



# Changes in Farm Financial Performance and Structure Between 1997 and 2002

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In this article we examine changes in the financial performance and structure of a panel or group of commercial farm businesses in Iowa between January 1, 1997 and January 1, 2002. This period was a challenging one for most farm families as well as farm leaders and public officials. Specifically, farm families experienced:

- The introduction, in 1996, of a farm bill that significantly altered the government's role in income support and supply control.
- Two years, 1996 and 1997, of unprecedented farm income.
- An economic crisis in two major importing regions — Asia and Russia — that adversely affected U.S. agricultural trade.
- A dramatic collapse in 1998 and 1999 of hog prices.
- A recurrence of livestock losses in late 2001.
- A series of ad hoc subsidies provided to farmers to compensate for the 1996 Farm Bill's inability to adjust supply in response to longer-term price declines.
- Continuing consolidation and integration of farms and agribusinesses throughout the agricultural sector.
- Food safety and food preference problems that adversely impacted trade in certain livestock and grain products.
- Volatility in energy and fertilizer costs.
- Increasing pressure from the government and the general public for farmers to improve their environmental performance.
- A severe economic downturn or recession in the U.S.

- The attacks on the U.S. in September 11, 2001 and the subsequent war on terrorism.

Given all of these economic shocks, how have farm families in Iowa fared since 1997? The following analysis provides some insight into these critical issues.

## Measuring Financial Performance

The data used in this study are obtained from 557 members of the Iowa Farm Business Association (IFBA). The panel is probably fairly representative of commercial family farm businesses.

Calendar year summaries for major commodity prices and yields during this period are shown in Table 1.

USDA's nominal and deflated net farm income (NFI) estimates for the Iowa agricultural sector from 1980-2001 are shown in Figure 1. Also

*continued on page 3*

**Table 1. Iowa Commodity Prices, Yields, & Government**

	Payments, 1997-2001				
	1997	1998	1999	2000	2001*
<b>Corn</b>					
Price (\$/bu.)	2.29	2.13	1.80	1.78	1.81
Yield (bu./a.)	138	145	149	145	146
<b>Soybeans</b>					
Price (\$/bu.)	7.32	5.85	4.45	4.67	4.39
Yield (bu./ac.)	46	48	45	43	44
<b>Government payments (\$billion)</b>					
	0.71	1.17	2.06	2.30	1.97
<b>Barrows &amp; Gilts</b>					
Price (\$/cwt.)	55.10	36.50	32.50	44.70	47.10
<b>Steers &amp; Heifers</b>					
Price (\$/cwt.)	66.70	61.90	65.10	70.00	73.50
<b>All Milk</b>					
Price (\$/cwt.)	13.40	15.40	13.30	11.75	12.70

Source: Iowa Ag Statistics  
\*Preliminary

Changes in Farm Financial Performance and Structure Between 1997 and 2002, continued from page 2

shown is a trend line fit to deflated NFI between 1984 and 2000. Two facts are evident:

- NFI in Iowa has been particularly volatile over the past decade.
- There has been no real increase in NFI for the Iowa agricultural sector since 1984.

**Table 2. 2001 Descriptive Information**

	ACI Quintiles (%)				
	Top 20	Top 20 to 40	Middle 20	Lower 60 to 80	Bottom 20
Total Acres, Operator Share	1,011	703	627	681	634
Farm Types:					
Cash Grain	43.8%	51.4%	37.8%	48.2%	34.2%
Grain-Livestock	17.9%	17.1%	26.1%	27.7%	29.7%
Hog	24.1%	20.7%	22.5%	7.1%	18.0%
Beef	8.0%	6.3%	9.0%	13.4%	9.9%
Dairy	1.8%	1.8%	1.8%	0.9%	0.0%
Mixed	4.5%	2.7%	2.7%	2.7%	8.1%
Operator Age	48.8	50.3	51.3	50.9	53.0

Source: 2001 IFBA Data.

What isn't apparent from aggregate income data is how individual farming operations have been affected by the factors that underlie the volatility in farm income. In order to gain insight into the farm-level impacts we turn to the IFBA panel.

