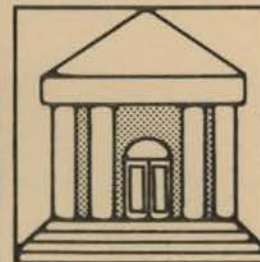
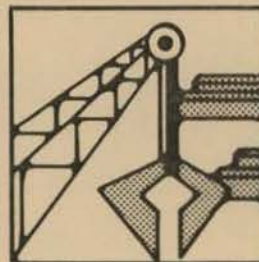
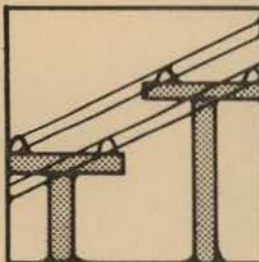
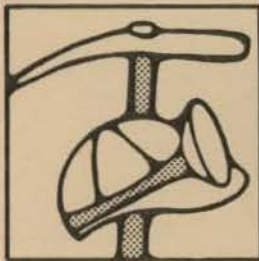
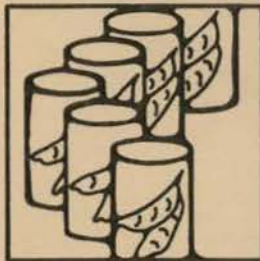
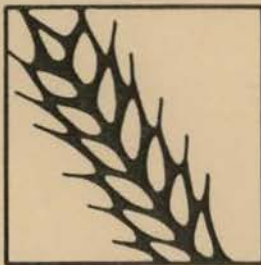


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# The Changing Role Of Idaho Agriculture 1947-1974



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# The Changing Role Of Idaho Agriculture 1947-1974

*Roger B. Long, Professor of Agricultural Economics*

## Introduction

This report evaluates the changing role of agribusiness — livestock production, crop production and food processing — in Idaho's economy from 1947 to 1974. The analysis estimates total gross output by economic sector in the state and traces agribusiness activities in their interrelationships with other economic activities.

Unfortunately, total production or output information for Idaho's economic sectors is seldom reported in a consistent manner. For example, the agriculture sector commonly reports cash receipts which represent only a part of total livestock and crops output. Similarly in food processing, data on value of shipments are reported but total

output for any given period is not. The estimates given here are based on best data available.

To determine sector output also requires a consistent framework in which to estimate and organize the data so information can be compared. This study has adopted the input-output framework used by the U.S. Department of Commerce.

All dollar figures are in current terms. No attempt has been made to adjust them with price indices; consequently, no adjustments have been made for increasing price levels.

## Estimated Output by Economic Sector in Idaho, 1947 - 1974

To evaluate the impact of agriculture on Idaho over time, economic changes occurring in the state must be determined. For the input-output framework, the state was divided into 11 non-government and 2 government sectors. The government sectors are not included in this analysis since government sectors primarily provide personal services supported by tax dollars and government output is closely related to wages and salaries to pay for those personal services. Consequently, budgetary information should be available to help estimate government output. For the 11 non-government sectors, changes in total output were estimated using data from a number of sources.

Data sources were not always consistent between sectors, nor did the data always meet input-output framework requirements. Therefore, total output or gross margins were by necessity estimated from the most reliable sources of information. The data, data sources and output estimates for each of the 11 sectors are discussed in the following sections.

Although little information is available on sector output, employment and payrolls by state, one previous study can serve as a guide for state estimates. Karen R. Polenske (3) has made individual output estimates for 88 economic sectors, by states, for the years 1947, 1958 and 1963. The advantage of her work is that individual state results must add to no more than the total U.S. output. Consequently, Polenske's work is valuable in assessing individual state estimates, serving as a constraint against the tendency to overestimate because of double-counting.

### Livestock Agriculture — Sector 1

The U.S. Department of Agriculture publishes consistent and reliable data for livestock agriculture. The data series on cash receipts from livestock and livestock products was first used to estimate total output in this study. Total livestock output was also estimated using cash receipts and expanding the data by a margin consistent with Polenske's output estimates (3). Famure (1) also analyzed livestock output in Idaho. His work with output per unit of input tends to justify the cash receipts data as the best estimate of total output in this sector. Table 1 and Fig. 1 summarize these estimates.

### Crop Agriculture — Sector 2

Total output of crop agriculture was estimated from data on cash receipts from crops published consistently by USDA during the period. Cash receipts from crops understate the real value of crop output because some crops are not sold directly in the marketplace. Most hay and feed grains, for example, are fed on the same farms on which they are grown. The input-output framework requires accounting for total crop production. For this reason, Polenske's (3) and Famure's (1) estimates of total crop output in 1947, 1958 and 1970 were averaged and the percentage difference was used to estimate the value of total crop output for each year. These estimates are shown in Table 2 and Fig. 2.

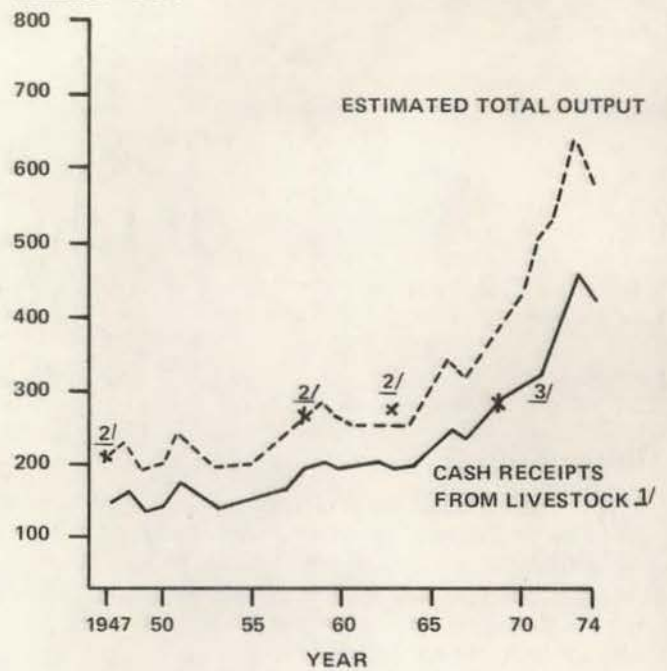
**Table 1. Estimated value of total output for livestock sector, Idaho, 1947-1974.**

Year	Cash receipts <sup>1</sup> (million)	Estimated total output <sup>2</sup> (million)
1947	\$146	\$204
1948	167	233
1949	135	189
1950	143	200
1951	174	244
1952	157	219
1953	139	194
1954	140	195
1955	141	197
1956	157	220
1957	171	239
1958	191	267
1959	201	282
1960	192	268
1961	197	275
1962	198	276
1963	194	272
1964	197	276
1965	218	305
1966	240	336
1967	227	318
1968	252	352
1969	279	390
1970	304	426
1971	321	496
1972	398	557
1973	457	640
1974	411	575

<sup>1</sup>Cash receipts from livestock and livestock products, from USDA Bureau of Agricultural Economics. Cash Receipts and Value of Home Consumption by States, 1924-1951. Government Printing Office, 1952.

<sup>2</sup>Derived from Polenske (3).

Millions of dollars



**Fig. 1. Estimated value of total output for livestock agriculture sector, Idaho, 1947-1974.**

<sup>1</sup>USDA Bureau of Agricultural Economics. Cash Receipts and Value of Home Consumption by States, 1924-1951. Government Printing Office, 1952.

<sup>2</sup>Polenske (3).

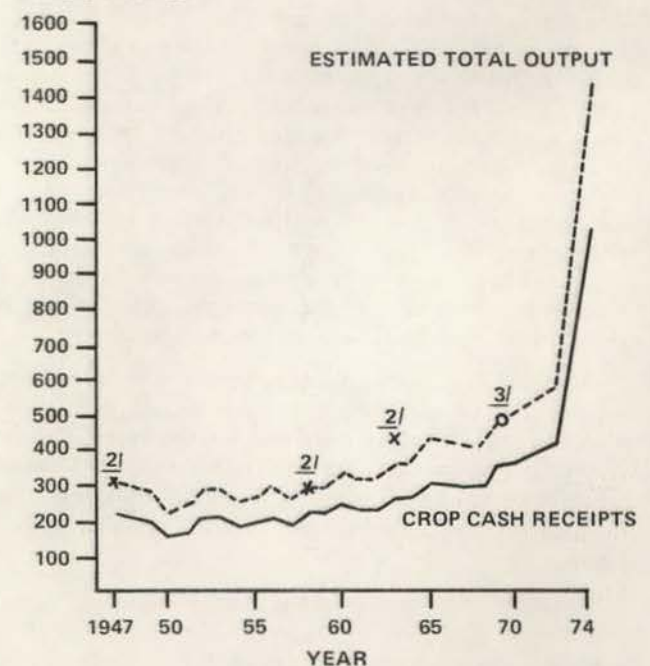
<sup>3</sup>Famure (1).

