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A LOOK AT THE HOG-CORN RATIO AND ITS ABILITY TO REFLECT THE PROFITABILITY OF SWINE ENTERPRISES

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A LOOK AT THE HOG-CORN RATIO AND ITS ABILITY TO REFLECT THE PROFITABILITY OF SWINE ENTERPRISES

I. Introduction

In past years it has been argued that the hog-corn ratio was a useful tool in indicating the profitability of swine enterprizes. The purpose of this study is to review the current usefulness of the hog-corn ratio as an indicator of the profitability of swine enterprizes, and hence establish to what degree it can be used as a tool upon which to base long run investment decisions, as well as short run production decisions or adjustments.

In examining this problem two questions must be addressed. First, is there a level at which the hog-corn ratio typically reflects a future period of profitable conditions for pork producers? Secondly, if so can the hog-corn ratio be used with sufficient reliability by pork producers in deciding when to expand or contract their operations?

II. The Data

The hog-corn ratio is simply a measure of the number of bushels of corn it would take to purchase a hundred weight of hogs at a given point in time. To determine the usefulness of the hog-corn ratio in predicting hog prodit, income from swine enterprises over time are compared with the hog-corn ratio. These ratios were compared over the years 1960 to 1965.

Using a standard hog budget for 1975[1] income and variable cost data for the years 1960-1974 were generated based on

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[1]The standard hog budget that was used came from the Missouri Farm Planning Handbook (Manual 75, FM 7530). This manual is published by the University of Missouri College of Agriculture Extension Service.

commodity prices and index values. The use of the income over variable cost budgets allows for the application of fixed cost from different pork production systems. (Table 1)

After income over variable cost was derived fixed cost was subtracted to obtain net income. Fixed cost data was obtained from an on farm study conducted at the University of Missouri.[2]

A quantitative summary of the completed budgets including the fixed as well as variable costs, appears in Table 2 of this paper.

III. Results

Shown in Figure 1 the hog-corn ratio plotted with income over variable costs as well as net income. From this graph it can be seen that the hog-corn ratio (at least until 1971) tends to follow income fairly closely. This tells us several things. First, like income the hog-corn ratio maps out the hog cycle. Every 3 to 5 years the ratio systematically reaches a low and then moves upward again. In this sense the hog-corn ratio appears to retain a high degree of usefulness and accuracy in its ability to map out the hog cycle. However, this comparison, though useful, falls short of indicating the usefulness of the hog-corn ratio as a predictor of future profit levels of swine producing enterprises.

To analyze the profitability question notice that a given hog-corn ratio level does not necessarily generate congruent

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[2]For additional information see "An Evaluation of Enclosed Confinement and Drylot Growing and Finishing Systems of Swine Production" UMC Res. Bul. 1009, January, 1975.

