

[In 2006, Idaho] agriculture was responsible for generating \$21 billion in total sales, 156,599 jobs, \$4.2 billion in and \$8.4 billion in gross state product... Based on this analysis, agriculture is the single biggest contributor to the economic base of Idaho."

WHY THIS PUBLICATION?

The diversity of Idaho agriculture is remarkable. Its agricultural portfolio is far more diverse than the Midwest Corn Belt states, for example. Also, the recent shift in Idaho's agricultural economy from crops to livestock has been swift and dramatic. From a gross contribution perspective, agriculture is a mid-size sector in the Idaho economy, providing \$12 billion in goods and services. However, from a base contribution perspective, agriculture is the single largest sector in the Idaho economy at some \$21 billion in 2006. This paper explains why both figures are true, and it presents ways to consider Idaho agriculture's impact on the state's economy.

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EXECUTIVE SUMMARY

Agriculture in Idaho has grown from family farmsteads into an agribusiness industry, providing food, jobs, and income in Idaho and food for the nation and the world. Agriculture is defined as the production and processing of crops and livestock.

Gross contribution analysis: When looking only at the economic activity directly generated by Idaho agriculture in 2006, agriculture is a mid-sized sector. It:

- Generated \$12 billion in total sales—11% of Idaho's total;
- Employed 56,000 Idahoans—6% of Idaho's total workforce; and
- Paid more than \$1.2 billion in wages—4% of Idaho's total.

Additionally,

- Agriculture was directly responsible for generating approximately \$2.9 billion in value added, or about 6% of the gross state product (GSP).

The numbers above are an example of a "gross contribution analysis."

Base contribution analysis: The economic activity of agriculture also supports many other local industries and brings a great deal of new revenue into Idaho through agricultural sales out of the state—agricultural exports.

In this way, the economic activity of sectors like fertilizer sales, farm equipment sales, and food processing input providers all depend on revenue generated by the agricultural sector.

When total sales of all sectors in the Idaho economy are attributed to the sector that is originally responsible for generating the revenue, a much greater picture of impact on Idaho's economy emerges. This is called an "economic base analysis."

From an economic base perspective, Idaho agriculture in 2006 was responsible for generating:

- \$21 billion in total sales—20% of Idaho's total;
- 156,599 jobs—17% of Idaho's total workforce;
- \$4.2 billion in wages—15% of Idaho's total; and
- \$8.4 billion—17% of Idaho's gross state product (GSP).

Based on this analysis, agriculture is the single biggest contributor to the economic base of Idaho.



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INTRODUCTION

AGRICULTURE & IDAHO'S ECONOMY

Agriculture in Idaho is a set of mutually supportive economic sectors needed to produce, process, and market food and fiber for consumption at home and abroad. The production and marketing channels of the agribusiness industry extend from farm suppliers to farmers and ranchers, from food processors through food retailers, ending with consumers in Idaho, the nation, and international markets.

Idaho industries are grouped into ten standard industrial sectors. These sectors include: (1) agriculture, (2) forestry and mining, (3) construction and utilities, (4) high tech manufacturing, (5) other manufacturing, (6) retail and wholesale trade, (7) services, (8) government services, (9) households, and (10) capital investment.

While most industry definitions are self-explanatory, the definitions for agriculture, high tech manufacturing, and other manufacturing require elaboration.

Agriculture: Agriculture is the production and processing of crops and livestock. The demand for

agricultural output extends throughout each sector of the economy and into their households. Within agriculture, producers sell to processors, and processors sell to distributors. Outside of agriculture, distributors sell to retailers and restaurants. Retail grocery stores are considered part of the retail and wholesale trade sector while restaurants are part of the service sector.

Not part of the agriculture sector are purchases of food, whether at home or away from home. Such purchases are made by consumers who are considered to be part of the household sector. Also not included in agriculture are grocery stores. They are in the retail sector because, for example, they would sell imported potatoes even if Idaho did not grow potatoes.

The potato, cheese, or sugar processing industries are in the agricultural sector because of their close association with adjacent potato, dairy, and sugarbeet farmers.

High tech manufacturing is the manufacturing of electronic products (i.e. DRAM, communication equipment, etc.).

"Other manufacturing" is a large catchall category that includes every business that makes goods other than

processed agricultural and forest goods or high tech products.

CROSS & BASE CONTRIBUTIONS: 2 WAYS TO MEASURE AGRICULTURE'S IMPACT

The importance of the agricultural sector to the economy can be measured in two complementary ways.

The first is a gross measure, which simply counts all the measures of economic activity (output, employment, wages, and value-added) that are generated from all sales within an industry.

The second is a base measure, which gives credit to the industry that brings new dollars into the region through exports for the economic activity that it supports in the regional economy.

For example, in a gross analysis, if a tire merchant sells a tire to a local agricultural producer, the value of this transaction (and the associated employment, wages, and value added) would be counted in the "tire store" or retail sector. However, because this sale is only possible because of the new dollars that are brought into the region by the agricultural producer (exports), the base analysis gives credit for this transaction to the agricultural sector.

TWO QUESTIONS: ONE FOR GROSS, ONE FOR BASE OUTPUT

Total gross and base measures of economic activity differ by how you view the contribution of each sector. If the question is: "What is the direct economic activity of Idaho agriculture for both exports and domestic use?" then the answer is the **gross analysis**.

In gross analysis the sales, employment, wages, and value added that occur in any sector are simply added up. If there are 1,000 people directly employed in the service sector, then the gross employment of the sector is simply 1,000.

This is the type of analysis that is typically reported in economic statistics reports. But, suppose the question is, "What is the total output of the Idaho economy across all sectors that is generated by agricultural output?" Now you must take a much broader view.

The resulting **base analysis** measures economic activity across all sectors that agriculture touches as it creates agricultural products for export, thus bringing new revenue into the state.

So, in a base analysis, if several farmers get together for a cup of coffee at 6 a.m. at the local café, then that money spent and the job created is credited to the agricultural sector rather than the service sector because it is agriculture that is responsible for generating the revenue that made the sale of that coffee possible.

Same if the farmer buys new tires for his equipment and so on.

The same logic applies for coffee purchased by workers in the manufacturing sector before their shift. In a base analysis, the manufacturing sector would get credit for revenue from that sale of coffee rather than the service sector.

The base output of agriculture or

any other sector is the sum of its exports plus associated indirect stimulation of sales from other sectors within Idaho. Economists have developed formulas for such calculations (see Appendix I).

IMPORTANCE OF EXPORTS: ECONOMY'S DRIVING FORCE

Economic base theory maintains that the exports of one sector bring about additional economic activity in other sectors. The export revenue from one sector is responsible for stimulating a certain portion of the output and jobs in other sectors as well. The analysis of these relationships is accomplished through an economic base Social Accounting Matrix (SAM) model



photo by Mark Lamoreaux

(see Definitions or IMPLAN sections). Money from exports ripples throughout the economy as each business seeks to fulfill demands of its export customers. Exports provide the driving force for an economy. Exports are the new money from outside Idaho's economy, fueling purchases from other businesses within Idaho or stimulating imports.

Exports are sales of goods and services to customers outside Idaho—to other states as well as international markets. Milk, cattle, sugarbeets, and potatoes are forward linked to agricultural processors within Idaho, not exported as raw agricultural products.

An increase in agricultural exports increases the contribution of farms

and the indirect contribution of the other sectors as they purchase more fuel, fertilizer, machinery, and labor to meet the increased demand for agricultural exports. Similarly, the other sectors support agriculture by providing goods and services needed to produce agricultural exports.

These reverberations wane as a portion of each round of spending leaks out to savings, taxes, and imports. The greater the "leakage" the faster the effects die out and the smaller the multiplier.

An economy without exports is less able to generate new money and will slowly leak out existing money due to purchases from outside the region.

Idaho-produced inputs to agriculture from the state's other nine sectors are important to the health of the economy by keeping as many of the dollars recycling through Idaho as possible and slowing leakage out of the local economy.

If an economy is like a garden ...

The analogy can be made that if an economy is like a garden, then base industries provide the rain, bringing in new resources, while the soil is like the indirect sectors holding on to existing water as long as possible. Just as sandy soils cannot hold the water well, an economy without strong indirect sectors cannot hold on to the dollars brought into the local economy by the exporting sector.

To fully analyze the health and sustainability of a given state or regional economy, both primarily exporting and primarily indirect sectors must be strong.

