

The World's Largest Open Access Agricultural & Applied Economics Digital Library

# This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<a href="http://ageconsearch.umn.edu">http://ageconsearch.umn.edu</a>
<a href="mailto:aesearch@umn.edu">aesearch@umn.edu</a>

Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.

# Staff Paper

2004 Michigan Swine (Farrow to Finish) Business Analysis Summary

> Eric Wittenberg and Stephen Harsh

Staff Paper 2005-14

December, 2005





Department of Agricultural Economics MICHIGAN STATE UNIVERSITY East Lansing, Michigan 48824

MSU is an Affirmative Action/Equal Opportunity Institution

#### 2004 Michigan Swine (Farrow to Finish) Business Analysis Summary

2004 Michigan TelFarm and Farm Credit Services Data Staff Paper No. 05-14

by

Eric Wittenberg and Stephen Harsh

Copyright 2005 by Eric Wittenberg and Stephen Harsh. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

#### 2004 Michigan Swine (Farrow to Finish) Business Analysis Summary

#### by

#### Eric Wittenberg and Stephen Harsh<sup>1</sup>

Table of Contents	Page
Executive Summary	3
List of Tables	
Summary Tables	
1) Average Farm Characteristics, 2002-2004	3
2) Average Income Statement, 2002-2004	4
3) Average Profitability Indicators (cost), 2002-2004	5
4) Average Profitability Indicators (market), 2002-2004	5
Average of 12 Farrow to Finish Swine Farms	
5) Livestock and Crop Production Summary	6
6) Farm Income Statement	7
7) Inventory Changes	9
8) Depreciation and Other Capital Adjustment	10
9) Profitability Measures	11
10) Liquidity Measures	12
11) Balance Sheet at Cost Values	13
12) Balance sheet at Market Values	14
13) Statement of Cash Flows	15
14) Financial Standards Measures	16
15) Operator Information and Nonfarm Summary	17
16) Financial Summary	18

<sup>&</sup>lt;sup>1</sup> Co-workers in the TelFarm project were: R. Betz, L. Borton, B. Battel, W. Schauer, D. Stein, and V. Varner with the assistance of Michigan State University Extension Agents. Greenstone Farm Credit Services of Michigan co-workers were: Kelly Tobin, Steve Eshelman, Janice Raymond, Tiffany Aldrich, Anne Gerke, Kathleen Spranger, Sonya Pentecost, and Lynette Wood. Farm Credit Services of Wisconsin co-worker was Steve Zimmerman.

#### **Executive Summary**

This report summarizes the financial and production records of 12 Michigan, farrow to finish, swine farms. To be included, the farms must have produced at least 50 percent of gross cash farm income from one or a combination of fat hogs, feeder pigs and cull breeding hogs sales. The records came from Michigan State University's TelFarm project and the Farm Credit Service system in Michigan. The values were pooled into averages for reporting purposes.

Farm records were included if a farm financial summary was completed on 2004 data including beginning and ending balance sheets, plus income and expenses. The data were checked to verify that cash discrepancy was less than 10% of gross cash inflow and that debt discrepancy was less than \$1,000. While considerable variation in the data exists, average values are reported in the summary tables below.

#### Summary of Results

The average size of a farrow to finish swine farm contained in this 2004 business analysis was 428 sows, 587 acres owned and 919 acres cropped, Table 1. Additional data on farm characteristics indicated that the average weight for a finished hog was 257 pound and the average price was \$51.93 per hundredweight.

Table 1. Average Michigan Swine (Farrow to Finish) Farm Characteristics, 2002-2004

2002	2003	2004
1095	364	428
491	769	587
800	1036	919
247	252	257
\$36.47	\$44.82	\$51.93
7	9	12
	1095 491 800 247	1095 364 491 769 800 1036 247 252

Net farm income (NFI) is the amount remaining after all cash farm expenses and depreciation have been subtracted from net cash farm income and inventory changes have been recognized. The net farm income value is the return to operator unpaid management, labor and equity capital invested. Income statement data presented in Table 2 indicates that net farm income in 2004 averaged, \$197,737. This average somewhat obscures a very large range of net farm income values. The range was a negative \$15,796 to \$566,393 and the standard deviation was \$208,952.