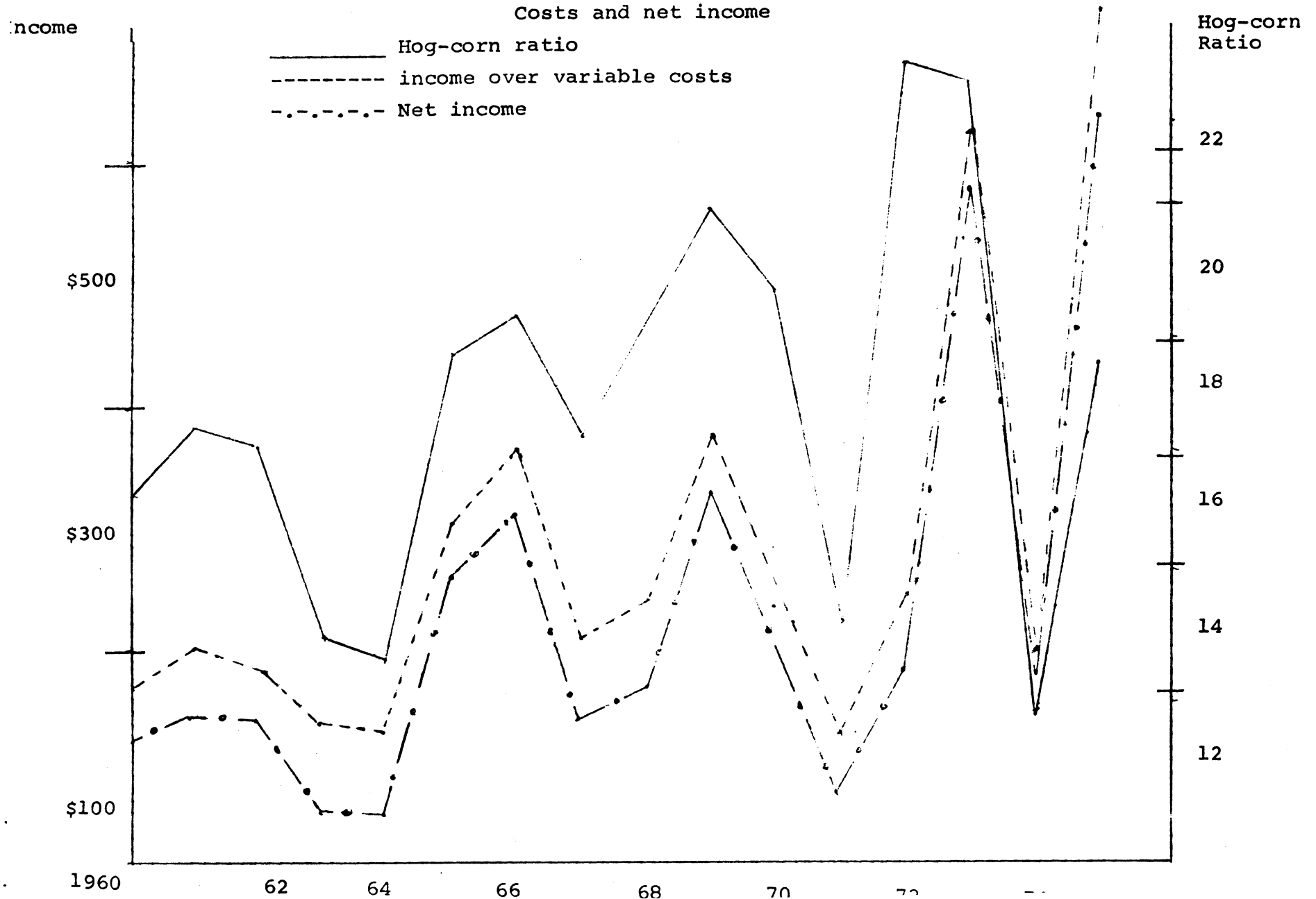
Table 1

Hog budget based on per sow unit per year basis assuming (14 pigs raised)	
Gross receipts:	
230 lb. market hogs	31.05 cwt
400 lb cull sow	2.00 cwt
Gross Income	
Variable Costs: Feed	
Grain (corn equivalent)	200 bushels
Protein, salt, minerals	2,200 lbs.
Starter Feed	400 lbs.
Total feed costs	
Other Variable Costs:	
Machinery cost & feed prep	$2/hog
Veterinary & medicine	1.50/hog
Other livestock materials	$2/hog
Utilities	2.50/hog
Breeding charge	12.00
Operating interest	22.00
Total Other	
Total Variable Cost	
Income over Variable Costs	

Table 2
INCOME AND COST SUMMARY FROM SWINE BUDGET

Year	Gross Income	Total Variable Costs	Total Fixed Costs	Income Over Variable Costs	Income Over Total Cost
1960	527	394	37	132	94
1961	562	396	37	165	127
1962	551	400	38	150	112
1963	504	422	38	81	43
1964	501	424	38	76	38
1965	699	434	38	264	225
1966	768	444	39	324	284
1967	634	456	40	177	137
1968	628	424	43	203	160
1969	777	443	46	334	288
1970	717	470	47	246	199
1971	603	506	50	97	47
1972	874	663	55	211	156
1973	1322	730	61	591	529
1974	1150	968	75	181	106
1975	1595	926	82	668	585