Economic base theory also provides insight into how much each sector is responsible for bringing value added, wages, and jobs into the state's economy. This information can be used to make informed decisions as to how policy actions will affect the economy and what new primarily export or indirect sectors might be developed through policy decisions to increase jobs and income.

Idaho agriculture exports 73% of its output

The agricultural sector in Idaho exports 73% of its output (total sales). The high tech sector is another

■ ■ ■
"Exports are the new money from outside Idaho's economy, fueling purchases from other businesses ... Idaho agriculture exports 73% of its output"

example of a primarily exporting sector, selling 55% of its production out of state. On the other hand, the service sector is a good example of an indirect sector, with 85% of its output going to support other sectors in Idaho. Retail and wholesale trade, construction and utilities, and other manufacturing are also primarily indirect sectors that support the primarily exporting sectors.

In summary, base contributions are propelled by exports and the output of other sectors indirectly generated in support of agriculture's export production. The base output of agriculture, or any other sector, is the sum of its exports and the associated indirect stimulation of the output of other sectors in the process. The gross output contribution of agriculture, or of any other sector, is the sum of exports and the domestic output needed by other sectors in their export production.

GROSS & BASE CONTRIBUTIONS OF IDAHO'S AGRICULTURE

The absolute and relative contribution of agriculture to Idaho's economy in 2006 was measured in terms of 1) output, 2) employment, 3) wages paid, and 4) total value added (also known as gross state product or GSP). This section considers those four categories.

The interpretation of these measures for the gross contributions is the activity of the agricultural sector necessary to meet both export and domestic demand. The base contribution of agriculture interpretation of these measures is the activity of agriculture as well as other sectors necessary to meet agriculture's export demand. The base contribution approach assumes that agriculture's domestic production is demanded by other sectors to meet their export demand.

Note that in Figures 3 through 6 total dollars added up across all 10 sectors reach the same sum for both gross and base contributions. For Figure 3, total sales were \$108 billion in 2006; for Figure 4, value added totaled \$50 billion, and so on. Differences occur in the ways contributions are distributed.

OUTPUT CONTRIBUTIONS

GROSS OUTPUT—NATIONAL RANKING; SUPERSTAR PRODUCTS

Idaho ranked 20th in the nation in the total output of agricultural products sold in 2002 (USDA 2004). Idaho has some "superstar" crops, ranking first nationally in potato production, second in barley, and third in sugarbeets. Idaho's huge dairy industry ranks fourth behind California, Wisconsin, and New York.

The diversity of Idaho agriculture is remarkable. Lacking the temperate climate of California, Texas, or Florida, Idaho's agricultural portfolio is far more diverse than the Midwest Corn Belt states. What gives Idaho agriculture its impact is not its sheer size, but rather the magnitude of the forward linkages (people and businesses Idaho ag producers sell to). Idaho's principal agricultural products—potatoes, beef, and milk—create additional economic benefits in the forward-linked processing industries, which add value. In contrast, many of the Midwest states export their major farm products (corn, wheat, and beans) without processing.

Idaho's 2006 cash receipts from farm output were more than \$4.5 billion, a new all time record. When the gross sales of processing are added to production, the total sales or output of agribusiness in Idaho in 2006 exceeded \$7.4 billion.

Crop revenues were estimated at \$2.09 billion, 12% above the 10-year average. For the sixth year in a row, livestock revenues exceeded crop revenues. Prior to 2000, crop revenues surpassed livestock revenues every year since 1979.

For 2006, **livestock revenues** were estimated at \$2.4 billion, (Figure 1), 21% higher than the 10-year average. Cash receipts from cattle and calves were 4% lower than in 2005, topping the \$1 billion mark for the fourth consecutive year. Cash receipts from milk were \$1.28 billion, down 9% from 2005's record \$1.42 billion.

Idaho agriculture's shift from crops to livestock

The shift in the Idaho agricultural economy from crops to livestock has been remarkably swift and dramatic. Over the past decade, Idaho's potatoes have struggled to maintain approximately 15% of cash receipts. Conversely, milk, at 19% of total agriculture cash receipts in 1997, is now at 29%.

The center of Idaho agriculture has shifted geographically to the dairies of the Magic Valley, and the businesses that are backward and forward linked to dairy (meaning businesses dairies sell to and buy from) have shifted in response. The decline in the sheep, fruit, seed, and mint crops has narrowed Idaho's agricultural diversity, and the overall financial

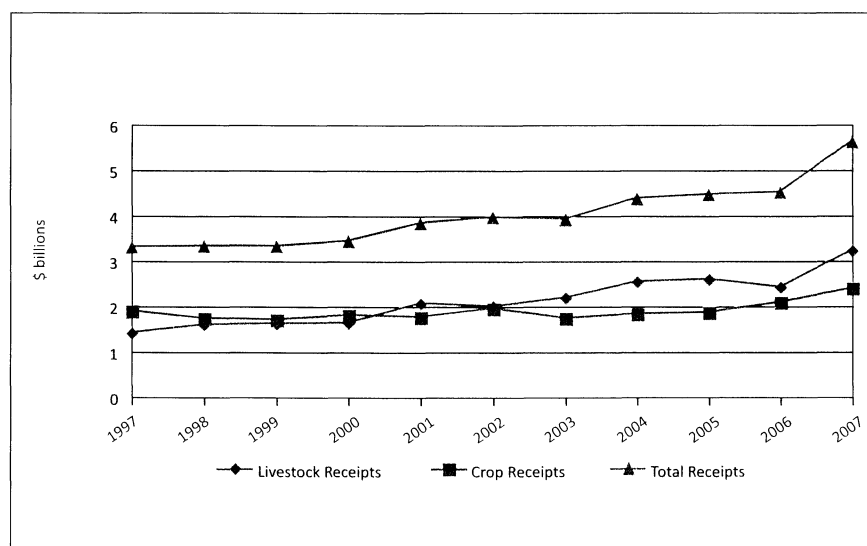
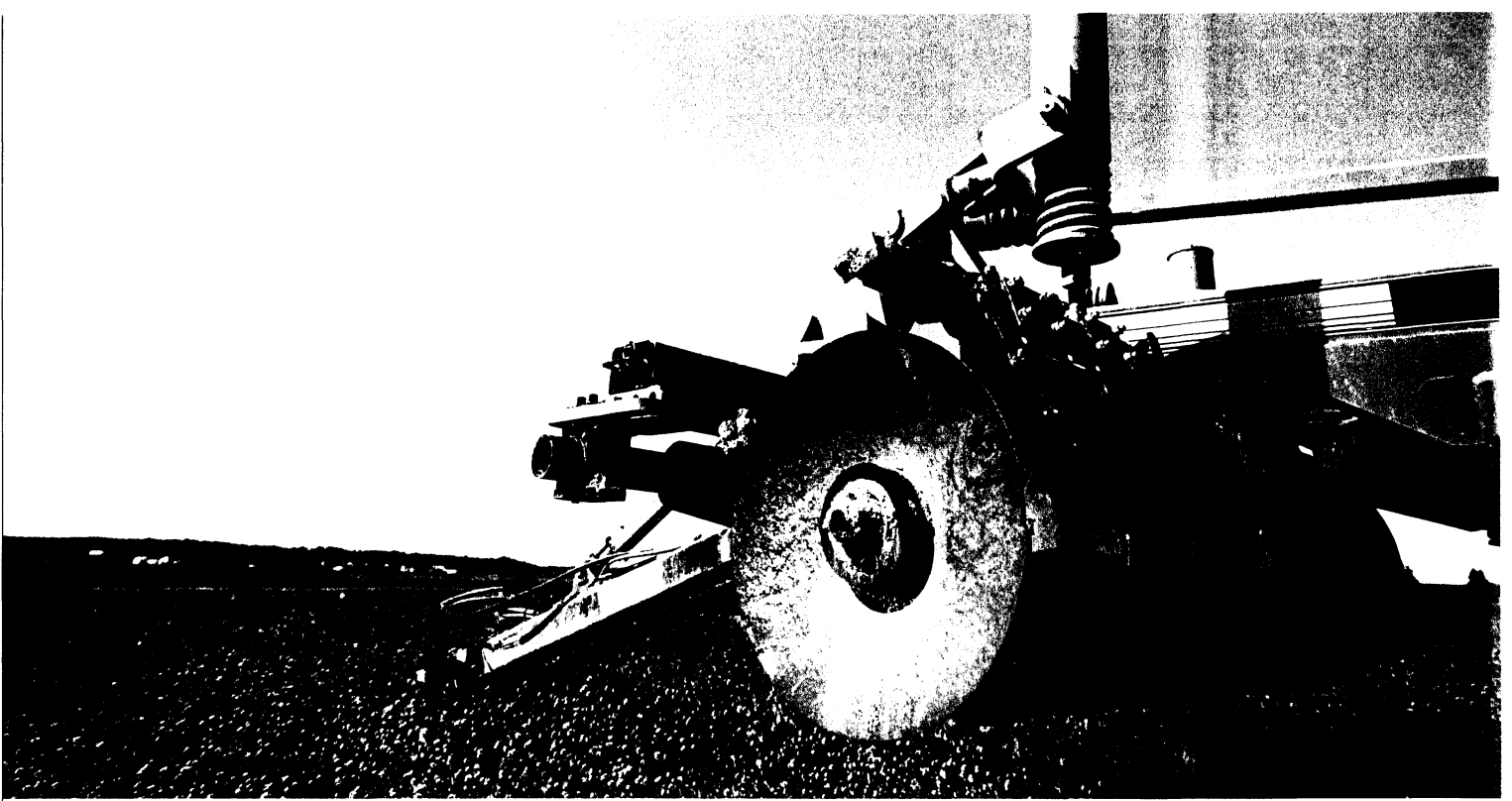