Gross cash farm income averaged \$1,089,291 in 2004. The largest component of these revenues was finished feeder pigs sales which averaged \$397,339 and finished raised hogs sales which averaged \$333,719. The third and forth largest revenues were corn and soybeans, \$83,298 and \$67,918 respectfully. Government payments averaged \$46,717 per farm in 2004.

Average total cash expenses were \$892,506 in 2004 and average net cash farm income was \$196,785, an increase of 18 percent over 2003. Given better hog prices in 2004, inventory levels increased and averaged \$79,712 per farm. Prepaid expenses, supplies, crops, market livestock and feeds inventories increased while accounts payable decreased.

Table 2. Average Swine Farm Income Statement, 2002-2004

	2002	2003	2004
		(\$)	
Gross cash farm income	1,986,148	1,001,043	1,089,291
- Total cash expense	2,149,235	833,911	892,506
= Net cash farm income	-163,087	167,132	196,785
+ Inventory change	111,150	-35,853	79,912
+ Depreciation and capital adjustments	<u>-71,696</u>	<u>-113,880</u>	<u>-78,960</u>
= Net farm income	-123,632	17,399	197,737

Four key financial performance indicators are presented in Table 3. The rate of return on assets (ROA) is calculated as if the farm has no debt. ROA indicates the farm earnings, after subtracting out an allowance for unpaid operator labor and management, as a percentage of invested assets. ROA provides the key summary performance indicator for your farm. By multiplying the operating profit margin by the asset turnover rate, the ROA is determined. The ROA data presented in Table 3 indicates an improvement over 2003.

The rate of return on equity (ROE), expressed as a percentage of own equity capital, represents the farm earnings after interest payments. Ideally the ROE should be higher than the ROA indicating that profit is being made on borrowed money. ROE performance for 2004 was very high, averaged 52.4 percent. This farm summary indicates that these farms were very profitable in 2004.

Table 3 compares profitability for the years 2002 - 2004 with assets valued at cost. Profitability indicators calculated using assets valued at cost can be used to compare the same farm over time. The average 2004 swine farm ROA was 16.1 percent, which was a vast improvement over 2003 value and the negative return in 2002. Return on equity was even higher at 52.4 percent. Operating profit margin measures the dollars of profit generated per dollar of revenue. In 2004, the OPM was 25.3 percent. Asset turnover measures the efficiency with which farm assets generate revenue. In 2004, this ratio was 63.5 percent. All these profitability measures indicate that on the average, 2004 was a profitable year financially.

Table 3. Average Swine Farm Profitability Indicators, 2002-2004

	2002	2003	2004
		(Percent)	
Rate of return on assets*	-3.2	0.7	16.1
Rate of return on equity	-14.8	-10.2	52.4
Operating profit margin	-7.0	1.4	25.3
Asset turnover rate*	45.6	49.8	63.5

<sup>\*</sup> Assets valued at **cost** value (rather than market value).

Table 4 compares profitability measures across the years 2002 - 2004 valued at market. The market value approach includes the impact of price appreciation (inflation) of the asset base overtime. Land is the main reason for price appreciation and reflects a form of income. Financial performance indicators like ROA can be looked upon in this comparison as the "opportunity cost of capital" of farming versus alternative investments. Market value for assets is more appropriate when comparing across different farms (while cost is more appropriate to compare the same farm across time).

The average return on assets (ROA) for 2004 was 10.1 percent, a positive change when compared to 2002 and 2003. Return on equity (ROE) for 2004 was 13.9 percent. Operating profit margin (OPM) measures the dollars of profit generated per dollar of revenue. In 2004 the OPM was 32.4 percent. In 2004 these swine farms are generating good profit per dollar of revenue.