In this study, we divide the farmers in the IFBA panel into five equal groups (quintiles) based on their average financial performance from 1997-2001. The specific measure that we use to classify financial performance is:

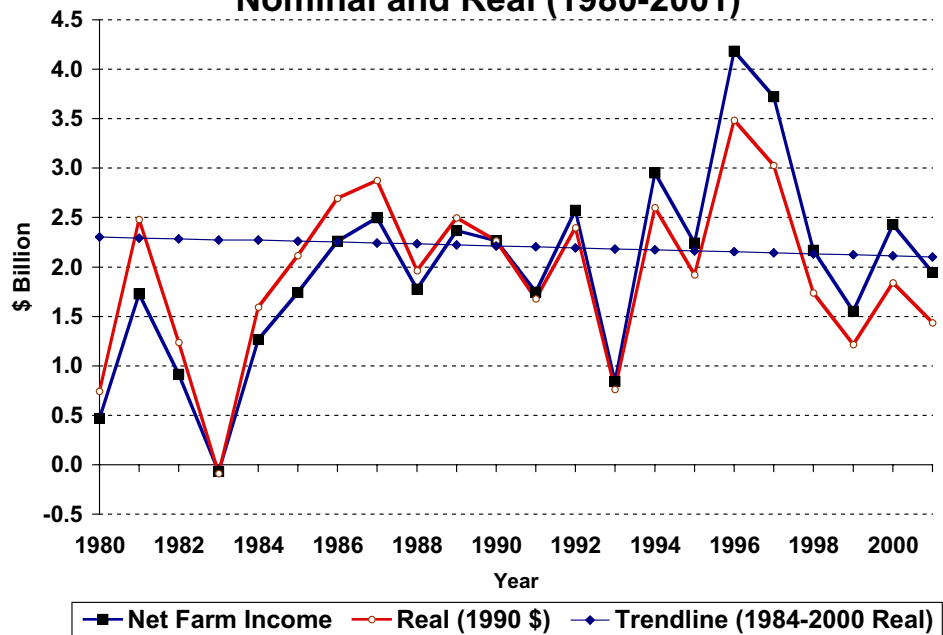
$$ACI = NFI + DEP + OFI - FL$$

- Where:
- ACI = adjusted cash income
  - NFI = accrual net farm income
  - DEP = depreciation
  - OFI = off-farm income
  - FL = family living expenditures

For each farm in the panel, we calculate average ACI for the five-year period. We then rank the

Figure 1.

### Iowa Net Farm Income Nominal and Real (1980-2001)



Source: USDA.

panel farms from largest to smallest ACI and divide them into five groups of approximately 111 farmers per group. Because each group or quintile consists of the same farms during each of the five years included in the study, we are able to follow changes in average financial performance and structure.

The financial measure that we have chosen to rank farm performance is a little unusual. Whereas NFI measures the profitability (and efficiency) of the farm business, ACI measures

Changes in Farm Financial Performance and Structure Between 1997 and 2002, continued from page 3

the financial capacity of the farm household. If ACI is positive, funds are available to pay income taxes, principal on term debt, replace capital assets or expand. If ACI is negative, the farm business must cover the shortfall either through asset liquidation, increased borrowing or equity infusion from family members or investors. Since we are interested in the overall financial impacts of the past five years on farm families, ACI provides a more comprehensive performance measure than does NFI.

**Descriptive Information**

Several descriptive characteristics of farms, as of 2001, are shown in Table 2. Some key changes since 1997 are:

- Farms in all five groups have increased the operator's share of their total land base (owned and rented). Since all farms in the panel increased land, the added acres must have come from farms not represented by this group. Labor usage declined across all ACI groups.
- Changes in farm types are also apparent. We see an increase in cash grain farms and a decrease in grain-livestock operations. It would appear that the grain-livestock farms are dropping their livestock enterprises in favor of cash

grain production. A similar trend is apparent for pork producers, especially those with lower ACI rankings.