Figure 1: 1997 to 2007 SALES TREND—Farm cash receipts for production (not including processed product sales) in Idaho between 1997 and 2007 increased all years except in 2003. Note that livestock receipts have outstripped crop receipts every year since 2003.



health of Idaho agriculture has become increasingly dependent on milk and beef.

In 2006 Idaho's GSP (in current dollars) rose to a new record of more than \$48 billion. See Figures 2 and 4. Over the last ten years (1997 to 2006) GSP has grown at an average annual rate of 4.6% per year.

Over the same ten years agribusiness has grown from 5.4% to 6.9% of total GSP. High tech manufacturing has grown at an average annual rate of 36%. In 1996 high tech contributed 1.7% of the state's GSP; by 2005 high tech had risen to 18% of Idaho's GSP.

BASE OUTPUT—AGRICULTURAL EXPORTS BRING IN NEW DOLLARS

The gross output numbers for agriculture—Figure 3—mask its ability to induce economic activity in other sectors needed in the production of agricultural exports. Agriculture brings new revenues into the state through the export of agricultural products. These export sales are the economic base of Idaho's economy, injecting new dollars into the economy to create jobs and income throughout other sectors.

Total exports in Idaho were \$51.2 billion in 2006. The \$10.4 billion (20%) in capital investment was the single largest export from Idaho, followed by agriculture's \$8.9 billion (17%). The other

major exporting sector was tech manufacturing at \$7.3 billion (14%). The retail and wholesale trade sectors of Idaho's economy accounted for more than 10% of the gross output in the economy, but less than 2% of the exports. (NOTE: Totals just mentioned differ slightly from totals in Figures 2 and 4 because data came from two different official sources.)

Thus, the contribution of retail and wholesale trade businesses are indirect

in that their output supports the primarily exporting sectors. The other manufacturing sector is relatively small with 3% of the exports. Manufacturing is traditionally an important export sector in many regional economies. While technology manufacturing, agricultural products manufacturing, and wood products manufacturing are all significant components of the export economy in Idaho, other manufacturing in Idaho also primarily

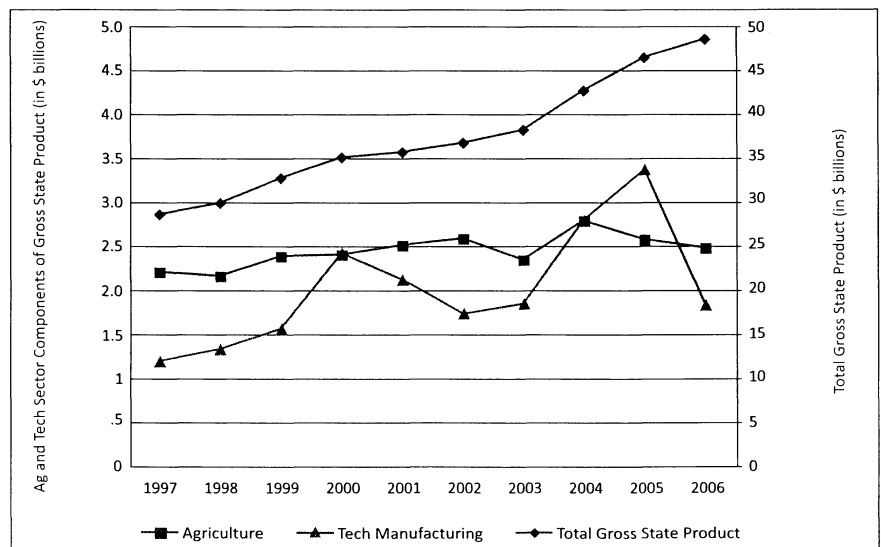


Figure 2: AGRICULTURE/TECH MANUFACTURING AND GROSS STATE PRODUCT—Top blue line tracks Idaho's total gross state product from 1997 to 2006 with the corresponding axis on the right. Left axis compares gross contribution of two similar-sized Idaho sectors to Idaho's GSP during those same 10 years. Middle red line represents Idaho agriculture. Bottom green line tracks technology manufacturing. Agriculture has been much less volatile over this time period. Source: U.S. Department of Commerce, Bureau of Economic Analysis.

■ "Within the agribusiness complex, 61% of
 ■ agriculture's value added can be attributed
 to production agriculture and 39% to the
 processing sectors."

contributes indirectly by supporting the export output of other sectors.

The base output of agriculture is 20% of Idaho's total output. The base contribution of Idaho agriculture is \$21 billion, which equals the sum of agricultural output for exports (\$8.9 billion) and the indirect output from other sectors (\$12.2 billion) needed by the agricultural sector to produce these exports.

VALUE ADDED CONTRIBUTION AND GROSS STATE PRODUCT (GSP)

The value added within a sector equals the sum of the returns to labor, capital, and payment of business taxes. The sum of value added across all sectors equals the gross state product (GSP). Returns to labor and capital include wages and salaries, proprietors' income, as well as dividends, interest, and rents. In 2006, Idaho agriculture's gross value added was \$2.9 billion (6%) of Idaho's value added. See Figure 4. Within the agribusiness complex, 61% of agriculture's value added can be attributed to production agriculture and 39% to the processing sectors.

Idaho agriculture's base value added was \$8.4 billion (17%) in 2006. Because agricultural processing sells a larger proportion of its output to exports, the economic base effect of processing is relatively larger than that of production agriculture, with 46% of agriculture's contribution to the GSP coming from production agriculture and 54% from processing.

Indirectly, many of Idaho's other sectors owe a portion of their value added to agriculture. Services, retail and wholesale trade, and government services ranked as the top three sectors whose value added, in part, was brought about by agricultural exports.

The service sector alone contributes 34% of agriculture's base value added, which is greater than the agriculture sector's 32% that includes indirect (5%) and export contributions (27%). Across all the industries, the indirect value added created by agricultural processing exceeds that of agricultural production. This again

illustrates the magnitude of the backward linkages of agricultural processing. Impacts are driven by the exporting industry; cheese exports thus induce value added in the backward-linked dairies.