Asset turnover ratio measures the efficiency with which farm assets generate revenue. In 2004, the asset turnover ratio was 31 percent. This was an increase of 23 percent on average, higher prices for production or lower total asset value will increase ATO. This is an increase of 23 percent, meaning that the farm assets generated more dollars per dollar invested in farm assets. The trend with respect to profitability in 2004 was better than 2003.

Table 4. Average Swine Farm Profitability Indicators, 2002-2004

	2002	2003	2004
		(Percent)	
Rate of return on assets*	-0.1	2.8	10.1
Rate of return on equity	-3.6	1.7	13.9
Operating profit margin	-0.5	11.0	32.4
Asset turnover rate*	31.2	25.1	31.0

<sup>\*</sup> Assets valued at **market** value (rather than cost value).

# Table 5 Crop Production and Marketing Summary 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

-	g. Of Farms
Number of farms	12
Acreage Summary	
Total acres owned	587
Total crop acres	919
Crop acres owned	509
Crop acres cash rented	410
Crop acres share rented	_
Total pasture acres	-
Average Price Received (Cash Sales Only)	
Wheat, Winter per bushel	2.91
Soybeans per bushel	7.56

# Table 6 Farm Income Statement 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of
	All Farms
Number of farms	12
Cash Farm Income	
Beans, Navy	5,415
Corn	83,298
Corn, Seed	5,544
Hay, Mixed	125
Soybeans	67,918
Straw	607
Sugar Beets	12,640
Wheat, Winter	15,916
Hogs, Farrow-Fin, Raised Hogs	333,719
Hogs, Feeder Pigs, Feeder Pigs	22,333
Hogs, Finish Feeder Pigs	397,339
Sheep, Market Lambs, Mkt Lambs	2,626
Sheep, Market Lambs, Wool	46
Hogs, Weaning to Finish	32,312
Cull breeding livestock	16,094
Misc. livestock income	62
Direct & CC govt payments	79
Other government payments	46,717
Custom work income	37,420
Patronage dividends, cash	133
Insurance income	553
Cash from hedging accts	2,315
Other farm income	6,081
Gross Cash Farm Income	1,089,291

#### Table 6 Farm Income Statement (Continued) 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Cash Farm Expense Seed Fertilizer Crop chemicals Crop insurance Drying fuel Crop miscellaneous Feeder livestock purchase Purchased feed Breeding fees Veterinary Supplies Livestock utilities Marketing Livestock miscellaneous Interest Fuel & oil Repairs Custom hire Hired labor Land rent Machinery & bldg leases Real estate taxes Farm insurance Utilities Dues & professional fees Miscellaneous Total cash expense Net cash farm income	39,734 58,709 34,821 1,890 9,832 2,861 123,472 259,614 2,050 7,947 2,672 451 5,396 6,720 37,835 16,679 32,797 44,865 45,978 45,680 14,999 12,391 19,214 28,831 3,626 33,443 892,506 196,785
Inventory Changes Crops and feed Market livestock Accounts receivable Prepaid expenses and supplies Accounts payable Total inventory change Net operating profit  Depreciation and Other Capital Adjust Breeding livestock Machinery and equipment	10,304 30,971 -24,909 51,003 12,543 79,912 276,697 ments -992 -53,045
Machinery and equipment Buildings and improvements Other farm capital Total depr. and other capital adj	-53,045 -24,922 0 -78,960
Net farm income	197,737

### Table 7 Inventory Changes 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Net cash farm income	196,785
Crops and Feed Ending inventory Beginning inventory Inventory change	213,224 202,920 10,304
Market Livestock Ending inventory Beginning inventory Inventory change	219,235 188,263 30,971
Accts Receivable & Other Current Asse Ending inventory Beginning inventory Inventory change	51,651 76,560 -24,909
Prepaid Expenses and Supplies Ending inventory Beginning inventory Inventory change	84,543 33,540 51,003
Accounts Payable & Accrued Expenses Beginning inventory Ending inventory Inventory change	30,796 18,253 12,543
Total inventory change	79,912
Net operating profit	276,697