**Table 2. Estimated value of total output for crop agriculture sector, Idaho, 1947-1974.**

Year	Cash receipts from crops <sup>1</sup> (million)	Estimated total output (million)
1947	\$222	\$312
1948	213	298
1949	201	281
1950	160	224
1951	178	249
1952	206	290
1953	210	294
1954	185	259
1955	193	270
1956	209	293
1957	188	263
1958	213	298
1959	212	297
1960	240	336
1961	228	319
1962	231	323
1963	263	368
1964	265	371
1965	308	431
1966	302	423
1967	293	410
1968	294	412
1969	352	493
1970	360	504
1971	389	545
1972	410	574
1973	659	918
1974	731	1,019

<sup>1</sup>Source: USDA Bureau of Agricultural Economics. Cash Receipts and Value of Home Consumption by States, 1924-1951. Government Printing Office, 1952.

Millions of dollars



**Fig. 2. Estimated value of total output for crop agriculture sector, Idaho, 1947-1974.**

<sup>1</sup>USDA Bureau of Agricultural Economics. Cash Receipts and Value of Home Consumption by States, 1924-1951. Government Printing Office, 1952.

<sup>2</sup>Polenske (3).

<sup>3</sup>Famure (1).

### Mining — Sector 3

Market values were also difficult to establish in the mineral production and mining industries. It is also difficult to determine where mining should end and where manufacturing or processing should begin. These ambiguities made it somewhat more difficult to establish the value of total output for mining in any one year. The Survey of Current Business (6) shows the income from mining in Idaho from 1948 to 1973. Total output estimates from these data and Polenske's estimates of total output for 1947, 1958 and 1963 were somewhat lower than mineral industry values published in The Mineral Yearbook (7). However, these later estimates probably included some processing along with mining. Table 3 and Fig. 3 present the mining income data and total output estimates used in this study.

### Food Processing — Sector 4

Data representing the food processing sector were obtained from the Annual Survey of Manufacturers (4) series on value of shipments for 1967 to 1972, and from food and kindred products industry value-added data available from 1947 through 1972. To estimate total output for the food processing sector, Polenske's (3) estimates for 1947, 1958 and 1963 were also used. These data are summarized in Fig. 4. Table 4 presents the data used to estimate total output for the food processing sector.

### Other Manufacturing — Sector 5

Similar data were available for the "other manufacturing" sector (where other manufacturing is total manufacturing minus food and kindred products manufacturing). Other manufacturing includes forest product processing. The best data series available were value of shipments from 1964 to 1972 (4), Polenske's estimates (3) and value-added data from the Survey of Current Business (6). Polenske's estimates for 1947, 1958 and 1963 apparently are related to the value of shipments data from 1964 to 1972. Fig. 5 and Table 5 present the data base and estimates for total output. While these estimates of total output are not as accurate as actual census data, they are an attempt to determine output on an annual basis.

### Transportation and Communications — Sector 6

Data for the transportation and communications sector were difficult to obtain. The information most relevant to this sector was data on income generated by transportation in the Survey of Current Business (6) for 1956 to 1973. Total output for the transportation and communications sector were estimated by extrapolating Polenske's (3) estimates to 1974 based on the slope of the line established by data on income generated by transportation (Table 6 and Fig. 6).

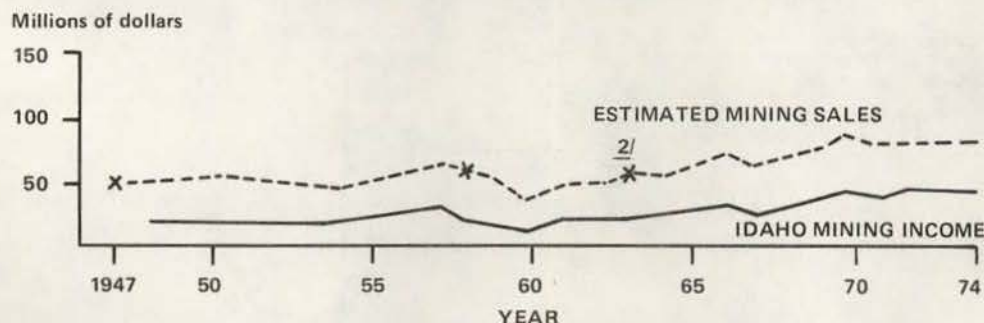


Fig. 3. Estimated value of total output for mining, Idaho, 1947-1974.<sup>1</sup>

<sup>1</sup>U. S. Department of Commerce (6).

<sup>2</sup>Polenske (3).

Table 3. Estimated value of total output for mining sector, Idaho, 1947-1974.

Year	Idaho mining income <sup>1</sup> (million)	Estimated total output (million)	Year	Idaho mining income <sup>1</sup> (million)	Estimated total output (million)
1947	\$ —	\$50	1961	\$ 21	\$ 49
1948	22	51	1962	21	49
1949	—	52	1963	22	51
1950	23	54	1964	23	54
1951	—	52	1965	25	58
1952	—	51	1966	28	66
1953	—	50	1967	27	63
1954	21	49	1968	29	68
1955	23	54	1969	32	75
1956	26	61	1970	34	80
1957	27	63	1971	33	77
1958	23	54	1972	34	80
1959	22	51	1973	34	80
1960	16	37	1974	34	80

<sup>1</sup>U.S. Department of Commerce (6).

Table 4. Estimated value of total output for food processing sector, Idaho, 1947-1974.

Year	Value of shipments <sup>1</sup> (million)	Estimated total output (million)
1947	\$179 <sup>2</sup>	\$175
1948	180	179
1949	187	187
1950	200	190
1951	210	200
1952	217	205
1953	225	212
1954	232	224
1955	240	232
1956	250	245
1957	263	257
1958	267 <sup>2</sup>	270
1959	288	287
1960	312	301
1961	337	324
1962	380	347
1963	384 <sup>2</sup>	362
1964	403	387
1965	428	413
1966	454	440
1967	461	475
1968	497	510
1969	558	549
1970	621	590
1971	673	650
1972	804	800
1973	960	960
1974	1,142	1,142

<sup>1</sup>U.S. Bureau of the Census (4)

<sup>2</sup>Polenske (3).

Millions of dollars

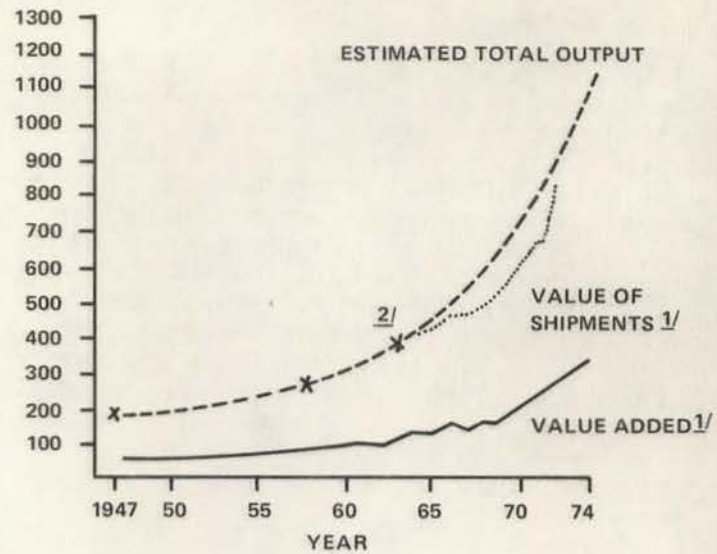


Fig. 4. Estimated value of total output for food processing sector, Idaho, 1947-1974.

<sup>1</sup>U.S. Bureau of the Census (4).