WAGES PAID CONTRIBUTION

Idaho agriculture paid gross wages and salaries of \$1.2 billion (4%) in 2006 (Figure 5). This compares to the service sector that paid gross wages of \$11.3 billion or 40% of the state's economy. However, the service sector is primarily an indirect sector of the economy whose jobs and wages support base sectors like agriculture to meet its export demand. The base

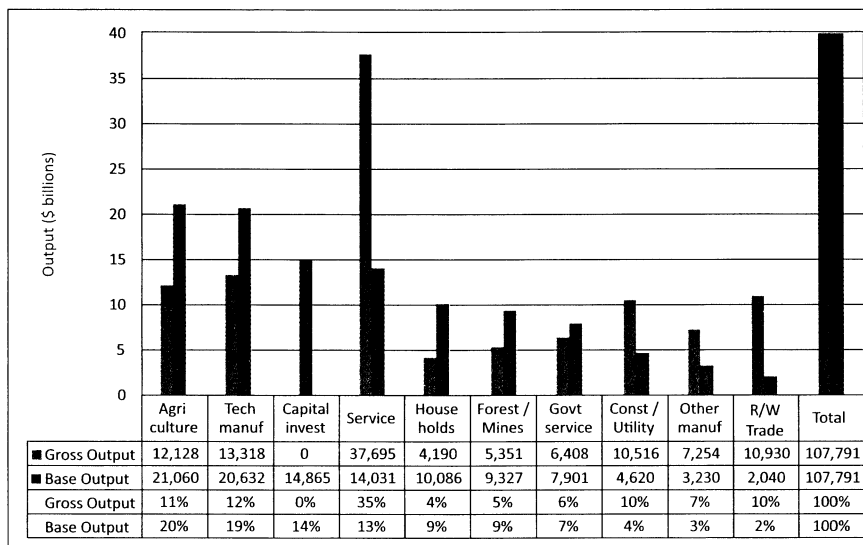


Figure 3: TOTAL SALES—Gross and base output measures for 10 Idaho sectors in 2006 show agriculture leading in base output with \$21 billion; the service sector leads in gross output with \$37.7 billion. Source: IMPLAN

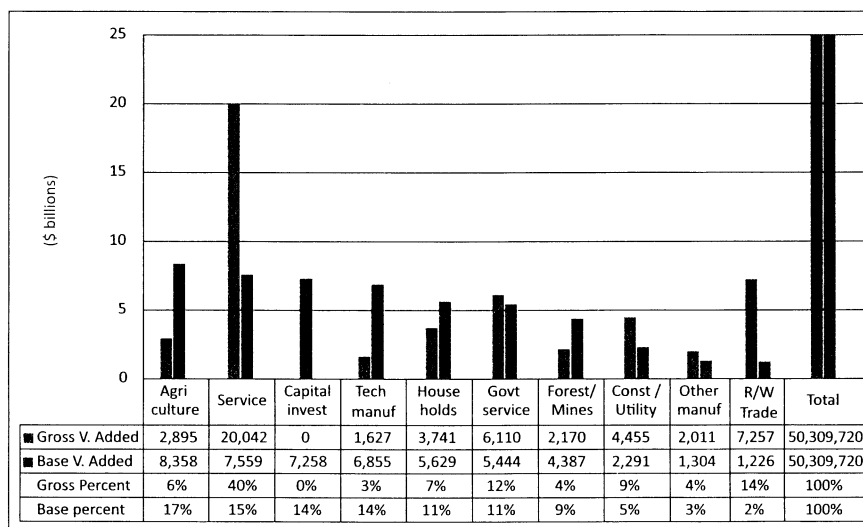


Figure 4: VALUE ADDED (Gross State Product)—Gross and base measures of value added (equivalent to GSP) in 2006 show agriculture leading all 10 sectors in base value added with \$8.4 billion; Service sector leads in gross value added with \$20 billion. Source: IMPLAN

sectors bring about jobs and wages in the indirect sectors. The service sector is responsible for 38% of the base wages paid in the agricultural sector, which is greater than the 26% paid by the agriculture sector itself to meet export demand (22%) and its own needs (4%). When looking at wages that can be directly or indirectly attributed to the economic base output of agriculture, the total increases to more than \$4.2 billion—or 15% of total Idaho wages—were paid in 2006. See Figure 5.

■ ■ ■
 “The gross employment of Idaho agriculture is about 56,000 full- and part-time workers or 6% of the state’s employment.”

EMPLOYMENT CONTRIBUTION

Employment as used in this study includes both full- and part-time jobs. The gross employment of Idaho agriculture is about 56,000 full- and part-time workers or 6% of the state’s employment (Figure 6). Idaho’s largest gross employment is in the service sector with 440,000 jobs (49%). The service sector has a larger share of Idaho’s employment (49%) than either value added (40%) or wages paid (40%) because of its relatively low wages and labor intensiveness.

As big as Idaho’s gross service sector is, it stimulates only about half the indirect jobs (83,000) from other sectors as agriculture does (116,000). Most service sector jobs are indirect jobs and are induced by the exports from the primarily exporting sectors.

Jobs are directly created in the exporting industry or indirectly in backward linked businesses. For every million dollars of agricultural exports, 18 jobs are created in agriculture and other sectors. In effect, we assume that jobs-per-dollar of exports is constant, but not necessarily equal across all industries.

Idaho agriculture’s base employment is about 157,000 jobs or more than 17% of total employment.

Of the 157,000 jobs contributed by agriculture in Idaho, more than 70% are indirect, created by the contribution of agricultural exports rippling throughout Idaho’s economy. Of the base employment, 41% were called forth in the service sector and 31% in the agricultural sector itself from exports (26%) and to help create the exports (5%).

**APPENDIX I
 Methods and IMPLAN**

Gross and base measures of a sector are an accounting task. Gross contributions entail counting the

number of people employed, the total sales, or the total value added created by each sector domestically and abroad. To maintain consistent sector definitions, we report the gross measures from the 2006 IMPLAN database (see Definitions), but we could have used the state’s gross state product and employment data.

Base contribution measures depend on the interrelationships between exports from one sector and the other supporting or indirect sectors in an economy needed to produce exports. Some sectors exist primarily to support other sectors so are called indirect sectors.

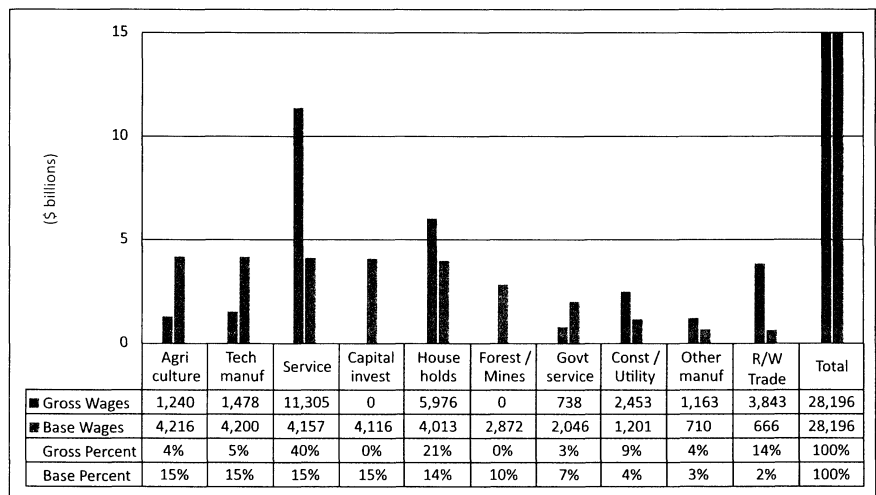


Figure 5: WAGES/SALARIES—For Idaho wages and salaries paid by sector in 2006, agriculture edges out all other sectors for base wages at \$4.2 billion; service at \$11.3 billion leads for gross wages. Source: IMPLAN

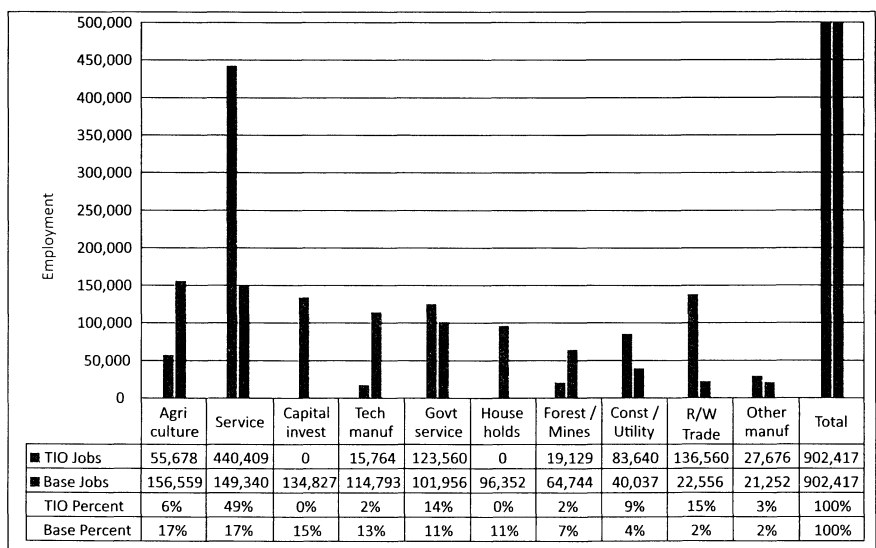


Figure 6: EMPLOYMENT/JOBS—Gross and base measures of employment by sector in Idaho in 2006 show agriculture leading for base jobs (156,559), while service provided 440,409 Total Industry Output jobs. Figures include part-time and full-time jobs. Source: IMPLAN



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Other sectors are primarily exporting sectors whose output, in part, forms the export base of the state's economy. It is assumed that final demand, of which exports is the major component, drives an economy. Exports help by bringing new money into an economy. Other components of final demand besides exports include household consumption, investment, and government spending.