### Table 8 Depreciation and Other Capital Adjustments 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Net operating profit	276,697
Breeding Livestock Ending inventory Capital sales Beginning inventory Capital purchases Depreciation, capital adjust.	41,979 1,746 40,869 3,849 -992
Machinery and Equipment Ending inventory Capital sales Beginning inventory Capital purchases Depreciation, capital adjust.	109,426 2,495 116,186 48,780 -53,045
Buildings and Improvements Ending inventory Capital sales Beginning inventory Capital purchases Depreciation, capital adjust.	83,172 - 93,017 15,077 -24,922
Other Capital Assets Ending inventory Capital sales Beginning inventory Capital purchases Depreciation, capital adjust.	42,835 2,866 31,304 14,397
Total depreciation, capital adj.	-78,960
Net farm income	197,737

#### Table 9 Profitability Measures 2004 Swine (Farrow to Finish) Business Analysis Summary

#### (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Profitability (assets valued at cost) Net farm income Labor and management earnings Rate of return on assets Rate of return on equity Operating profit margin Asset turnover rate	197,737 176,728 16.1 % 52.4 % 25.3 % 63.5 %
Interest on farm net worth Farm interest expense Value of operator lbr and mgmt. Return on farm assets Average farm assets Return on farm equity Average farm equity Value of farm production	21,009 33,501 48,511 182,727 1,135,465 149,226 284,669 721,578
	Avg. Of All Farms
Number of farms	12
Profitability (assets valued at marke Net farm income Labor and management earnings Rate of return on assets Rate of return on equity Operating profit margin Asset turnover rate	248,910 162,388 10.1 % 13.9 % 32.4 % 31.0 %
Interest on farm net worth Farm interest expense Value of operator lbr and mgmt. Return on farm assets Average farm assets Return on farm equity Average farm equity Value of farm production	86,522 33,501 48,511 233,900 2,325,877 200,399 1,442,033 721,578

# Table 10 Liquidity Measures 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Liquidity (cash) Net cash farm income Net nonfarm income Family living and taxes Principal due on long term debt Cash available for interm. debt Average intermediate debt	196,785 18,373 76,588 30,142 108,427 214,149
Years to turnover interm. debt Expense as a % of income Interest as a % of income	2.0 82 % 3 %
Liquidity (accrual)  Total accrual farm income  Total accrual operating expense  Net accrual operating income  Net nonfarm income  Family living and taxes  Principal due on long term debt  Available for intermediate debt  Average intermediate debt	1,105,657 828,960 276,697 18,373 76,588 30,142 188,340 214,149
Years to turnover interm. debt Expense as a % of income Interest as a % of income	1.1 75 % 3 %

Table 11 Balance Sheet at Cost Values

2004 Swine (Farrow to Finish) Business Analysis Summary

(Farms Sorted By Rate of Return on Assets - Mkt)

Avg. Of All Farms

Number of farms	12	
	Beginning	Ending
Assets		
Current Farm Assets		
Cash and checking balance	33,805	31,863
Prepaid expenses & supplies	33,540	84,543
Growing crops	4,648	4,335
Accounts receivable	64,199	35,214
Hedging accounts	7,158	12,102
Crops held for sale or feed	202,920	213,224
Crops under government loan	0	0
Market livestock held for sale	188,263	219,235
Other current assets	554	0
Total current farm assets	535,088	600,515
Intermediate Farm Assets		
Breeding livestock	40,869	41,979
Machinery and equipment	116,186	109,426
Titled vehicles	0	
Other intermediate assets	29,091	32,892
Total intermediate farm assets	186,146	184,296
Long Term Farm Assets		
Farm land	286,727	289,814
Buildings and improvements	93,017	83,172
Other long-term assets	2,213	9,943
Total long-term farm assets	381,956	382,929
Total Farm Assets	1,103,190	1,167,741
Total Nonfarm Assets	110,105	138,638
Total Assets	1,213,295	1,306,378
Liabilities		
Current Farm Liabilities		
Accrued interest	10,163	5,829
Accounts payable	20,633	12,424
Current notes	273,253	194,836
Government crop loans	0	0
Principal due on term debt	69,479	75,288
Total current farm liabilities	373,528	288,376
Total intermediate farm liabs	190,026	155,939
Total long term farm liabilities	327,544	366,180
Total farm liabilities	891,098	810,495
Total nonfarm liabilities	16,474	25,112
Total liabilities	907,571	835,607