**Balance Sheet**

In Table 3 we present average beginning-year balance sheets for 2001 for each of the ACI quintiles. Here are some key changes in asset

and liability structure that have occurred over the preceding five years:

- Farms in the top two quintiles, those with average ACI levels in the upper 40 percent, show an increase in short term assets.
- Farms in the lower three quintiles liquidated short-term assets over this period.
- All groups show a reduction in breeding livestock.
- Machinery and equipment investments increased for all groups; however, there was a significantly greater increase in the two highest ranking ACI groups.
- Land investments also increased for all groups during this period. Again, the greatest increases were in the farms ranking in the upper 40 percent ACI.
- Farms in the top 20 percent increased land operated by nearly a third more than farms in the next lower quintile. However, the farms in the top 20-40 percent group increased their long term asset values more than the top 20 percent. This would suggest the top group is likely expanding land operated through leasing rather than purchase.

*continued on page 4*

**Table 3. Beginning Balance Sheet, January 1, 2002**

	ACI Quintiles (%)				
	Top 20	Top 20 to 40	Middle 20	Lower 60 to 80	Bottom 20
<b>Farm Assets</b>					
Short-term assets	\$411,997	\$212,551	\$193,424	\$177,164	\$165,782
Intermediate assets	\$276,484	\$192,073	\$151,737	\$150,630	\$156,490
Land and improvements	782,798	535,922	409,379	374,389	408,637
Total assets	\$1,471,279	\$940,546	\$754,540	\$702,184	\$730,909
<b>Farm Liabilities</b>					
Short-term debt	115,501	81,491	77,640	93,576	106,565
Intermediate term debts	54,088	48,709	36,501	41,366	38,485
Long-term debts	191,477	118,340	115,522	92,145	102,362
Total liabilities	\$361,065	\$248,540	\$229,662	\$227,087	\$247,412
<b>Working capital</b>	\$296,496	\$131,060	\$115,784	\$83,588	\$59,216
<b>Farm Net Worth</b>	\$1,110,214	\$692,006	\$524,877	\$475,097	\$483,497
Current Ratio	3.57	2.61	2.49	1.89	1.56
Debt/Asset Ratio	24.5%	22.1%	28.2%	24.6%	25.0%
Net worth change for 2001	\$38,475	\$37,066	(\$3,671)	(\$5,838)	\$2,543

Source:2001 IFBA Data.

Changes in Farm Financial Performance and Structure Between 1997 and 2002, continued from page 4

- Overall, market value of assets increased for all groups.
- Short-term liabilities also increased over this time for all groups. The largest increase in absolute terms came in operating notes and accounts payable.
- Changes in intermediate liabilities were somewhat mixed across the various quintiles.
- Long term or real estate debt also increased for all groups — the bottom quintile had the smallest increase. The top 20-40 percent group increased long term debt the most both in absolute and percentage terms.
- Total liabilities increased across the board with the greatest increase coming in the 20-40 percent ACI quintile.
- Net worth increased sharply over this period for farmers in the two upper groups — with an average gain of approximately 16 percent. The greatest increases occurred between 2000 and 2001.
- Farms in the middle quintile also experienced a gain in net worth, but at a much more modest level.
- The average change in net worth for farms in the bottom two quintiles, however, was negative. Nonetheless, farms in the bottom 20 percent only lost, on average, 5 percent of their net worth over the five years.
- Livestock sales changes were also mixed. The upper two groups show an increase in livestock sales — primarily due to beef receipts. The lower two quintiles experienced declines in livestock sales.
- Expenses increased for the top four groups. The bottom group experienced a reduction in expenses particularly in purchased feed.
- Rent, interest and depreciation, in general, increased for all groups. This is consistent with the expansion trends noted in the balance sheet.
- Net farm income declined for all groups by roughly the same absolute amount. However in percentage terms, the decline was significantly higher for the lower ranking farm businesses and was significantly lower for the top 20 percent.
- Considerable variability in income occurred over the 1997 to 2001 time period. Income declined sharply in both NFI and ACI from 1997 to 1998 with the recovery in 1999 and 2000 as the supplementary government payments kicked in and livestock prices improved.