For example, assume an elemental economy comprised of two industries of equal size in terms of gross measures. Each industry is half the economy whether measured by gross employment, output, or value added. The first industry only produces output for export in this simple economy. The second industry only produces output to support the production of exports from the first industry.

This example of a simple economy illustrates that the gross contribution of each industry is 50% of the economy.

Gross contribution is the sum of exports and domestic output. Each only produces one or the other, and output is of equal magnitude.

However, the base contribution of the first industry is 100% and the base contribution of the second

industry is 0%.

Base contribution measures the export and indirect contribution of an industry or sector. Industry one has all the exports and calls forth all the output of industry two. Without the presence of the first industry, there would be no demand for the output of the second industry. Base contribution, whether measured as output, value added, wages paid, or employment, is attributed entirely to the first industry.

To assess the contribution of agriculture, we analyze agriculture's base contribution both in terms of exports and indirect contributions of other sectors needed to produce agricultural exports. Besides agriculture's exports, the agricultural sector also contributes in a service or indirect role by providing goods and service to other businesses within Idaho.

Gross contribution of agriculture is the sum of export and domestic production.

Base contribution of agriculture is the sum of export production in agriculture and indirect production in other sectors needed to produce agricultural exports. The gross and base contribution of agriculture will

differ if agriculture's domestic production needed by other sectors is more or less than the indirect production from other sectors needed by agriculture to meet its export demand.

Base export multiplier reveals how the exports from a single industry create demand for all the other industries in a regional economy. A Social Accounting Matrix (SAM) model was constructed to measure the base export multiplier effect. The Idaho SAM model accounts for output and purchases among Idaho industries in 2006. The data source was the 2006 IMPLAN database.

A SAM model of the Idaho economy includes an agricultural sector that buys goods and services from other Idaho businesses, the rest of the U.S., and abroad. It includes other sectors that buy and sell goods and services from each other and the agricultural sector. Numerous rounds of inter-industry transactions occur.

Agricultural transactions create a multiplier effect; agricultural exports generate or induce changes in the outputs of many other industries in Idaho's economy. Therefore, total economic activity or output increases by a multiple of the export demand.

APPENDIX II
Terms & Definitions

Agriculture: The production and processing of crops and livestock.

Base contribution (output) of agriculture: It measures the economic activity across all sectors that agriculture involves as it creates agricultural products for export. The base output of agriculture or any other sector is the sum of its exports and the associated indirect stimulation of the output of other sectors in the process.

Direct effect: Economic activity that is generated by the exports of any of Idaho's 10 industrial sectors.

Economic base theory: It maintains that exports of one sector of an economy bring about additional economic activity in other sectors. The export revenue from one sector is responsible for stimulating a certain portion of the output and jobs in other sectors as well. Analysis of these relationships is accomplished through an economic based SAM model.

Exports: Sales of goods and services outside of Idaho—both domestic and international sales.

Gross contribution (output) of agriculture: Jobs, output, wages, and value added generated as Idaho agriculture meets both domestic and foreign demands. The gross output contribution of agriculture, or of any other sector, is the sum of exports and the domestic output needed by other sectors in their export production.

Gross state product (GSP): GSP is the sum of value added across all sectors of the economy. Also see value added definition.

IMPLAN database: IMPLAN (IMpact analysis for PLANning) can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity. It also allows users to build economic models estimating effects of a proposed change in a specific economic region. The IMPLAN database contains county, state, zip code, and federal economic statistics, which are specialized by region, not estimated from national averages. Using classic input-output analysis in combination with regional specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users.

Indirect effects: These are generated by industries purchasing inputs from other local businesses that support the sales of exports. For example, the indirect effect from Idaho agriculture generates dollars that ripple throughout the state's economy to create additional jobs, sales, and value added in other Idaho businesses

Induced effects: These are generated by industries paying wages to employees who are involved in export activities. The wages are then used to purchase goods and services from other local businesses.

Input: An item that is used by a sector to produce its output. An output from one sector may be used as an input in another. For example, corn is an output from crop production but is an input (as animal feed) into livestock.

Jobs: Full- and part-time employment as specified by the U.S. Department of Commerce.

Manufacturing—Technology manufacturing: One of Idaho's 10 standard industrial sectors involving the manufacture of electronic products—i.e. DRAM, communication equipment, etc.

Manufacturing—Other manufacturing: One of Idaho's 10 standard industrial sectors involving a large catchall category that includes every business that makes goods other than processed agricultural and forest goods or high tech products.

Multiplier effect: The multiplier effect refers to the idea that an initial spending rise can lead to an even greater increase in regional or national income.

For example: a company spends \$1 million to build a factory. The money does not disappear, but rather becomes wages to builders, revenue to suppliers, etc. The builders will have higher disposable income as a result, so consumption—aggregate demand—will rise as well. If all of these workers combined spend a total \$2 million dollars, the multiplier is 2 because there was an initial \$1 million input, which created a \$2 million output.

Output or sales: The gross sales of businesses. When a business sells a product to itself (a farmer feeding home grown hay to her own cattle), this is recorded as output or sales even though the product was not traded in a market. The output or sales of the retail and wholesale trade sectors are margined, meaning that only the markup or margin is recorded as sales of the retail and wholesale sector.

SAM model: A Social Accounting Matrix (SAM) model is a numerical scheme of the circular flow that can be used to determine changes in the impact of economic agents. The Idaho SAM model accounts for output and purchases among 10 Idaho industry sectors in 2006. Data source was Idaho's 2006 IMPLAN database. A SAM model of the Idaho economy includes an agricultural sector that buys goods and services from other Idaho businesses, the rest of the U.S., and abroad. And it includes other sectors that buy and sell goods and services from each other and the agricultural sector.

Value added (VA): The total of: (1) wages and salaries; (2) proprietor's income; (3) indirect business taxes; and (4) dividends, interest, and rents. The sum of VA across all sectors of the economy equals the gross state product (GSP).

Wages: Wages and salaries paid are the paychecks of full- and part-time workers in Idaho businesses.