Figure 1 Hog-corn Ratio vs
Income over Variable
Costs and net income



levels of income and in turn profit. Referring back to Figure 1, the hog-corn ratio in 1962 and 1967 was identical at 16.5. However, in these same years, producers incomes over variable costs per sow unit/year were $150 and $178 respectively. A more dramatic comparison is illustrated in the years 1972 and 1973. Here the respective ratios were 22.5 and 22.2, while income over variable costs per sow unit/year were $210 and $590 respectively. To carry this one step further examine Figure 1. For when the hog-corn ratio is 16.0, A visual inspection of income over variable costs at those respective points quickly shows that income levels vary substantially. The results of this visual scan are presented in Table 3. This table shows that for the same hog-corn ratio income over variable costs ranges from $125 per sow unit to $350 per sow unit. Simarily in Table 4, the hog-corn ratio is compared for a constant income over variable cost level of $200 per sow unit. In this case the same levels do not generate similar hog-corn ratios. These observations lead to the conclusion that there is indeed no specified level of income associated with a particular hog-corn ratio level.

In analyzing movements in the hog-corn ratio as compared with income over variable costs an interesting fact emerges. First of all as Figure 2 illustrates, there was an upward trend exhibited in the cost of producing hogs during the fifteen year period studied. Even so, producers income over variable costs for the entire period increased at an average rate that was over twice the rate of increase in the hog-corn ratio.

Table 3

Hog-corn ratio of 16 and corresponding income over variable costs per sow unit

YEAR	HOG-CORN RATIO	INCOME OVER VARIABLE COSTS
1960-61	16	142
1962-63	16	135
1964-65	16	190
1970-71	16	155
1971-72	16	125
1973-74	16	280
1974-75	16	350

The ratio between the percentage annual change in income over variable costs to the percentage annual change in the hog-corn ratio was 2.1:1.[3] This would indicate that a 10% fluctuation in the same direction in producers incomes over variable costs. Unfortunately, an excessively large standard deviation for this relationship prevents any concrete "rule of thumb" conclusions.

The results of this study indicate that at the present time the hog-corn ratio is not a precise indicator of profitability levels of swine producing enterprises. This can in part be attributed to fluctuating input prices for farm commodities such as corn, a commodity that makes up a large percentage of swine production costs. In times of stable commodity prices the hog-corn ratio was more useful as a general rule of thumb indicator of profitability. For example, in the 1960's corn prices fluctuated little in relative terms. Corn typically comprised 60 percent of the total variable costs in the budgets used in this study. During the 60's there was only an approximate range of $.25 in the price paid for corn. The range of annual price fluctuations was rarely over $.10 per bushel.[4] Fixed cost were also increasing in a relatively stable pattern during this time period.(Figure 2)

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[3]This ratio was computed by summing the annual percentage changes in income over variable costs per sow unit dividing by the summation of annual percentage change in the hog-corn ratio for the years 1960-1975. The year 1973 was thrown out because of an usually large fluctuation.

