, profits, taxes, and the returns to agribusiness owners—have historically been low. The six counties of the Magic Valley accounted for more than 25% of Idaho's $55 billion gross state product in 2010. Being an export base industry, however, agribusiness was the Magic Valley's top ranked value added industry. The base contribution of agribusiness to the region's GRP was $2.5 billion in 2010, which is 45% of the total. Of agribusiness's contribution to GRP, $2.5 billion was from exports.

Dairy processing was the largest base value added industry, contributing 19% ($1 billion) of base value added to the Magic Valley economy in 2010. In other words, just under one in every five dollars of value added in the Magic Valley was contributed by dairy processing. Dairy processing's contribution to value added in 2010 was the sum of $92 million of value added directly generated by processing plants and

Figure 1. Base and gross outputs of the top 10 sectors of the Magic Valley economy, 2010.

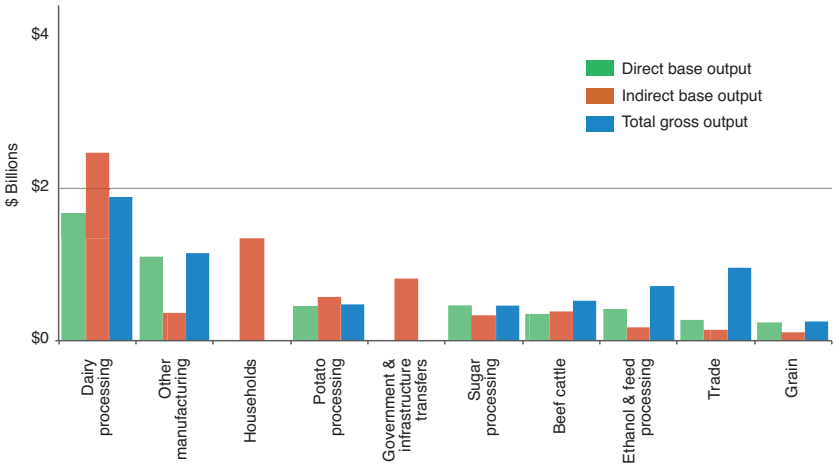
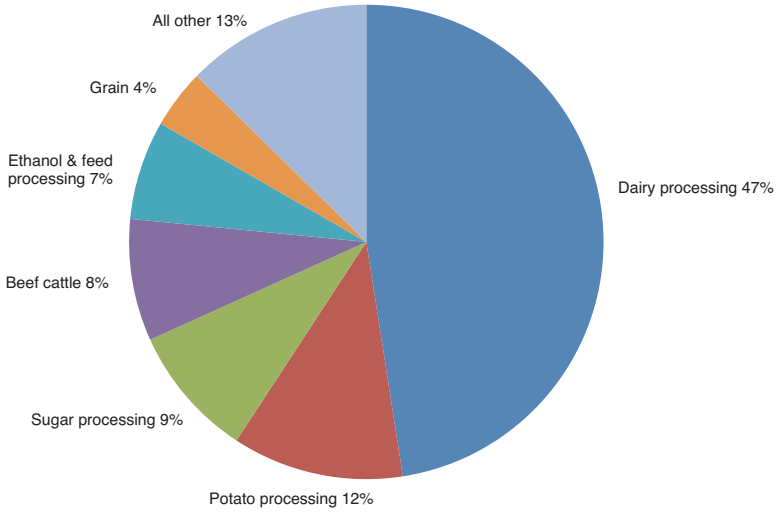


Figure 2. Base output of Magic Valley agribusiness, by sector, 2010.



$954 million of value added indirectly generated in other businesses in the valley.

Comparisons within the agribusiness sector of the Magic Valley economy show that the processing industries of dairy, potato, and sugar comprised over two-thirds of agribusiness industry base value added in 2010 (figure 3). The top three base value added agribusinesses in 2010 were dairy processing with 42%, followed by potato processing with 16% and sugar processing with 10%. Beef cattle and grain were the only production agriculture industries in the top six base value added agribusiness industries.