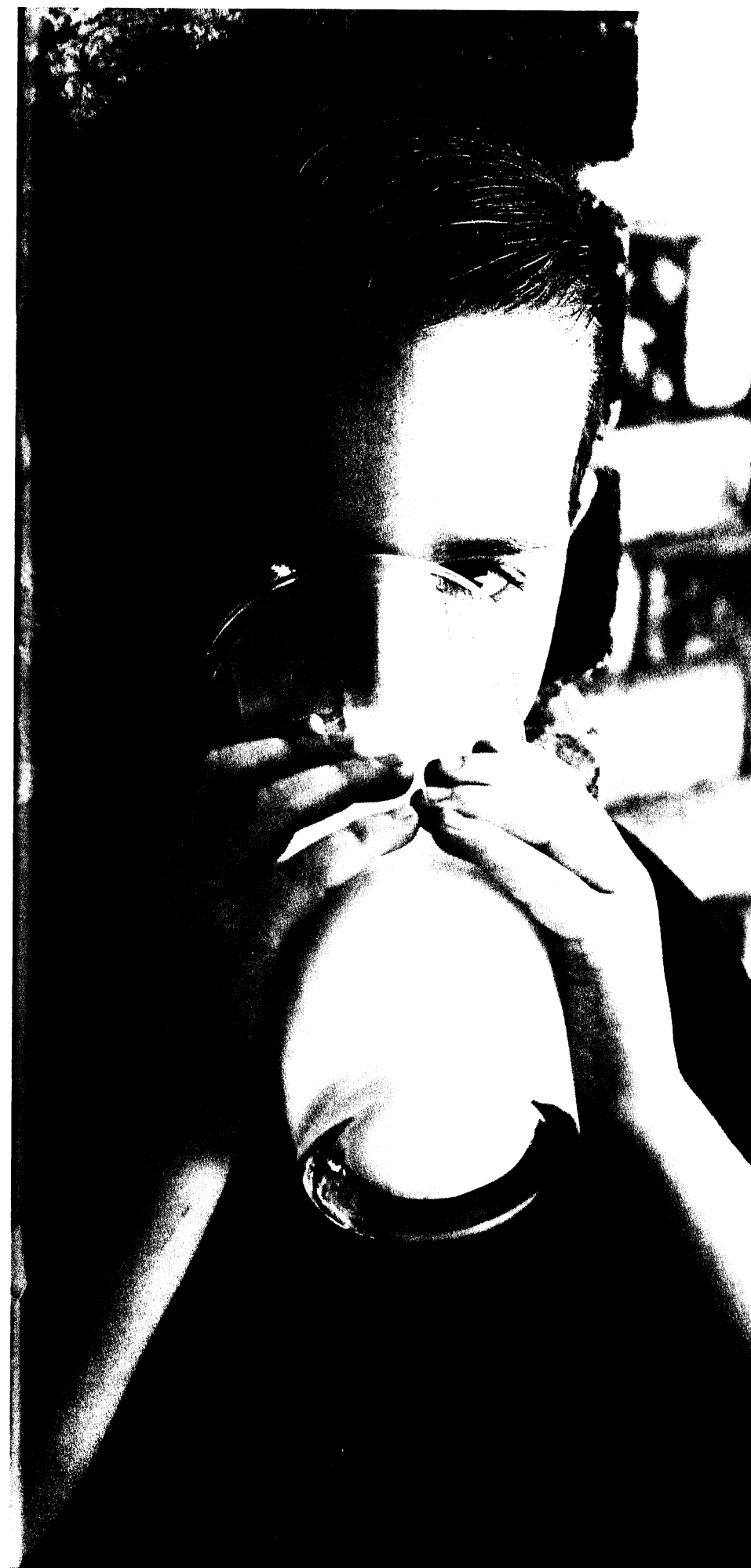


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The Financial Condition of Idaho Agriculture: 2008 projections

Ben Eborn, Paul Patterson, and Garth Taylor

For the 5th straight year, Idaho farmers posted record sales! Cash receipts from sales of crops and livestock in 2008 are projected to hit \$6.3 billion, an 11% increase over 2007. However, due to increased production costs, net farm income is expected to drop 5% from last year's record to an estimated \$1.7 billion for 2008. The 2008 decrease in farmers' bottom lines follows the amazing 103% increase in 2007. With the exceptions of sugarbeets, onions, and cattle, every major Idaho crop and livestock category increased in cash receipts. Milk receipts again reached a record level, \$2.15 billion, 5% above 2007's record. Potato sales rose an estimated 13% to their second-highest level ever, \$800 million.

2008 Crop and Livestock Highlights:

- 23 For the eighth year in a row, livestock revenues exceeded crop revenues. At \$3.34 billion, livestock revenues comprised 53% of Idaho's total farm-gate cash receipts.
- 24 For the fifth consecutive year, dairy is Idaho's leading agricultural industry. Resulting from record high production (up 8% from 2007) and strong prices, 2008 cash receipts from milk are estimated to be \$2.15 billion, 5% higher than in 2007. Over 34% of Idaho farm sales were milk checks.
- 25 Cattle and calves were Idaho's second-largest agricultural revenue producer, bringing in an estimated \$1.07 billion, 2% less than in 2007.
- 26 Potatoes remain Idaho's number one crop, with 2008 revenues estimated at \$800 million, 13% more than in 2007. Potato production fell to 115 million cwt, down 12% from 2007, but prices jumped 22%.
- 27 Wheat surpassed hay and regained the title of Idaho's second-largest crop-revenue producer. Revenues for 2008 are expected to be \$707 million, an increase of 55% from 2007. Wheat production was up 17%; however, prices were 45% higher than in 2007.
- 28 Hay revenues are forecasted to be \$673 million, up 47% from 2007. Total hay production was up 5.5%, but hay prices are estimated to be 42% higher than in 2007.
- 29 Barley sales in 2008 are estimated at \$231 million, 62% higher than in 2007. Idaho barley production increased by 13% in 2008, and prices are projected to be 31% higher than in 2007.
- 30 Revenues from Idaho's sugarbeets are estimated at \$147 million, down 30% from 2007. Production is forecast to be 3.63 million tons, down 38%.

Idaho Farm Cash Receipts

Idaho's 2008 farm cash receipts from marketings are estimated to be \$6.3 billion—11% more than last year's record of \$5.7 billion.

Crop revenues are estimated at \$2.94 billion, up 22% from last year's \$2.41 billion and 46% above the 10-year average. With the exceptions of sugarbeets and onions, every major crop produced increased revenues in 2008. Wheat, barley, beans, hay, and potatoes posted double-digit increases.

Livestock revenues are estimated at \$3.34 billion, up 2% from last year's \$3.27 billion and 41% higher than the 10-year average. Cash receipts from cattle and calves are projected to be 2% lower than last year. Cash receipts from milk are expected to be \$2.15 billion, up 5% from last year's record-breaking \$2.05 billion.

The shift in the Idaho agricultural economy from crops to livestock has been remarkably swift and dramatic. Within the past decade, Idaho's Famous Potatoes have struggled to bring in approximately 15% of cash receipts. Conversely, milk, which was at 25% of total farm cash receipts in 1998, is now at 34%. The center of Idaho agriculture has shifted geographically to the dairies of the Magic Valley. Farming's backward- and forward-linked industries—the suppliers to farms and processors—have shifted in response.

Declines in sheep, fruit, seed crops, and mint have narrowed Idaho's agricultural diversity, and the overall health of Idaho agriculture has become increasingly dependent on milk and beef prices.

Cash receipts in 2008 were well above last year's all-time record in nominal dollars as well as the highest ever in real dollars (1996 dollars). Over a 39-year span (1970-2008), inflation-adjusted cash receipts hit a low in 1971 then rose to their third-highest point just three years later. Real-dollar cash receipts in 2008—\$5.17 billion—were 57% higher than the 39-year average. Until the spikes in the last two years, revenues from Idaho agriculture were far less volatile in the decade of the 1990s and into the 21st century than in previous decades.

Methods—Cash Receipts

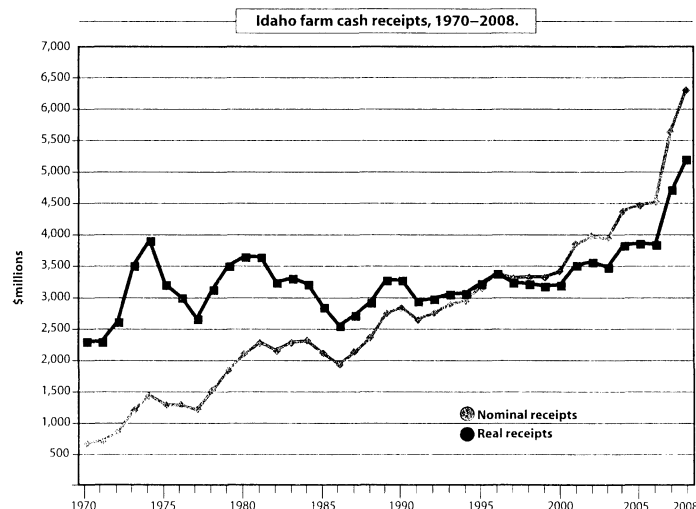
Actual cash receipts for 2008 will not be published by the USDA until the fall of 2009. We used the most recent monthly data from the USDA Idaho Agricultural Statistics Service and from the *Idaho State Department of Agriculture Annual Report*. Data unavailable from these sources were forecasted by the authors using one of three methods: (1) index, (2) expected value, and (3) price-times-quantity.

The index method is used for cattle and calves. The index method captures the relative year-to-year changes in both price and production by indexing current- and previous-year data.

The expected value method is used when price and quantity data are unavailable or available only at the end of the year. Probabilities are assigned to the cash receipts for the three most recent years. This forecasting method is reserved for crops and livestock classified in the "other" categories, which are relatively small contributors to total cash receipts, such as poultry, lambs, trout, hogs, fruit, corn, and mint. This method is also used to forecast cash receipts from greenhouse and nursery products because price and production data are unavailable due to product diversity.

The price-times-quantity method is used when accurate monthly price and marketing data are available, as for milk, potatoes, barley, beans, hay, onions, sugarbeets, and wheat.

Calendar Year—Crop revenue is recorded on a calendar-year basis. For most crops that means portions of two or more crops can be sold in a January to December calendar year. For example, during the 2008 calendar year, potato sales came from both the 2007 and 2008 crops.