<sup>2</sup>Polenske (3).

Table 5. Estimated value of total output for other manufacturing sector, Idaho, 1947-1974.

Year	Value of shipments <sup>1</sup> (million)	Estimated total output (million)
1947	\$153 <sup>2</sup>	\$158
1948	—	195
1949	—	224
1950	—	250
1951	—	275
1952	—	300
1953	—	325
1954	—	345
1955	—	370
1956	—	387
1957	—	407
1958	421 <sup>2</sup>	420
1959	—	437
1960	—	453
1961	—	475
1962	—	500
1963	527 <sup>2</sup>	535
1964	571	570
1965	634	615
1966	704	660
1967	764	710
1968	840	765
1969	874	830
1970	953	920
1971	988	988
1972	1,017	1,024
1973	1,048	1,045
1974	1,079	1,065

<sup>1</sup>U.S. Bureau of the Census (4).

<sup>2</sup>Polenske (3).

Millions of dollars

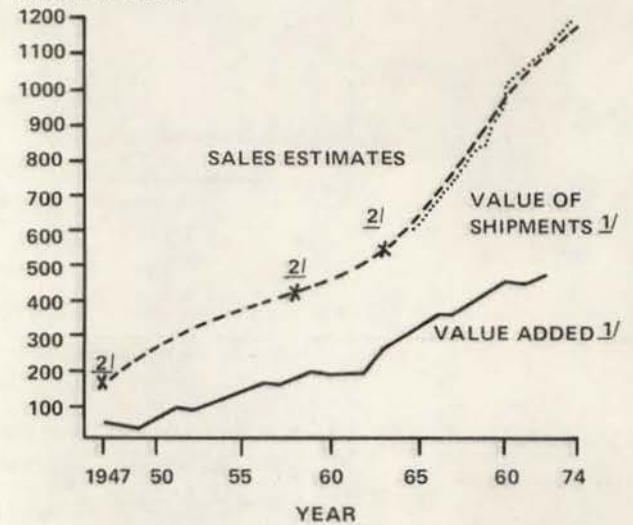


Fig. 5. Estimated value of total output for other manufacturing sector, Idaho, 1947-1974.

<sup>1</sup>U.S. Bureau of the Census (4).

<sup>2</sup>Polenske (3).

## Utilities — Sector 7

For the utilities sector, operating revenue data were available from 1956 to 1972 except for 1958, 1959 and 1960 (2). Polenske's estimates and the operating revenue data are on very different levels. Operating revenues would include some double counting if gas or electricity were sold between utilities within Idaho and then resold to the public. This would inflate values when operation revenues were used as estimates for total output. Large amounts of power are also imported for use in Idaho and these transactions may distort data on actual production. To avoid this potential problem, total output for utilities was estimated from Polenske's data for 1947, 1958 and 1963 using the slope of the data implied by the operating revenue data. Table 7 and Fig. 7 summarize these relationships and output estimates.

## Construction — Sector 8

Construction data for the state of Idaho were also very scarce. Total receipts from contract construction, available from 1956 to 1972, were obviously incomplete insofar as total construction was concerned. Data were available from 1949 to 1972 on the actual income earned from construction (5), so this information and Polenske's (3) estimates for total sales in 1947, 1958 and 1963 were used to estimate total output from construction. Since the construction sector tends to respond to general business conditions more readily than other sectors, these estimates probably contain the greatest relative error. There is little comparable data to determine accuracy. Table 8 and Fig. 8 show the data base and estimates of construction output.

## Finance, Insurance, Real Estate — Sector 9

Direct data series on total output for the finance, insurance and real estate (FIRE) sector were not available. However, total business receipts plus rent data related closely to the estimates by Polenske (3) for 1947, 1958 and 1963. Consequently, the slope of the line implied by totaling business receipts plus rent (6) was used to estimate total output for Sector 9. This procedure tends to smooth out short-run fluctuations but should represent long-run trends fairly well. Table 9 and Fig. 9 summarize the estimating procedure.

## Wholesale and Retail Trade — Sector 10

To avoid double counting problems, gross margins are used in input-output tables to represent total output for the trade sectors. Income data from the wholesale and retail trade sector are available since 1948 and were used to estimate gross margins over time. Income from wholesale and retail trade activity was closely related to Polenske's (3) gross margin estimates and patterns established by the two relationships were used to estimate gross margins from trade for the period. Income from trade activities showed a very regular and steady growth over time (6). This stability should provide a fairly good basis to make satisfactory estimates of gross margins resulting from trade. Table 10 and Fig. 10 present the income data used and estimated gross margins.

Table 6. Estimated value of total output for transportation and communications sector, Idaho, 1947-1974.

Year	Income generated by transportation <sup>1</sup> (million)	Estimated total output (million)
1947	\$—	\$ 93
1948	—	101
1949	—	109
1950	—	116
1951	—	124
1952	—	130
1953	—	135
1954	—	140
1955	—	146
1956	—	150
1957	82	154
1958	83	157
1959	87	160
1960	87	163
1961	88	166
1962	91	167
1963	94	168
1964	96	171
1965	93	174
1966	103	178
1967	104	183
1968	107	190
1969	116	197
1970	124	206
1971	142	217
1972	158	232
1973	179	254
1974	202	278

<sup>1</sup>U.S. Department of Commerce (6).

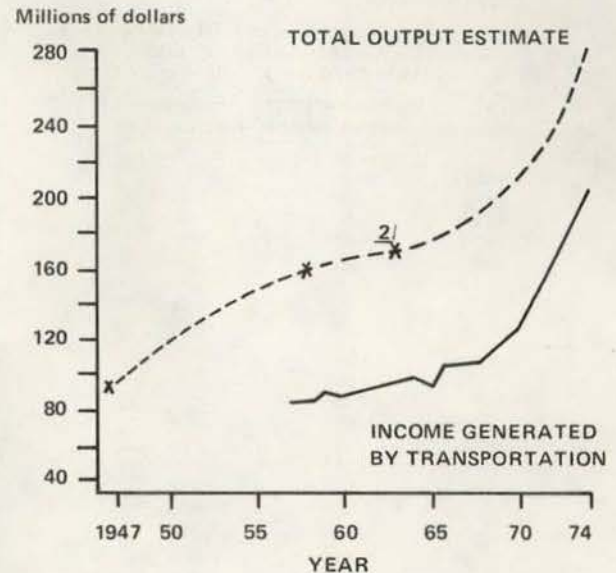


Fig. 6. Estimated value of total output for transportation and communications sector, Idaho, 1947-1974.<sup>1</sup>

<sup>1</sup>U. S. Department of Commerce (6).

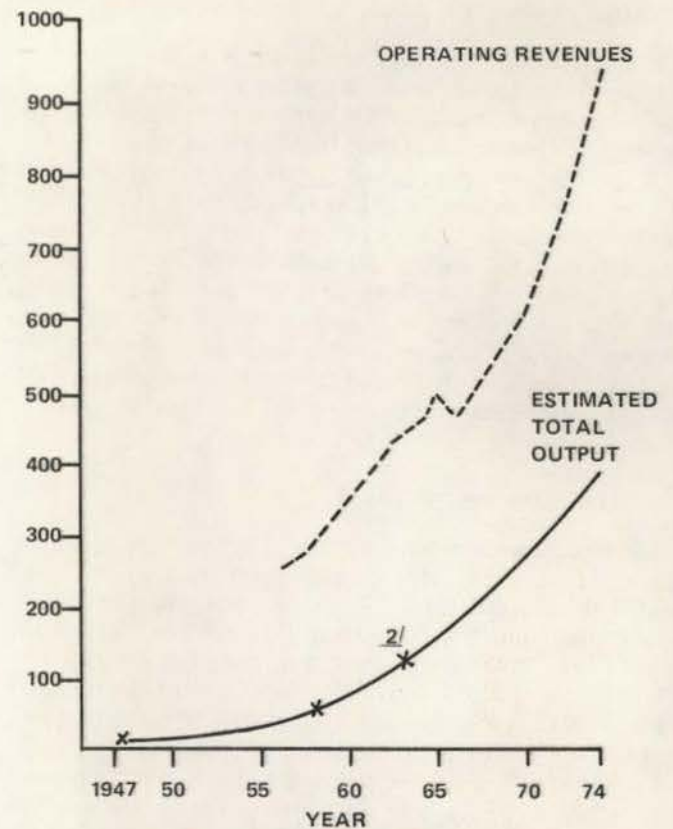
<sup>2</sup>Polenske (3).