Employment contribution of agribusiness

Ranking sectors of the agribusiness industry by jobs results in different rankings. Farming and processing are highly mechanized and relatively efficient industries that require a small labor input for a high-value output. A decreasing number of farmers continue to produce more crops and livestock. Similarly, food processing continues to become more labor efficient.

Low employment is reflected in agribusiness's gross contribution to Idaho's employment. Gross jobs in agribusiness were 17% (15,000 jobs) of the total jobs in the region in 2010. Using the base measure, agribusiness accounted for 37% (33,000) of total jobs in the Magic Valley. Of those base jobs, 7,000 were directly employed in agribusiness firms and 26,000 were indirect jobs from non-base businesses that support the agribusiness industry.

One in every seven jobs in the Magic Valley was directly or indirectly created by dairy processing. Nearly 25% of the base jobs were created by the three major processing sectors: dairy processing (14%), followed by potato processing (5%), and sugar processing (5%). Dairy processing's base jobs in 2010 were the sum of the 1,200 jobs directly generated by the processing plants and the 11,300 jobs indirectly generated in other Magic Valley businesses.

Comparisons within the agribusiness sector of the Magic Valley economy indicate the processing industries of dairy, potato, and sugar comprised over two-thirds of agribusiness industry base employment (figure 4). The top three base job agribusinesses were dairy processing with 38%, followed by potato processing with 15%, and sugar processing with 14%. Beef cattle and grain were the only production agriculture industries among agribusiness's top six base employers.

Multipliers and impacts

Exports generate the "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. Exports from one business circulate among other local businesses creating a multiplier or "ripple effect" in the local economy. A larger multiplier means that the business directly and indirectly purchases a

Figure 3. Base value added of Magic Valley agribusiness, by sector, 2010.

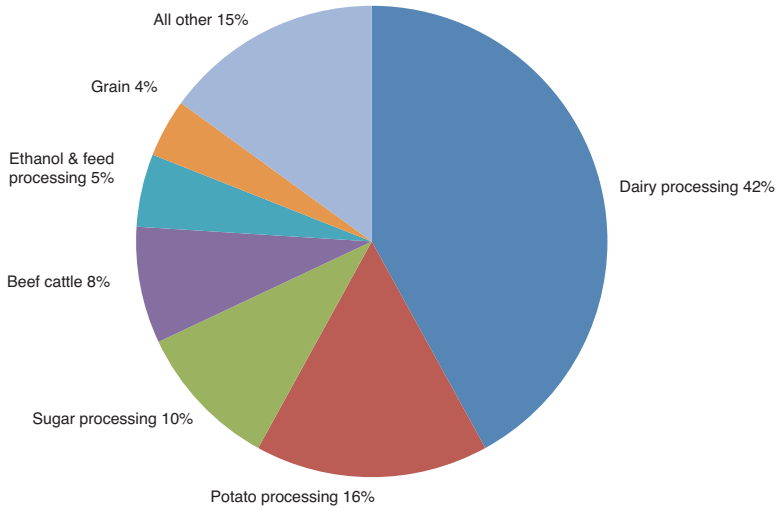
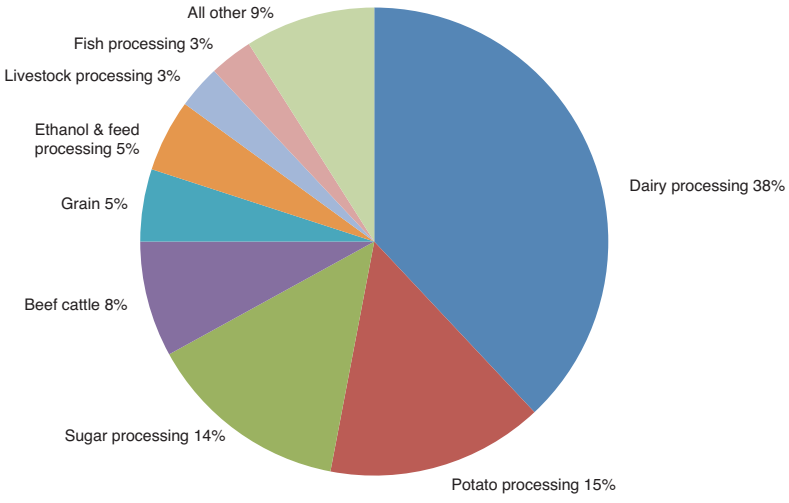


Figure 4. Base jobs of Magic Valley agribusiness, by sector, 2010.



larger proportion of its inputs from within the local economy instead of importing them. 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: one each for output (sales), jobs, and value added. 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.