Sources: Idaho Agricultural Statistics Service and UI projections

Note: Real receipts are adjusted for inflation to 1996 dollars.

Idaho Net Farm Income

Net farm income is the bottom line—the farmer’s paycheck. Idaho net farm income in 2008 is estimated to be 5% lower than in 2007. An estimated 10% increase in revenues (gross farm sales, government payments, etc.) and a 15% increase in costs resulted in net farm income at an estimated \$1.68 billion, 39% higher than the 10-year average.

In only one of the past 10 years have Idaho cash receipts from farm marketings varied year to year by more than 12%. Net farm income over the same period, however, has been much more volatile. In six of the past 10 years, net farm income changed 15% or more from the previous year. The 2007 whopping 103% increase followed the 31% decrease in 2006 and the 73% increase in 2004.

The 10% increase in 2008 revenues can be attributed largely to the projected 22% increase in revenues from crop production and 2% increase in revenues from livestock production. Revenues from services and forestry are estimated to be up 5% from 2007, while revenues from government payments are expected to be down 4%.

On the cost side, total farm expenses are estimated to be 15% higher than in 2007. Most farm expenses experienced hefty increases. Costs of manufactured inputs such as fuel, fertilizer, and electricity rose a painful 35%. Manufactured inputs account for 21% of farm expenses, thus cost increases in this category have a big impact on the bottom line. Costs for “other” inputs, including machine hire, storage, transportation, and repair and maintenance, climbed 12%. Costs of farm-origin inputs, including feed, seed, and replacement livestock, jumped 17%.

Nationally, 2008 U.S. net farm income is estimated at \$86.9 billion, relatively unchanged from \$86.8 billion in 2007, but still 42% higher than the 10-year average.

Over a 39-year period (1970-2008), Idaho net farm income, in nominal terms, peaked in 2007 at \$1.77 billion and hit a low in 1977 at \$112 million. In real dollars (1996 base year), Idaho net farm income topped out in 1974 at \$1.6 billion, and just five years later, in 1979, hit its lowest point, \$241 million, a sevenfold drop. Idaho real net farm income for 2008 is estimated to be 63% higher than the 39-year average.

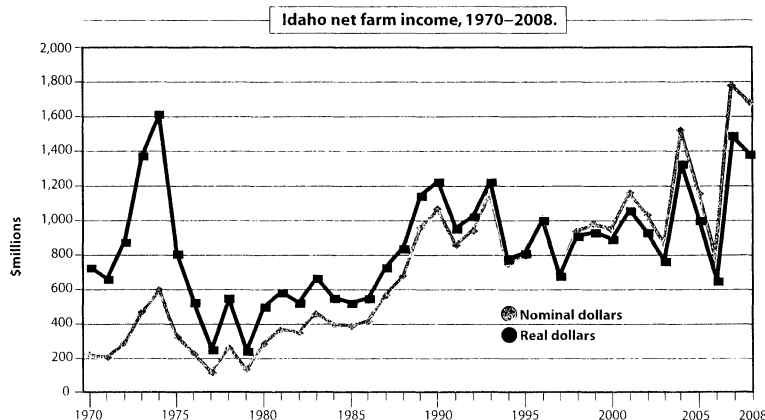
Methods—Net Farm Income and Net Value Added

Net farm income is the farmer’s bottom line, revenues minus costs. Revenues include cash receipts from crop and livestock marketings, inventory changes, the estimated value of home consumption, government payments, machine hire and custom work, forest product sales, and the imputed rental value of farm dwellings. Farm expenses include farm-origin inputs (purchased livestock, feed, and seed), manufactured inputs (fertilizers, fuel, and electricity), and “other inputs” including repairs and maintenance, machine hire and custom work, marketing, storage, transportation, and contract labor.

Idaho net farm income for 2008 is not published by the USDA until the fall of 2009. Data sources we used to forecast 2008 net farm income include the USDA forecast “Value-Added to the U.S. Economy by the Agricultural Sector via the Production of Goods and Services, 2004-2008F.” Farm revenues for livestock and crops were obtained from our 2008 cash receipts forecast with adjustments for inventory changes and noncash receipts. Costs were estimated from the percentage change from 2007 to 2008 in U.S. cost information, which we used to update this year’s Idaho cost data.

Net farm income estimates published by the USDA are subject to revision for up to 5 years. For example, in 2003 USDA reported Idaho net farm income at \$1.22 billion and 2 years later revised it down by close to a third.

Gross state product (GSP) measures the sum of all value added by industries within the state. Net value added (NVA) measures economic returns to farm employees, lenders, landlords, and farmers. It measures production agriculture’s contribution to Idaho’s GSP. Net farm income is that portion of NVA earned by farm operators. NVA estimates are modified by the U.S. Department of Commerce to develop Idaho’s GSP agricultural accounts.



Sources: USDA Economic Research Service and UI projections

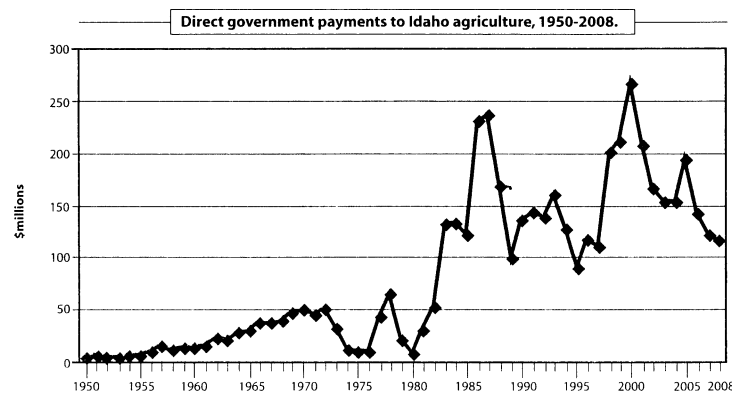
Note: Real dollars are adjusted for inflation to 1996 dollars.

Government Payments to Idaho Agriculture

Federal government payments in fiscal year 2008 are estimated at \$116 million, a decrease of 4% from 2007 and over one-third less than the average of the past 10 years. Production support payments accounted for 60% of total payments, conservation program payments 29%, emergency program payments 11%, and price support program payments practically nothing.

In 2000, payments exceeded \$260 million, the highest amount ever received by Idaho agriculture. The previous high, \$234 million, was in 1987 during the farm financial crisis. Since 2000, government payments have declined over 60% and are now below the amount paid 25 years ago.

Direct government payments in 2007 and 2008 contributed 14% of U.S. net farm income. In contrast, government payments to Idaho agriculture contributed 7% of net farm income in 2008. Idaho received approximately 0.9% of total 2008 payments to U.S. agriculture.

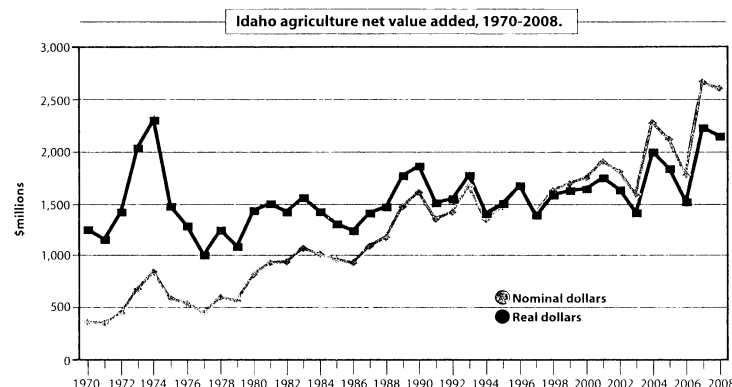


Source: USDA Economic Research Service and UI projections

Note: 2008 is the fiscal year; all other years are calendar years.

Idaho Agriculture's Net Value Added

For 2008 net value added (NVA) of Idaho agriculture is estimated at \$2.6 billion, a decline of 2% from 2007. In nominal dollars, NVA in 2007 was the highest ever recorded and in 2008 the second highest. In real dollars (1996 base), NVA was at a 39-year high in 1974 and 39-year low in 1977. In real dollars, forecasted NVA for 2008 is \$221 million below the 1974 high and 36% above the 39-year average. In 2006, crop and live-stock (farm production) contributed 3.3% to Idaho's total gross state product (GSP). As a proportion of Idaho's total GSP, production agriculture topped out in 1974 at 16.1%.