**Table 7. Estimated value of total output for utilities sector, Idaho, 1947-1974.**

Year	Idaho utility receipts (operating revenues) <sup>1</sup> (million)	Estimated total output (million)
1947	\$130	\$ 16
1948	145	17
1949	150	18
1950	167	18
1951	180	20
1952	195	23
1953	210	25
1954	225	27
1955	240	32
1956	255	37
1957	270	49
1958	290	63
1959	312	59
1960	327	75
1961	380	83
1962	416	100
1963	431	116
1964	456	135
1965	494	155
1966	463	176
1967	493	200
1968	530	224
1969	570	245
1970	608	270
1971	674	300
1972	754	324
1973	843	350
1974	936	378

<sup>1</sup>Idaho Public Utilities Commission (2).

Millions of dollars



**Fig. 7. Estimated value of total output for utilities sector, Idaho, 1947-1974.<sup>1</sup>**

<sup>1</sup>Idaho Public Utilities Commission (2).

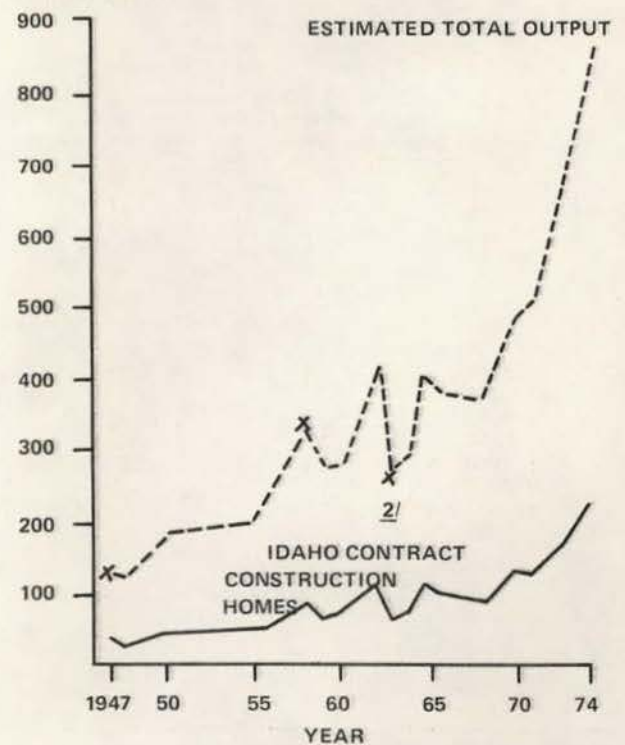
<sup>2</sup>Polenske (3).

**Table 8. Estimated value of total output for construction sector, Idaho, 1947-1974.**

Year	Idaho contract construction income <sup>1</sup> (million)	Estimated total output (million)
1947	\$ -	\$131
1948	34	130
1949	40	152
1950	47	179
1951	49	187
1952	50	190
1953	51	194
1954	52	198
1955	53	202
1956	62	236
1957	76	290
1958	85	337
1959	73	278
1960	76	290
1961	89	339
1962	111	423
1963	72	275
1964	80	305
1965	106	404
1966	101	385
1967	100	381
1968	98	373
1969	113	430
1970	127	484
1971	137	522
1972	164	625
1973	193	735
1974	227	864

<sup>1</sup>U.S. Department of Commerce (6).

Millions of dollars



**Fig. 8. Estimated value of total output for construction sector, Idaho, 1947-1974.<sup>1</sup>**

<sup>1</sup>U. S. Department of Commerce (6).

<sup>2</sup>Polenske (3).

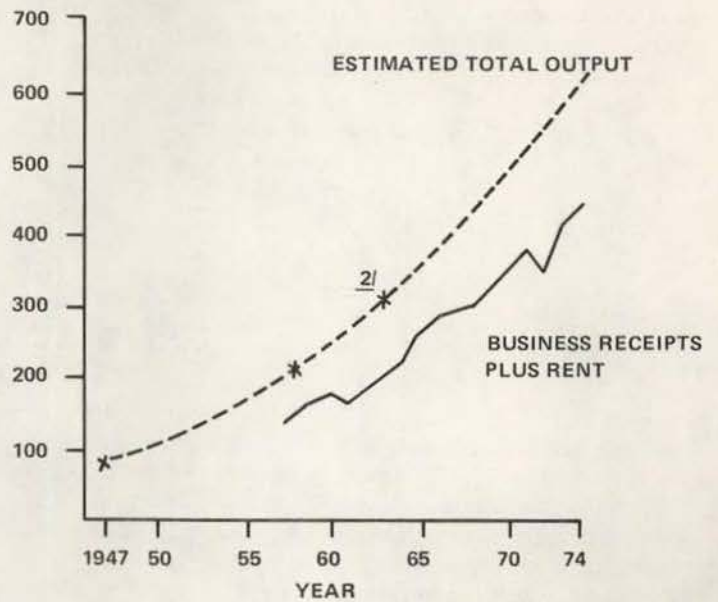


**Table 9. Estimated value of total output for finance, insurance and real estate sector, Idaho, 1947-1974.**

Year	Business receipts plus rent <sup>1</sup> (million)	Estimated total output (million)
1947	\$ 51	\$ 83
1948	62	94
1949	70	103
1950	75	114
1951	82	125
1952	90	135
1953	100	149
1954	107	160
1955	113	173
1956	125	187
1957	139	201
1958	153	216
1959	170	235
1960	177	251
1961	171	270
1962	187	290
1963	213	316
1964	223	335
1965	262	360
1966	285	385
1967	294	410
1968	307	440
1969	330	470
1970	358	500
1971	381	535
1972	352	575
1973	410	620
1974	450	625

<sup>1</sup>U.S. Department of Commerce (6).

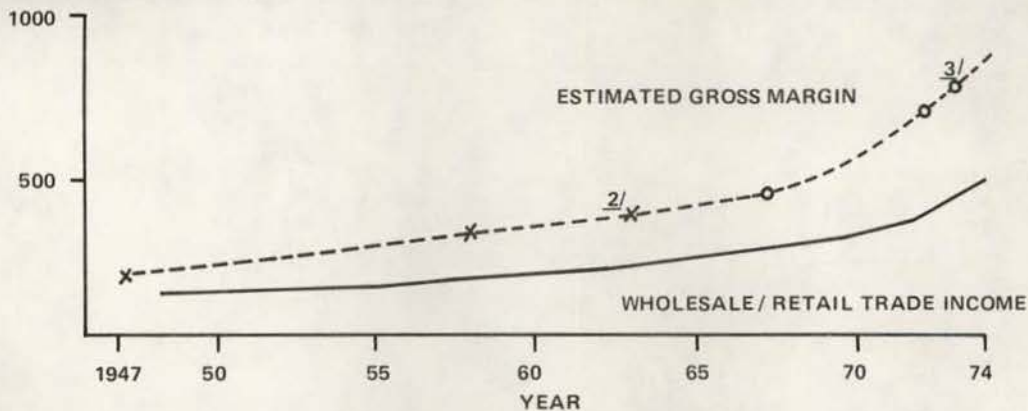
Millions of dollars



**Fig. 9. Estimated value of total output for finance, insurance and real estate sector, Idaho, 1947-1974.<sup>1</sup>**

<sup>1</sup>Business Income Tax Returns, Government Printing Office, 1971. U.S. Department of Commerce (6).

<sup>2</sup>Polenske (3).



**Fig. 10. Estimated value of gross margins, wholesale and retail trade sector, Idaho, 1947-1974.<sup>1</sup>**

<sup>1</sup>Polenske (3).

<sup>2</sup>Polenske (3).

<sup>3</sup>Estimated "gross margin" figures (20.33%).