continued on page 6

**Income Statement**

The 2001 income statements are given in Table 4. Some important changes over the period include:

- Total crop income showed mixed results across the five groups over this period. This is primarily due to the fact that government and insurance payments increased to more

**Table 4. Average Income Statement, 2001<sup>1/</sup>**

	ACI Quintiles (%)				
	Top 20	Top 20 to 40	Middle 20	Lower 60 to 80	Bottom 20
<b>Income</b>					
Crop Income	\$290,265	\$190,996	\$166,519	\$174,793	\$160,192
Livestock Income	\$328,623	\$126,863	\$130,135	\$108,692	\$144,249
Total Farm Income	\$618,889	\$317,859	\$296,655	\$283,485	\$304,44
<b>Expenses</b>	\$514,013	\$278,346	\$269,514	\$267,148	\$292,859
<b>Accrual Net Farm Income</b>	\$104,876	\$39,513	\$27,140	\$16,336	\$11,582
+ Depreciation	\$38,791	\$24,543	\$20,592	\$20,134	\$20,001
+ Off Farm Income	22,992	22,293	12,146	9,502	8,899
- Family living expenses	48,625	40,333	34,440	34,224	44,558
<b>Adjusted Cash Income (ACI)</b>	\$118,033	\$46,015	\$25,438	\$11,748	(\$4,076)

<sup>1/</sup> Accrual statement, adjusted for inventory changes.

Source: 2001 IFBA Data.



*Changes in Farm Financial Performance and Structure Between 1997 and 2002, continued from page 5*

- The top two groups had positive ACI and NFI for all years over the period. The lowest ranking group had negative ACI for two out of the five years, in 1998 and 2001.
  - We also note that there was an average increase in off-farm income and a decrease in family living expenditures during this period for most groups.
  - ACI decreased similarly in absolute terms across all groups. Proportionately, however, the reduction in liquidity was much greater for the lower ranking groups, with ACI declining 115 percent for the lowest quintile.
  - Dependence on farm program payments has increased sharply for all five groups between 1997 and 2001. This dependence increases dramatically with decreasing financial capacity or decreasing ACI rank.
3. For the most part, farms included in this study appear to have pursued expansion strategies since 1997. They have expanded their land base and increased their investment in land and intermediate assets — machinery and buildings. We also observe a net increase in debt for all farms in the study. At the same time, they have shifted their enterprise mix in favor of cash grain production and away from livestock. This suggests that farms in this panel have positioned themselves to capture farm program payments.
  4. What isn't clear from this analysis is whether or not the farms in this study are better positioned for a very plausible economic environment that would include reduced federal outlays, increased environmental oversight and heightened international competition in commodity markets. For example, the observed increase in land and machinery investments may be the result of farmers' expectations that subsidies would indefinitely continue at or near current levels. Alternatively, farmers may be viewing the subsidies as windfalls and are investing funds in capital assets in anticipation of a period of reduced incomes. This latter explanation would be somewhat more plausible if debt loads hadn't increased as well. For the top three ACI groups, however, asset value increases exceeded debt increases. We also note that, on average, farms in all five groups increased their production expenses relative to changes in revenue from all sources.

**Final Comments**

This article has examined changes in the financial performance and structure for a panel of Iowa commercial farm businesses from January 1, 1997 to January 1, 2002. Not surprisingly, the analysis provides answers to some questions — but leaves a number of others for subsequent study.

1. Despite falling commodity prices, farm equity and income were generally stabilized for most farms over the period of study. Stabilization is due, to a large extent, to direct, across-the-board subsidization by the federal government to corn and soybean production. Recovery of livestock prices from 1998 lows also contributed to the maintenance of farm income and equity however.
2. Within the panel there has been an increase in the concentration of assets, liabilities and net worth in the top two quintiles – the upper 40 percent of farms. For lenders, this change in the distribution suggests that outstanding liabilities are increasingly being controlled by larger, better capitalized operations.

This analysis reflects conditions up to January 2, 2002. A number of significant events have occurred over the past year that are not included.

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