Sources: Idaho Agricultural Statistics Service and UI projections

Note: Real value added is adjusted for inflation to 1996 dollars.

Idaho Livestock and Crop Revenues

Cattle and Calves

Revenue from cattle and calves is estimated at \$1.07 billion, down 2% from 2007. Prices held steady throughout most of the year, then fell sharply in September. The Idaho cattle and calf inventory as of January 1, 2008, was 2.23 million head, 2% higher than a year earlier. There were 460,000 beef cows on hand, 13,000 head fewer than in January 2007. The milk cow inventory climbed from 502,000 head in January 2007 to 530,000 head by January 2008.

Milk

Milk production in 2008 was over 1 billion pounds in 10 of 12 months. Revenue from Idaho milk is estimated to be \$2.15 billion, up 5% from 2007. Milk production was up 8%, and prices averaged 3% lower. Cash receipts are estimated to be 68% higher than the 10-year average.

Barley

Idaho barley production in 2008 increased an estimated 13% from 2007 levels, and barley prices are projected to be 31% higher, resulting in barley revenues estimated at \$231 million, 62% higher than in 2007. The state's average yield is estimated to be 86 bushels per acre, up 6 bushels per acre from 2007. Nationally, barley production is 13% higher than in 2007.

Beans

Dry bean revenues in 2008 are estimated at \$56 million, 29% higher than in 2007. Production was down an estimated 4%, but prices are estimated to be up 40%. Average yields of 1,950 pounds per acre are up 150 pounds per acre from 2007, but growers harvested 10,000 fewer acres.

Greenhouse/Nursery

Revenues in 2008 are estimated to be \$87 million, 2% higher than in 2007. Field-grown sales typically account for 75% of total revenues, while Christmas trees and greenhouse-grown sales including houseplants, flowers, and seedlings account for the rest.

Hay

In 2008 hay was Idaho's third most valuable crop. Reflecting strong demand from expanding dairies, hay revenues are forecast to be a record high of \$673 million, up 47% from 2007. Alfalfa hay production was up 4% to an estimated 4.97 million tons, and other hay production was up 20% to 0.76 million tons. Prices are estimated to be 42% higher than last year.

Onions

Production for 2008 is expected to be 5.87 million cwt, a 14% decrease from 2007. Yields are estimated to be 690 cwt, down 60 cwt from a year ago. With production down 14% and significantly higher prices, onion revenues are forecast to be \$46 million, down 8% from 2007.

Potatoes

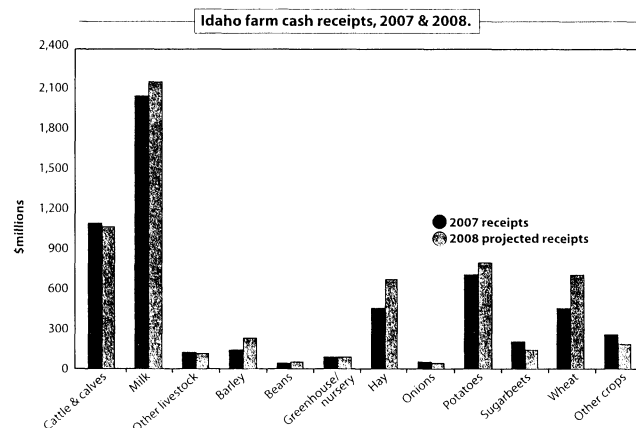
Potatoes remain Idaho's largest source of crop revenue, with 2008 revenues estimated at \$800 million, 13% higher than in 2007. Potato production is estimated to be 115 million cwt, down 12% from 2007, and the lowest since 1989. Average yields of 378 cwt (field-run basis) are up 5 cwt from last year, and prices are estimated to be 22% higher.

Sugarbeets

Idaho's sugarbeet production is forecast to be 3.63 million tons, down 37% from last year's 5.75 million tons, the lowest since 1984. Growers harvested 50,000 fewer acres than in 2007, the lowest since 1977. Average yields were 31.0 tons per acre, down from last year's record high 34.4 tons per acre. Revenue is estimated at \$147 million, down 30% from 2007.

Wheat

Wheat was Idaho's second-largest revenue producer among crops in 2008. Revenues are expected to be \$707 million, up 55% from 2007. At a projected 98.2 million bushels, production was up 17% from 2007. Wheat prices were their highest ever, averaging 45% higher than in 2007. Nationally, the 2008 wheat crop is estimated to be 21% larger than in 2007.



Sources: Idaho Agricultural Statistics Service and UI projections

Idaho net farm income, by calendar year.

	(\$ millions)										Change
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	('07-'08)
REVENUES											
Crop Production	1,698	1,766	1,762	1,950	1,733	1,829	1,925	2,123	2,413	2,935	22%
Livestock Production	1,616	1,629	2,063	1,999	2,180	2,538	2,592	2,418	3,269	3,344	2%
Services & Forestry	319	319	337	378	354	371	508	536	594	626	5%
Government Payments	211	264	208	165	153	153	191	141	121	116	-4%
Home Consumption	7	6	6	6	6	6	7	7	7	9	26%
Inventory Adjustment	115	134	(64)	131	22	165	57	58	64	66	5%
TOTAL REVENUES	3,965	4,119	4,311	4,629	4,448	5,063	5,279	5,284	6,467	7,096	10%
EXPENSES											
Farm Origin Inputs	635	660	729	1,002	982	984	1,051	1,165	1,386	1,617	17%
Manufactured Inputs	555	572	571	624	607	625	758	774	839	1,133	35%
Other Inputs	700	750	718	796	872	756	872	1,042	1,033	1,158	12%
Vehicle Regist./Licensing	9	12	11	9	11	10	10	9	11	11	4%
Property Taxes	87	89	86	90	82	85	104	127	146	151	4%
Capital Consumption	285	289	295	300	305	330	366	391	402	424	6%
Payments to Stakeholders	725	790	755	781	712	761	860	903	877	922	5%
TOTAL EXPENSES	2,997	3,164	3,166	3,603	3,571	3,551	4,023	4,410	4,693	5,416	15%
NET FARM INCOME	968	955	1,145	1,026	876	1,511	1,257	873	1,774	1,680	-5%
Year-to-Year Change	5%	-1%	20%	-10%	-15%	73%	-17%	-31%	103%	-5%	

SOURCES: 1999–2007: Economic Research Service/USDA; 2007 & 2008: Forecasted by G. Taylor, P. Patterson, and B. Eborn, University of Idaho.

NOTE: Data for 2007 and the previous four years are preliminary estimates that USDA can revise for up to five years.

Idaho cash receipts from farm marketings, by calendar year.

	(\$ millions)										Change
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	('07-'08)
LIVESTOCK											
Cattle and Calves	677	757	916	976	1,070	1,069	1,066	1,022	1,092	1,070	-2%
Milk	834	762	1,043	918	1,005	1,358	1,418	1,282	2,050	2,153	5%
Other Livestock	105	110	103	105	105	111	108	114	127	120	-5%
TOTAL LIVESTOCK	1,616	1,629	2,063	1,999	2,180	2,538	2,592	2,418	3,269	3,344	2%
CROPS											
Barley	129	120	139	140	158	149	199	129	143	231	62%
Beans	34	33	28	32	35	34	46	36	43	56	29%
Greenhouse/Nursery	67	70	67	71	81	84	80	84	86	87	2%
Hay	215	263	311	280	220	311	343	402	458	673	47%
Onions	37	44	40	52	66	36	34	52	50	46	-8%
Potatoes	597	539	582	702	547	516	516	665	710	800	13%
Sugarbeets	216	212	188	212	217	204	201	234	210	147	-30%
Wheat	229	298	254	306	259	334	336	350	456	707	55%
Other Crops	174	222	154	155	151	163	170	171	257	188	-27%
TOTAL CROPS	1,698	1,799	1,762	1,950	1,733	1,829	1,925	2,123	2,413	2,935	22%
TOTAL CASH RECEIPTS	3,314	3,428	3,825	3,949	3,913	4,368	4,517	4,542	5,682	6,279	11%
Year-to-Year Change	0%	3%	12%	3%	-1%	12%	3%	1%	25%	11%	

SOURCES: 1999–2007: Idaho Agricultural Statistics Service; 2007 and 2008: Forecasted by G. Taylor, P. Patterson, and B. Eborn, University of Idaho.

NOTE: Data for 2007 and the previous four years are preliminary estimates that USDA can revise for up to five years.

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