**Table 10. Estimated value of gross margins for wholesale and retail trade sector, Idaho, 1947-1974.**

Year	Income from wholesale and retail trade <sup>1</sup> (million)	Estimated gross margin (million)	Year	Income from wholesale and retail trade <sup>1</sup> (million)	Estimated gross margin (million)	Year	Income from wholesale and retail trade <sup>1</sup> (million)	Estimated gross margin (million)
1947	\$130	\$179	1957	162	290	1966	252	400
1948	-	197	1958	171	295	1967	258	410
1949	-	200	1959	188	300	1968	267	490
1950	133	205	1960	193	310	1969	290	540
1951	-	200	1961	194	340	1970	315	595
1952	-	215	1962	205	350	1971	346	640
1953	-	247	1963	210	376	1972	383	700
1954	-	250	1964	221	380	1973	433	770
1955	154	260	1965	236	395	1974	489	847
1956	163	287						

<sup>1</sup>U.S. Department of Commerce (6).

## Services — Sector 11

Data were not directly available for total output for personal and business services in Idaho. However, data were available for income from selected services (6). Observations for income from selected services were closely related to but at a level lower than Polenske's total output estimates (3).

For projection purposes, selected service income data were used to estimate total output for the service sectors in Idaho between 1947 and 1974. The income data used and the estimated total output for the service sector are shown in Table 11 and Fig. 11.

## Gross Sector Output

The estimated outputs for Idaho's 11 sectors are summarized for each year in Table 12. Total annual output increased from \$1.420 billion in 1947 to \$7.294 billion in 1974 — a five-fold increase in 27 years. The continuously compounded rate of growth for total output was estimated at 6% per year. While all sectors contributed to this growth, they did not develop at the same rate. For example, mining output was estimated to increase from \$50 to \$80 million over the period, a growth rate of 1.7%. Utilities output was estimated to increase from \$16 to \$378 million, an 11.7% compounded growth rate. While these two sectors show extreme growth rates, little information about actual production or output is available for either.

Table 13 summarizes continuously compounded growth rates for Idaho sectors from 1947 to 1974. Outputs for

utilities, services, FIRE, other manufacturing, construction and food processing grew faster than the state average of 6%. Trade, crops, transportation and communications, livestock and mining grew at rates lower than the state average, basically because they were already well established in Idaho in 1947 and consequently were at a relatively higher base figure. In other words, these sectors had above average outputs in 1947 compared to the higher growth rate sectors (row one, Table 12).

Crop output increased from \$312 million in 1947 to \$1,019 million in 1974, a 326.6% change. Finance, insurance and real estate output increased from \$83 million in 1947 to \$625 million in 1974, a 753% change. However, crops increased more than finance, insurance and real estate in dollars of output.

Table 11. Estimated value of total output for service sector, Idaho, 1947-1974.

Year	Selected service income <sup>1</sup> (million)	Estimated total output (million)
1947	\$ 48	\$ 77
1948	49	78
1949	52	83
1950	56	90
1951	60	96
1952	66	106
1953	72	115
1954	76	122
1955	83	133
1956	91	146
1957	91	146
1958	73	117
1959	108	173
1960	118	189
1961	124	198
1962	134	214
1963	139	222
1964	150	240
1965	170	272
1966	181	290
1967	198	317
1968	213	341
1969	230	368
1970	254	406
1971	277	443
1972	309	494
1973	338	540
1974	368	585

<sup>1</sup>U.S. Department of Commerce (6).

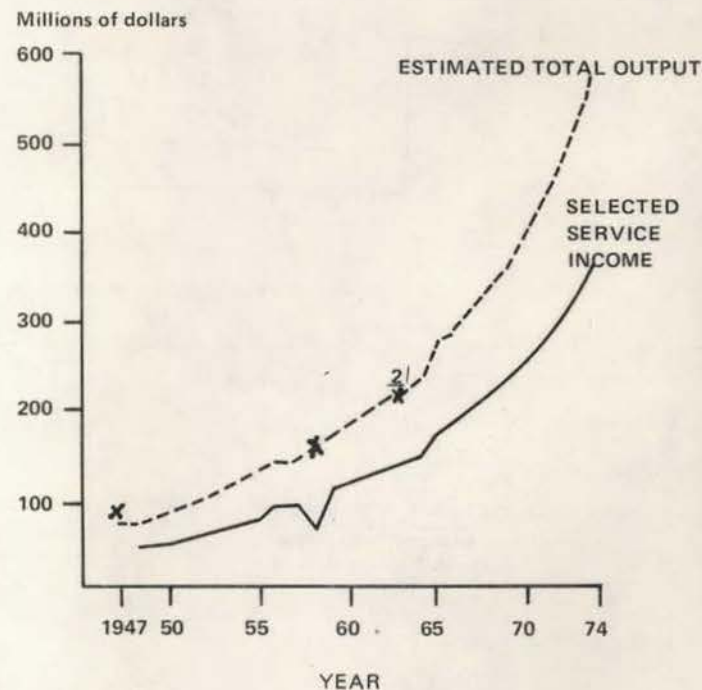


Fig. 11. Estimated value of total output for service sector, Idaho, 1947-1974.<sup>1</sup>

<sup>1</sup>U. S. Department of Commerce (6).

<sup>2</sup>Polenske (3).

Table 12. Estimated output by sector, Idaho, 1947-1973 (millions of dollars).

Year	Livestock	Crops	Mining	Food processing	Other manufacturing	Transportation		Construction	Finance		Trade	Service	Total
						Communications	Utilities		Real estate	Insurance			
1947	146	312	50	175	158	93	16	131	83	179	77	1,420	
1948	167	298	51	179	195	101	17	130	94	197	78	1,507	
1949	135	281	52	187	224	109	18	152	103	200	83	1,544	
1950	143	224	54	190	250	116	18	179	114	205	90	1,583	
1951	174	249	52	200	275	124	20	187	125	200	96	1,702	
1952	157	290	51	205	300	130	23	190	135	215	106	1,802	
1953	139	294	50	212	325	135	25	194	149	247	115	1,885	
1954	140	259	49	224	345	140	27	198	160	250	122	1,914	
1955	141	270	54	232	370	146	32	202	173	260	133	2,013	
1956	157	293	61	245	387	150	37	236	187	287	146	2,186	
1957	171	263	63	257	407	154	49	290	201	290	146	2,291	
1958	191	298	54	270	420	157	63	337	216	295	117	2,418	
1959	201	297	51	287	437	160	59	278	235	300	173	2,478	
1960	192	336	37	301	453	163	75	290	251	310	189	2,597	
1961	197	319	49	324	475	166	83	339	270	340	198	2,760	
1962	198	323	49	347	500	167	100	423	290	350	214	2,961	
1963	194	368	51	362	535	168	116	275	316	376	222	2,983	
1964	197	371	54	387	570	171	135	305	335	380	240	3,145	
1965	218	431	58	413	615	174	155	404	360	395	272	3,495	
1966	240	423	66	440	660	178	176	385	385	400	290	3,643	
1967	227	410	63	475	710	183	200	381	410	410	317	3,786	
1968	252	412	68	510	765	190	224	373	440	490	341	4,065	
1969	279	493	75	549	830	197	245	430	470	540	368	4,476	
1970	304	504	80	590	920	206	270	484	500	595	406	4,859	
1971	321	545	77	650	988	217	300	522	535	640	443	5,238	
1972	398	574	80	800	1,024	232	324	625	575	700	494	5,826	
1973	457	918	80	960	1,045	254	350	735	620	770	540	6,729	
1974	411	1,019	80	1,142	1,065	278	378	864	625	847	585	7,294	

Table 13. Growth rates of Idaho sector output.

Sector	Compound growth rate (%)
1. Utilities	11.7
2. Services	7.5
3. FIRE	7.5
4. Other manufacturing	7.3
5. Construction	7.0
6. Food processing	6.9
7. Trade	5.7
8. Crops	4.3
9. Transportation and communication	4.1
10. Livestock	3.9
11. Mining	1.7
State (overall)	6.0

### Personal Income and Sector Output

Since personal income in Idaho comes mostly from wages and salaries, comparing gross sector output with personal income is a way to evaluate sector output estimates. Table 14 summarizes personal income data and gross sector output for Idaho from 1957 to 1973. Personal income data are available from the Survey of Current Business (Appendix Table 1). These data are also presented in Fig. 12 and show that income and output data are closely related. Fig. 13 presents personal income as a function of total sector output. The two data sets are closely related with a correlation coefficient of .987. The slope of this relationship (Fig. 13) indicates that for every dollar of expansion of output there is a 46 cent increase in personal income. In the aggregate, estimated gross sector output for Idaho and personal income are related as expected.