Output multipliers. Dairy processing, potato processing, and trout processing have the highest sales multipliers—2.47, 2.28, and 2.13, respectively (table 3). These processing businesses rely mostly on locally produced milk, potatoes, and trout. For example, for every $1.00 of cheese exports there are $2.47 of sales directly and indirectly generated in the Magic Valley economy. The sales include the $1.00 of cheese plus $1.47 in additional economic activity generated by that sale.

Jobs multipliers. The lodging/dining and services businesses have the highest jobs multipliers of 27.8 and 22.4, respectively (table 3). These labor-intensive industries purchase their principle input (labor) from Magic Valley residents. Thus, for every million dollars of exports from motels (sales to travelers from outside the Magic

• Definitions •

Base versus nonbase. 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. 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.

Gross regional product. See value added.

Indirect effect. 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. The 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 export from a given industry. The jobs multiplier is the sum of the direct and indirect jobs required from all sectors of the local economy to sustain one additional million dollars of export from a given industry. The value added multiplier is the sum of the direct and indirect income required from all sectors of the local economy to sustain one additional dollar of 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.

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

Sector	Output	Jobs[1]	Value[1] Added
Government & misc	1.51	22.16	1.15
Trade	1.55	19.42	1.03
Professional services	1.54	22.38	0.98
Utilities	1.39	6.36	0.98
Health & social	1.57	19.69	0.89
Potato processing	2.28	10.72	0.89
Transportion	1.54	14.86	0.89
Vegetable crops	1.59	7.06	0.88
FIRE	1.40	9.25	0.88
Misc livestock	1.83	12.66	0.84
Other services	1.58	22.38	0.83
Misc crops	1.53	10.81	0.82
Motel, restaurant, entertainment	1.54	27.83	0.80
Dairy/milk production	1.81	7.73	0.71
Fish processing	2.13	11.98	0.70
Sugarbeet crops	1.43	17.50	0.68
Information	1.45	10.10	0.67
Constuction & mining	1.42	12.86	0.64
Forage crops	1.52	6.80	0.64
Dairy processing	2.47	7.46	0.63
Beef cattle	2.11	8.08	0.57
Sugar processing	1.73	10.11	0.54
Grain crops	1.46	7.40	0.49
Vegetable processing	1.45	5.58	0.44
Livestock processing	1.97	7.69	0.44
Other manufacturing	1.32	5.69	0.40
Misc food manufacturing	1.39	5.13	0.39
Government intrastructure & transfers	N/A	N/A	0.35
Households	N/A	N/A	0.35
Feed processing	1.44	3.70	0.30

[1]Per $1 million of exported goods or services

Valley), 27.8 jobs are directly and indirectly created in the Magic Valley. Farming and processing are highly mechanized and relatively efficient industries that require small labor input for high value output. Sugarbeet farming, with a multiplier of 17.5 jobs per million dollars of sugarbeet exports, has the largest agribusiness jobs multiplier.

Value added multipliers. The three industries of the Magic Valley economy that have the highest value multipliers are government & miscellaneous, trade, and professional services, with multipliers of 1.15, 1.03, and 0.98, respectively. Value added is not merely adding value to a commodity and selling it for a higher price. Value added is the return to wages and salaries, proprietor's 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 in an 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 every $1 million of government and miscellaneous spending in the Magic Valley, for example, there is $1.15 million of value added generated ($1 million × 1.15).

Economic sectors with high labor expenses have high value added multipliers because return to wages and salaries is a part of the value added formula and that labor is made up of 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.

Note on methods and data sources

The methods follow: E. Waters, B. Weber, and D. Holland. 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. 2011, and USDA NASS. FILL OUT USDA NASS CITATION

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