Net worth (farm and nonfarm)

Current farm liabilities / assets

Curr. & interm farm liab. / assets

Long term farm liab. / assets

Total debt to asset ratio

Net worth change

Ratio Analysis

470,771

165,048

48 %

57 %

96 %

64 %

305,723

70 %

78 %

86 %

75 %

Table 12 Balance Sheet at Market Values

2004 Swine (Farrow to Finish) Business Analysis Summary

(Farms Sorted By Rate of Return on Assets - Mkt)

Avg. Of All Farms

Number	OI	Iarms	12	
			Beginning	E

Assets	Beginning	Ending
Current Farm Assets Cash and checking balance Prepaid expenses & supplies Growing crops Accounts receivable Hedging accounts Crops held for sale or feed Crops under government loan Market livestock held for sale Other current assets Total current farm assets	33,805 33,540 4,648 64,199 7,158 202,920 0 188,263 554 535,088	12,102 213,224 0 219,235 0
Intermediate Farm Assets Breeding livestock Machinery and equipment Titled vehicles Other intermediate assets Total intermediate farm assets	40,550 409,484 583 29,091 479,709	417 32,892
Long Term Farm Assets Farm land Buildings and improvements Other long-term assets Total long-term farm assets Total Farm Assets Total Nonfarm Assets Total Assets	191,935 3,954 1,253,623 2,268,419 211,449	1,075,418 193,297 22,925 1,291,640 2,383,334 305,506 2,688,840
Liabilities Current Farm Liabilities Accrued interest Accounts payable Current notes Government crop loans Principal due on term debt Total current farm liabilities Total intermediate farm liabs Total long term farm liabilities Total farm liabilities Total nonfarm liabilities Total liabs excluding deferreds Total liabs excluding deferreds Total liabilities Retained earnings Market valuation equity Net worth (farm and nonfarm) Net worth excluding deferreds Net worth change	1,533,239	12,424 194,836 0 75,288 288,376 155,939 366,180 810,495 25,112 835,607 42,788 878,395
Ratio Analysis Current farm liabilities / assets Curr. & interm farm liab. / assets Long term farm liab. / assets Total debt to asset ratio Debt to assets excl deferreds	70 % 56 % 26 % 38 % 37 %	48 % 41 % 28 % 33 % 31 %

# Table 13 Statement Of Cash Flows 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Beginning cash (farm & nonfarm)	33,927
Cash From Operating Activities Gross cash farm income	1 000 201
Net nonfarm income	1,089,291 18,373
Total cash farm expense	-892,506
Apparent family living expense	-73,811
Income and social security tax	-2,777
Cash from operations	138,570
cash from operations	130,370
Cash From Investing Activities	
Sale of breeding livestock	1,746
Sale of machinery & equipment	2,495
Sale of titled vehicles	_
Sale of farm land	3,042
Sale of farm buildings	_
Sale of other farm assets	2,866
Sale of nonfarm assets	191
Purchase of breeding livestock	-3,849
Purchase of machinery & equip.	-48,780
Purchase of titled vehicles	_
Purchase of farm land	-5,700
Purchase of farm buildings	-15,077
Purchase of other farm assets	-14,397
Purchase of nonfarm assets	-2,417
Cash from investing activities	-79,880
Cash From Financing Activities	000 104
Money borrowed	280,104
Cash gifts and inheritances	12,080
Principal payments	-352,300
Dividends paid	- -
Gifts given	-516
Cash from financing activities	-60,631
Net change in cash balance	-1,942
Ending cash (farm & nonfarm)	31,986