If Idaho's population increases and human welfare in terms of income is not to fall, then sector output must also increase, since personal income is closely related to output. Apparently zero economic growth in terms of output also means zero personal income growth.

### Manufacturing Income and Output

The manufacturing sector of Idaho grew at an above average rate between 1947 and 1974. Income from manufacturing (Appendix Table 1) and output estimates can also be compared to evaluate the underlying relationship. Table 15 presents manufacturing income and output estimates from 1957 to 1973. Again they are closely related (Fig. 14) with a .996 correlation coefficient. Each additional dollar of output was associated with 22.5 cents of income. Manufacturing is not as important to Idaho as to many states; only about 15.6% of personal income in 1973 came from the manufacturing sector. This is an increase from 1956 when only 12.3% of personal income was earned in manufacturing.

Food processing is an important aspect of total manufacturing in Idaho. Food processing output was estimated at \$1,142 million, or 51.7% of total manufacturing output in 1974. To evaluate the changing role of Idaho's agriculture, the livestock, crop and food processing sectors are grouped as the agribusiness sector and are evaluated in comparison to total state output. As was shown in Table 13, crop and livestock output were somewhat below the state average for compound growth rates while food processing was above average.

**TOTAL OUTPUT & INCOME**  
(Billions of dollars)

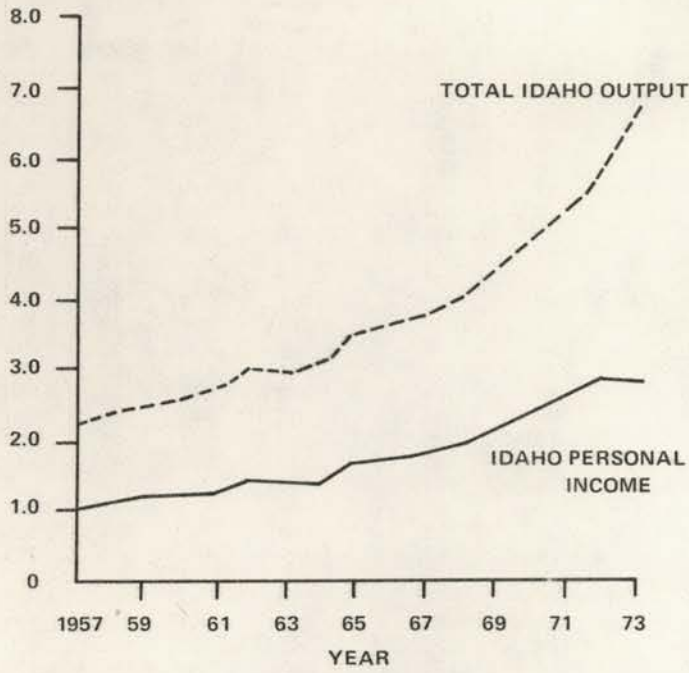


Fig. 12. Idaho personal income and gross sector output, 1957-1973.

Table 14. Personal income and sector output compared, Idaho, 1957-1973.

Year	Personal income (million)	Gross sector output (million)
1957	\$1,042	\$2,291
1958	1,091	2,418
1959	1,184	2,478
1960	1,204	2,597
1961	1,238	2,760
1962	1,354	2,961
1963	1,367	2,983
1964	1,397	3,145
1965	1,661	3,495
1966	1,721	3,643
1967	1,825	3,786
1968	1,898	4,065
1969	2,149	4,476
1970	2,364	4,859
1971	2,592	5,238
1972	2,844	5,826
1973	2,828	6,729

**PERSONAL INCOME**  
(Billions of dollars)

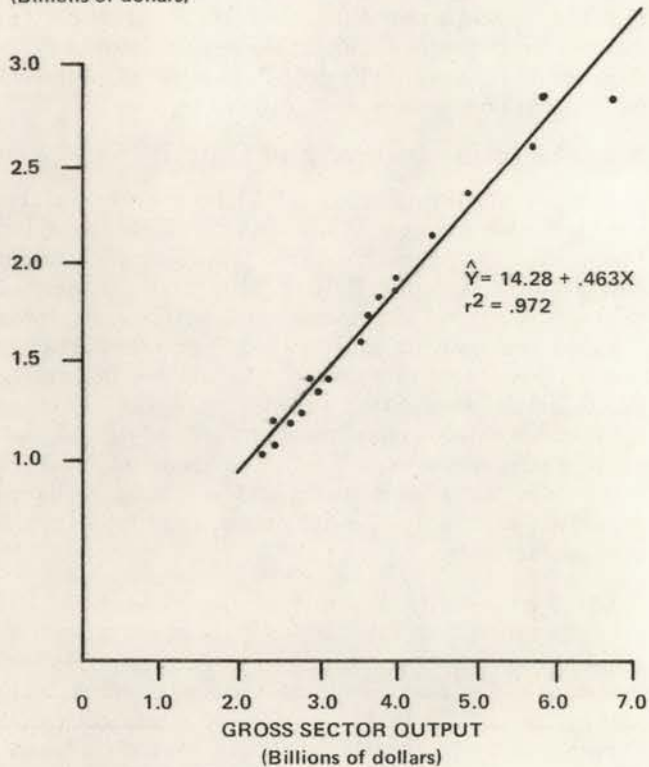


Fig. 13. Personal income as a function of gross sector output, Idaho, 1957-1973.

**MANUFACTURING INCOME**  
(Millions of dollars)

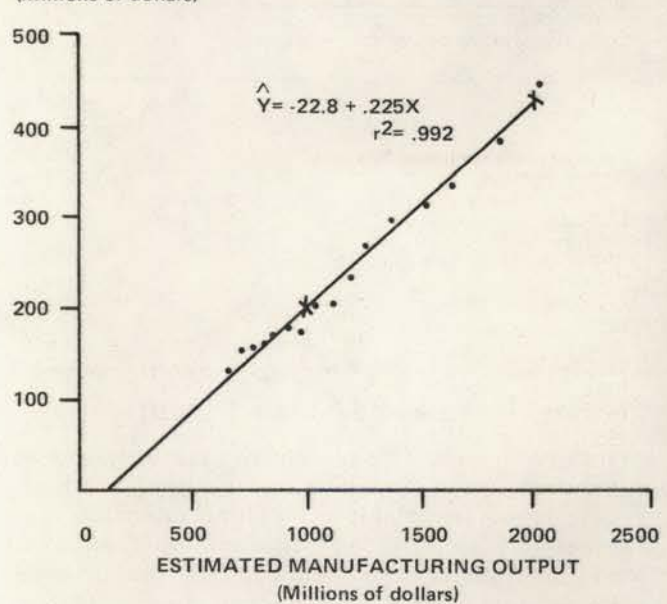


Fig. 14. Manufacturing income as a function of output, Idaho, 1957-1973.

# The Agribusiness Sectors

Agricultural production and food processing in Idaho have been growing but not at as fast a rate as some of the other sectors. In 1947, the output from livestock, crops and food processing totaled an estimated \$633 million. By 1974, the estimated total was \$2,572 million. Table 16 summarizes agribusiness sector output estimates from 1947 to 1974. The overall compound annual growth rate for all agribusiness sectors is 5.2% per year.

Table 17 summarizes the continually changing role of agriculture in Idaho's economy from 1947 to 1974. For example, farming went from a high of 32% of total state output in 1947 to 20% in 1974. Agribusiness produced 44.6% of total state output in 1947, but declined to 35.3% in 1974.

Farming (livestock and crop output) represented over 72% of agribusiness in 1947 and only 55% in 1974, while food processing increased from 27 to 44% of total agribusiness activity.

The agribusiness sectors have continually grown, but relatively are not as important as they were 30 years ago. Where farming and food processing made up 44.6% of the state's output in 1947, they had dropped to 35.3% in 1974. Food processing output in 1974 was nearly as important as livestock and crops together — \$1,142 million compared to \$1,430 million (Table 16). Total agribusiness output in 1974 (\$2,572 million) was 35.3% of the estimated value of total state output (\$7,294 million).