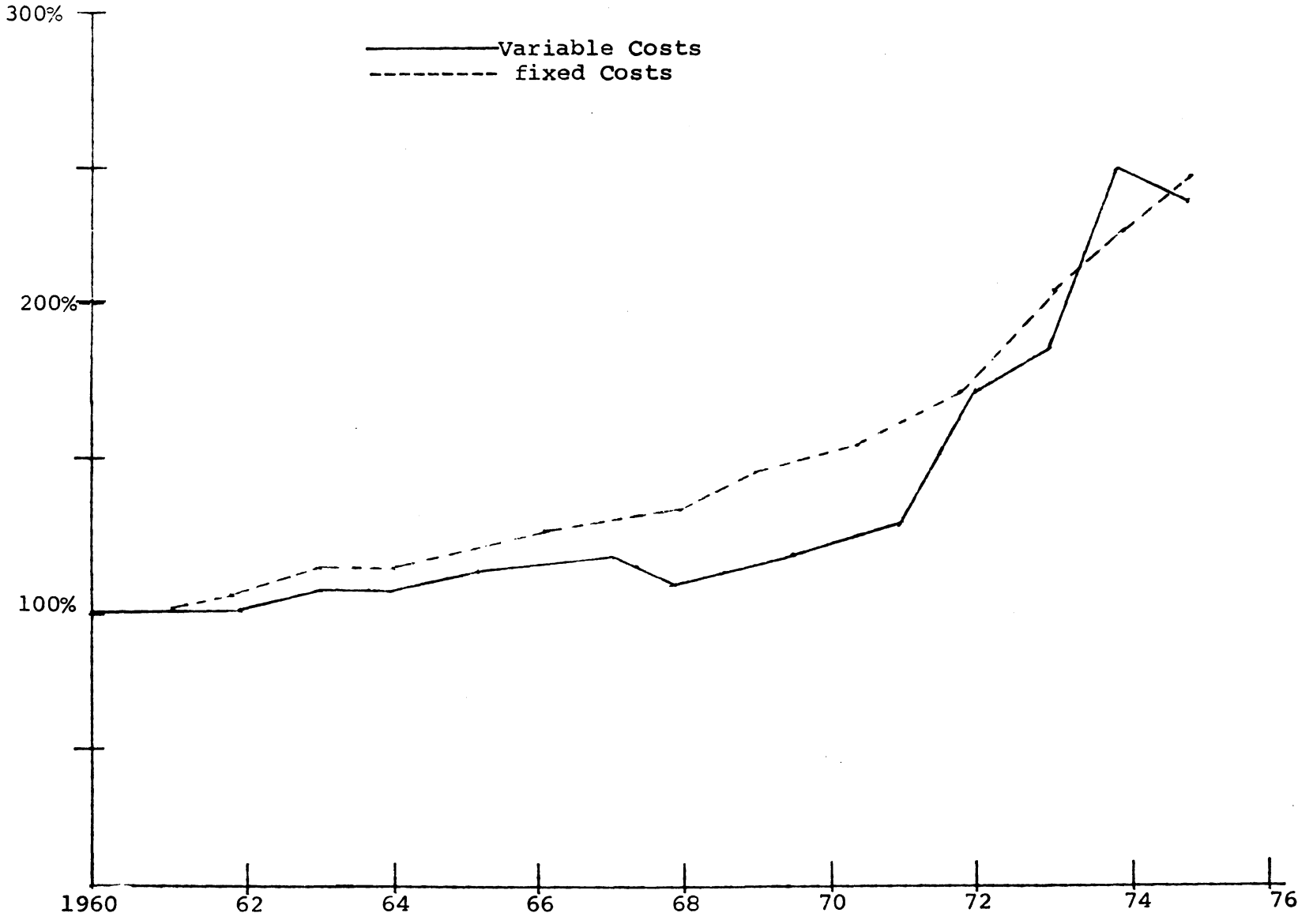
[4]These statements may be verified by examining the prices received for corn by Missouri farmers over the past 16 years. Missouri data book, Department of Agricultural Economics, University of Missour-Columbia.

Table 4

Hog-corn ratio corresponding to income over variable costs of $200 per sow unit

YEAR	INCOME OVER VARIABLE COSTS	HOG-CORN RATIO
1964-65	$200	16.2
1966-67	$200	16.8
1967-68	$200	17.8
1970-71	$200	18.6
1971-72	$200	21.2
1973-74	$200	14.0

Figure 2 The percentage changes in production costs from 1960-1975 (1960 = 100)



In periods of stable prices such as these, it is much easier for producers to get an idea of the hog price they need for profitable operations relative to the price of corn. However, in periods of fluctuating input prices the hog-corn is not as effective in indicating hog profitability.

IV. Summary

Although the hog-corn ratio continues to mirror producers income cycles, and hog cycles, it is at the present a less accurate measure of the absolute profitability of swine enterprises. This is due in part to the widely fluctuating commodity prices occurring in recent years. Since the hog-corn ratio is a measure of hog prices relative to corn prices, one of these factors must remain relatively stable in order for the ratio to meaningfully reflect the profitability of hogs. As long as corn, hogs and other input prices continue to fluctuate widely the hog-corn ratio will be of lesser value than what it may have been in periods of more stable input costs.

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