# Table 14 Financial Standards Measures 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Liquidity Current ratio Working capital	2.08 312,139
Solvency (market) Farm debt to asset ratio Farm equity to asset ratio Farm debt to equity ratio	35 % 65 % 55 %
Profitability (cost) Rate of return on farm assets Rate of return on farm equity Operating profit margin Net farm income	16.1 % 52.4 % 25.3 % 197,737
Repayment Capacity Term debt coverage ratio Capital replacement margin	216 % 114,761
Efficiency Asset turnover rate (cost) Operating expense ratio Depreciation expense ratio Interest expense ratio Net farm income ratio	63.5 % 71.9 % 7.1 % 3.0 % 17.9 %

# Table 15 Operator and Labor Information 2004 Swine (Farrow to Finish) Business Analysis Summary (Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of All Farms
Number of farms	12
Operator Information Average number of operators Average age of operators Average number of years farming	1.5 51.2 27.4
Results Per Operator Working capital Total assets (market) Total liabilities Net worth (market) Net worth excl deferred liabs	208,093 1,792,560 585,597 1,206,963 1,235,488
Gross farm income Total farm expense Net farm income	737,105 605,280 131,825
Net nonfarm income Family living & tax withdrawals	12,248 51,058
Total acres owned Total crop acres Crop acres owned Crop acres cash rented Crop acres share rented Total pasture acres	391.3 612.9 339.3 273.6
Labor Analysis Number of farms Total unpaid labor hours Total hired labor hours Total labor hours per farm Unpaid hours per operator Value of farm production / hour Net farm income / unpaid hour Average hourly hired labor wage	11 3,378 3,490 6,868 2,186 101.77 55.51 12.78

#### Table 16 Financial Summary 2004 Swine (Farrow to Finish) Business Analysis Summary

(Farms Sorted By Rate of Return on Assets - Mkt)

	Avg. Of
	All Farms
Number of farms	12
Income Statement	
Gross cash farm income	1,089,291
Total cash farm expense	892,506
Net cash farm income	196,785
Inventory change	79,912
Depreciation and capital adjust	-78,960
Net farm income	197,737
Profitability (cost)	
Labor and management earnings	176,728
Rate of return on assets	16.1 %
Rate of return on equity	52.4 %
Operating profit margin	25.3 %
Asset turnover rate	63.5 %
Profitability (market)	4.50.000
Labor and management earnings	162,388
Rate of return on assets	10.1 %
Rate of return on equity	13.9 %
Operating profit margin	32.4 % 31.0 %
Asset turnover rate Liquidity	31.0 %
Ending current ratio	2.08
Ending working capital	312,139
End working capital to gross inc	28.7 %
Term debt coverage ratio	215.7 %
Expense as a percent of income	75.0 %
Interest as a percent of income	3.0 %
Solvency (cost)	
Number of farms	12
Ending farm assets	1,167,741
Ending farm liabilities	810,495
Ending total assets	1,306,378
Ending total liabilities	835,607
Ending net worth	470,771
Net worth change	165,048
Ending farm debt to asset ratio	69 %
Beg total debt to asset ratio	75 %
End total debt to asset ratio Solvency (market)	64 %
Number of farms	12
Ending farm assets	2,383,334
Ending farm liabilities	843,138
Ending total assets	2,688,840
Ending total liabilities	878,395
Ending net worth	1,810,444
Net worth change	277,205
Ending farm debt to asset ratio	35 %
Beg total debt to asset ratio	38 %
End total debt to asset ratio	33 %
Nonfarm Information Net nonfarm income	18,373
Crop Acres	
Total acres owned	587
Total crop acres	919
Total crop acres owned	509
Total crop acres cash rented	410
Total crop acres share rented	=