## Farm Income and Output

To a large degree, farm output (livestock output plus crop output), determines farm income for any given period of time. Fig. 15 presents estimated farm output and farm income data from 1957 to 1973. As would be expected, these two series tend to move together. Fig. 16 presents farm income as a function of farm output. Statistical analysis indicates these two variables are closely related, with a correlation coefficient of .967. Farm income increased 42 cents for every \$1 increase in estimated farm output from 1957 to 1973. This return per dollar of output compares favorably with the state (46 cents per dollar of output) and all manufacturing (22.5 cents per dollar of output).

Farm output and income data (Fig. 15) show steady increases over most of the period from 1957 to 1973. However, increases in 1973 were high relative to 1972 and the previous period because of sharply higher prices for

Table 15. Total manufacturing income and output, Idaho, 1957-1974.

Year	Manufacturing income <sup>1</sup> (million)	Manufacturing output (million)
1957	\$ 128	\$ 664
1958	133	690
1959	154	724
1960	154	754
1961	159	799
1962	169	847
1963	178	897
1964	174	957
1965	202	1,028
1966	222	1,100
1967	236	1,185
1968	265	1,275
1969	297	1,379
1970	315	1,510
1971	336	1,638
1972	386	1,824
1973	441	2,005

<sup>1</sup>U.S. Department of Commerce (6).

Table 16. Idaho agribusiness sectors output, 1947-1974 (millions of dollars).

Year	Livestock	Crops	Subtotal farming	Food processing	Total agribusiness
1947	\$ 146	\$ 312	\$ 458	\$ 175	\$ 633
1948	167	298	465	179	644
1949	135	281	416	187	603
1950	143	224	367	190	557
1951	174	249	423	200	623
1952	157	290	447	205	652
1953	139	294	433	212	645
1954	140	259	399	224	623
1955	141	270	411	232	643
1956	157	293	450	245	695
1957	171	263	434	257	691
1958	191	298	489	270	759
1959	201	297	498	287	785
1960	192	336	528	301	829
1961	197	319	516	324	840
1962	198	323	521	347	868
1963	194	368	562	362	924
1964	197	371	568	387	955
1965	218	431	649	413	1,062
1966	240	423	663	440	1,103
1967	227	410	637	475	1,112
1968	252	412	664	510	1,174
1969	279	493	772	549	1,321
1970	304	504	808	590	1,398
1971	321	545	866	650	1,516
1972	398	574	972	800	1,772
1973	457	918	1,375	960	2,335
1974	411	1,019	1,430	1,142	2,572
Compound growth rates	3.9%	4.5%	4.2%	7.1%	5.2%

Table 17. Farming, food processing, agribusiness and gross state output compared, 1947-1974.

Year	Farming as a percent of agribusiness	Food processing as a percent of agribusiness	Farming as a percent of state output	Agribusiness as a percent of gross state output
1947	72.4	27.6	32.1	44.6
1948	72.2	27.8	30.9	42.7
1949	69.0	31.0	26.9	39.1
1950	65.9	34.1	23.2	35.2
1951	67.9	32.1	24.9	36.6
1952	68.6	31.4	24.8	36.2
1953	67.1	32.9	23.0	34.2
1954	64.0	36.0	20.8	32.5
1955	63.9	36.1	20.4	31.9
1956	64.7	35.3	20.6	31.8
1957	62.8	37.2	18.9	30.2
1958	64.4	35.6	20.2	31.4
1959	63.4	36.6	20.1	31.7
1960	63.7	36.3	20.3	31.9
1961	61.4	38.6	18.7	30.4
1962	60.0	40.0	17.6	29.3
1963	60.8	39.2	18.3	31.0
1964	59.5	40.5	18.1	30.4
1965	61.1	38.9	18.6	30.4
1966	60.1	39.9	18.2	30.3
1967	57.3	42.7	16.8	29.4
1968	56.6	43.4	16.3	28.9
1969	58.4	41.6	17.2	29.5
1970	57.8	42.2	16.6	28.8
1971	57.1	42.9	16.5	28.9
1972	54.9	45.1	16.7	30.4
1973	58.9	41.1	20.4	34.7
1974	55.6	44.4	19.6	35.3

FARM INCOME & OUTPUT  
(Millions of dollars)

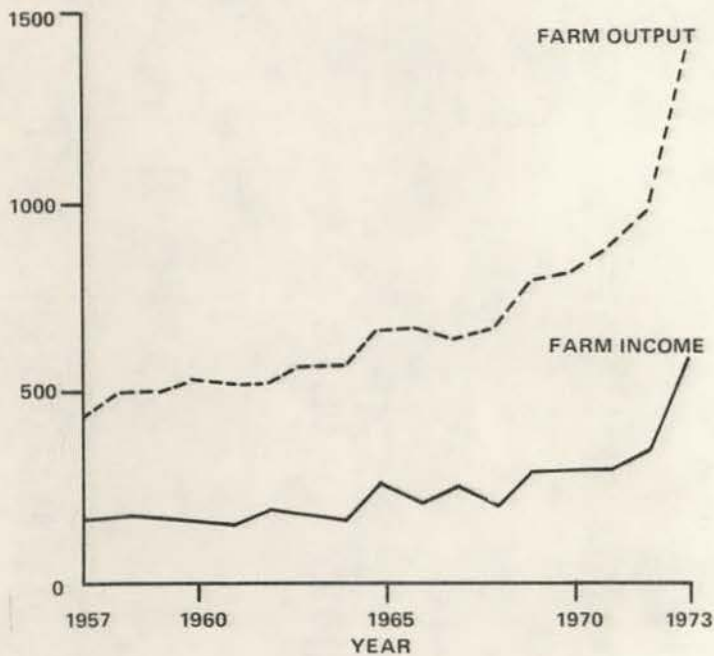


Fig. 15. Farm income and estimated output, Idaho, 1957-1973.

FARM INCOME  
(Millions of dollars)

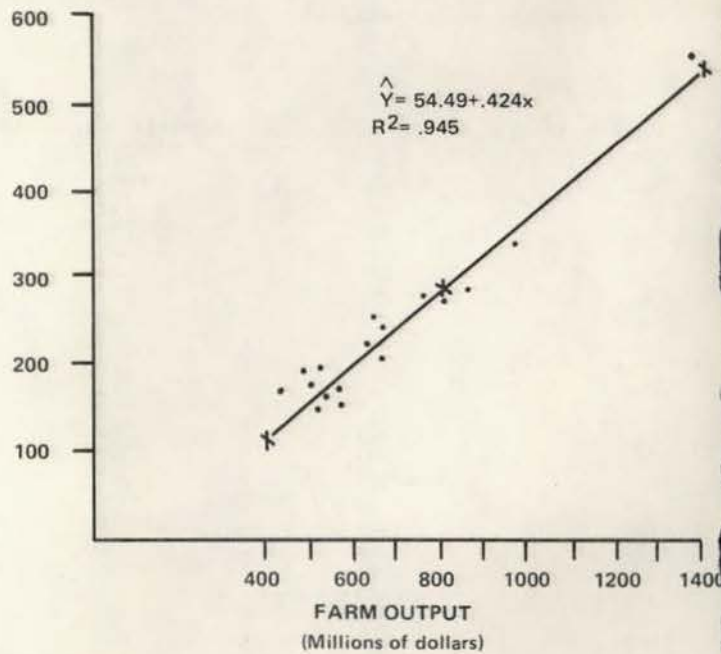


Fig. 16. Farm income as a function of farm output, Idaho, 1957-1973.

Table 18. Sector growth rate and unexplained output variation by sectors, Idaho, 1947-1973.

Sector	Average rate of growth	Output variation
	(million/year)	unexplained by trend (percent)
Livestock	\$13.1	25
Crops	17.6	40
Mining	1.1	42
Food processing	26.2	23
Other manufacturing	32.7	6
Transportation/Comm	5.1	8
Utilities	13.3	11
Construction	19.6	19
FIRE	20.1	6
Trade	20.6	14
Services	17.1	11

many agricultural commodities, especially wheat and livestock. Since 1973 and 1974 many prices have returned to more normal levels.

### Sector Output and Stability

The 11 sectors described in this analysis have all been

growing, but at very different rates. In addition, output levels for certain sectors are much more variable than for others. Table 18 summarizes the average increase in output by sectors in dollar terms, and the unexplained variation for each sector allowing for a simple linear increase in annual production.

The crop sector had the highest farm sector rate of growth in output over the 1947 to 1973 period — some \$17.5 million per year compared to \$13.1 million per year for livestock. Food processing increased at an average annual rate of \$26.2 million per year, second only to other manufacturing at \$32.7 million per year.

Output variation unexplained by a linear trend variable is 25% in livestock, 40% in crops and 23% in food processing. Except for mining and construction, output variation in other sectors was relatively low (from 6 to 14%). Since agriculture tends to be influenced by uncertain weather and price factors, these results are not surprising. Certainly output rates of growth (in terms of dollars per year) for agriculture compare favorably with the other sectors of the economy even though output levels are not nearly as stable.

## Summary

- Production or output information for individual sectors of Idaho's economy is difficult to obtain, even for sectors where an effort is made to collect such information.
- Total output for nongovernmental sectors in Idaho was estimated to expand at a 6% compound growth rate from 1947 to 1974.
- Sector outputs and growth rates are estimated as follows:

Sector	1947	1974	Growth rate (%)	Rank	
	output (millions)	output (millions)		1947	1974
Livestock	\$ 146	\$ 411	3.9	2	8
Crops	312	1,019	4.3	1	3
Mining	50	80	1.7	10	11
Food processing	175	1,142	6.9	4	1
Other manufacturing	158	1,065	7.3	5	2
Transportation & communications	93	278	4.1	7	10
Utilities	16	378	11.7	11	9
Construction	131	864	7.0	6	4
Finance, insurance, real estate	83	625	7.5	8	6
Trade	179	847	5.7	3	5
Services	77	585	7.5	9	7
State	\$1,420	\$7,294	6.0		

- Personal income and estimated output are directly related:

	\$ income/\$ output	Correlation coefficient
State aggregate	.463	.986
Manufacturing	.225	.996
Farming	.424	.972

- Agribusiness output by sector shows the rapid growth of food processing:

	1947 output (millions)	1974 output (millions)
Livestock	\$146	\$ 411
Crops	312	1,019
Food processing	175	1,142
Total Agribusiness	\$633	\$2,572

- Agribusiness has rather high unexplained output variation:

Sector	Rate of output growth (million/year)	Unexplained output variation
Livestock	\$13.1	25%
Crops	17.6	40%
Food processing	26.2	23%

- In 1974, the three agribusiness sectors comprised 36.7% of the 11 sector output considered for Idaho as a whole.
- Zero growth in terms of economic output implies zero growth in terms of personal income!



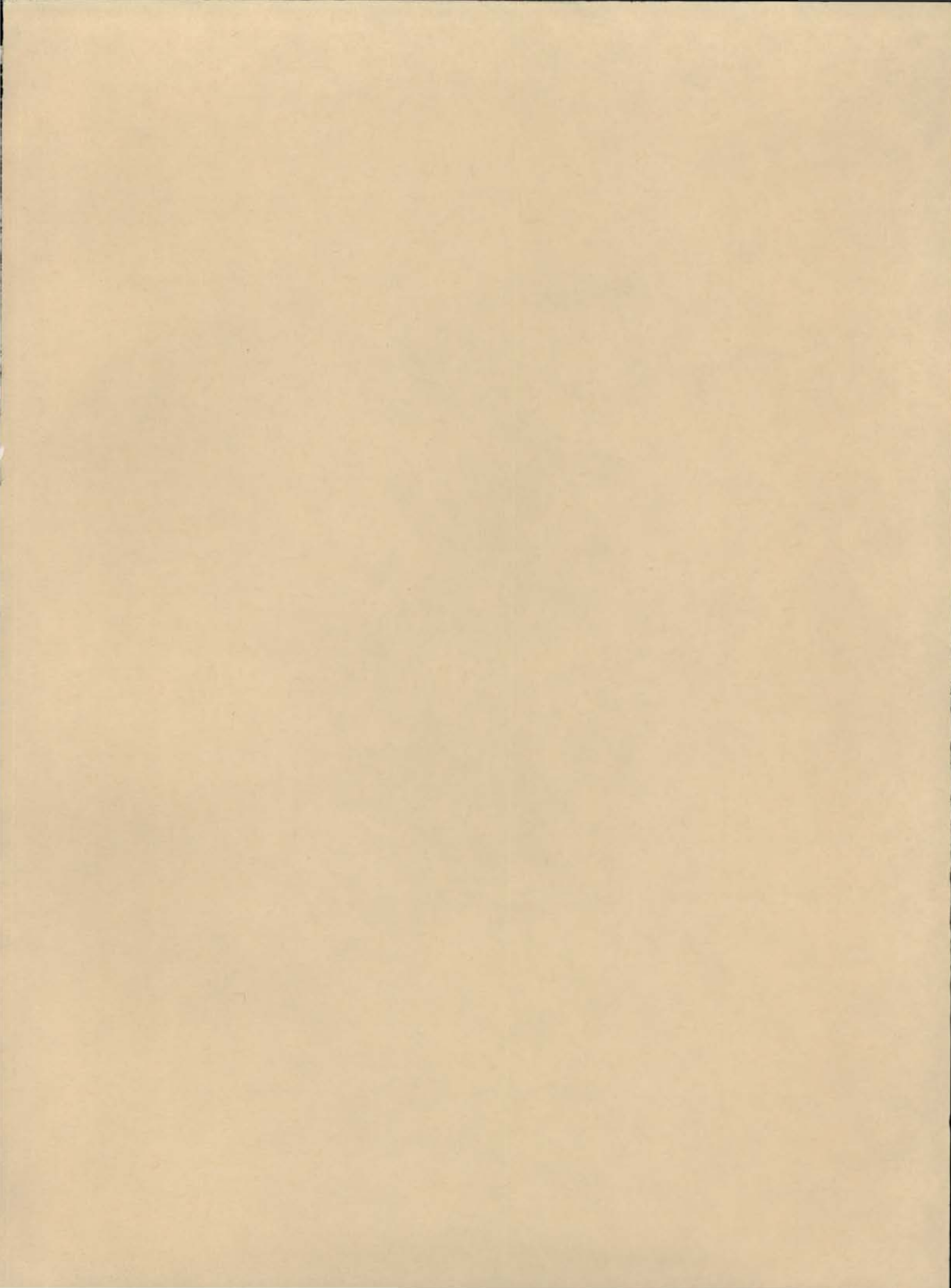
Appendix Table 1. Major sources of personal income for Idaho, 1957-1973 (millions of dollars).<sup>1</sup>

Year	Government disbursements				Mining	Contract construction	Manufacturers	Wholesale trade	F.I.R.E.	Trans. and Comm.	Services	Other	Rent	Total
	Farm	Federal	State	Transfer payments										
1957	169	34	68	71	27	76	128	162	29	82	91	2	103	1,042
1958	179	37	78	82	23	85	133	171	31	83	73	2	114	1,091
1959	174	37	84	91	22	73	154	188	34	87	108	2	130	1,184
1960	163	41	88	94	16	76	154	193	36	87	118	2	136	1,204
1961	148	46	94	107	21	89	159	194	37	88	124	2	129	1,238
1962	181	43	104	109	21	111	169	205	40	91	134	2	144	1,354
1963	172	50	109	114	22	72	78	210	42	94	139	2	164	1,367
1964	151	52	116	115	23	80	174	221	44	96	150	2	173	1,397
1965	254	57	126	124	25	106	202	236	49	93	170	8	211	1,661
1966	208	63	134	136	28	101	222	252	53	103	181	8	232	1,721
1967	222	67	150	160	27	100	236	258	56	104	198	9	238	1,825
1968	194	71	156	181	29	98	265	267	60	107	213	8	249	1,898
1969	277	77	178	195	32	113	297	290	65	116	230	9	270	2,149
1970	278	87	221	237	34	127	315	315	69	124	254	10	293	2,364
1971	289	96	250	283	33	137	336	346	77	142	277	11	315	2,592
1972	340	110	263	315	34	164	386	383	87	158	309	13	282	2,844
1973	560	120	277	359	34	193	441	433	101	179	338	13	310	3,358

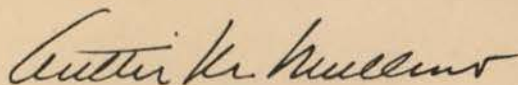
<sup>1</sup>U. S. Department of Commerce (6).

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Auttis M. Mullins  
Dean, College of Agriculture  
University of Idaho



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