Output, Prices and Labour Costs in the Sugar Industry

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Abstract

In empirical tests covering the last three decades the export price of sugar and the cost of labour do not seem to be the primary factors in the precipitate decline in sugar production. Tests of the effect of real estate development on the decline in sugar acreage are suggestive, but inconclusive.

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The decline of sugar production in Barbados in the post-war period has two elements: a drop in average yields and a precipitous decline in the acreage under cane. Yields declined from a range of 8-10 metric tonnes of sugar per acre in the late 1950s and early 1960s to a range of 6-8 metric tonnes in the 1970s and 1980s (See Chart 1). The change reflects technical changes in field and factory - in particular, the mechanisation of cultivation and harvesting. Mechanisation raised labour productivity to accommodate to rising labour costs, but it resulted in lower technical productivity, that is, the yield of sugar per hectare of cane.

The relationship between technical change, price and costs does not lend itself to time series analysis. Technical changes were introduced over time, at different rates on different farms. Their effects therefore were not continuous, showing up in a sharp deterioration between 1969 and 1975 and lower frequency of variation thereafter. Since the new technologies have been adopted for widespread use there has been a long struggle to bring the technical productivity of the new systems to a level which matches that of the old. Those efforts have so far been relatively unsuccessful.

It is a great paradox that innovations which substantially increased labour productivity (i.e. output per person) at the same time reduced technical efficiency (i.e. tonnes of sugar per hectare). As machines replace manual labour each worker's output goes up by an order of magnitude, but mechanical methods produce greater wastage, losses from the inclusion of extraneous matter in canes delivered to the mill and similar problems.

The decline in acreage under cane was more marked and more persistent than the fall in yields (See Chart 2). This note first tests the hypothesis that the acreages planted in cane reflect changes in sugar prices and in labour cost. Is it the case that labour costs were rising faster than prices and that labour productivity has not increased enough to close the gap? Economic theory suggests that acreages will increase if the revenue farmers expect from an extra acre is greater than the cost of the extra labour needed to work that acre. If we express everything in terms of prices and cost per tonne of sugar, this suggests an equation to determine the amount of acreage planted which is of the form:

(1) $a = f(p^* - c^*)$

The variable a represents the acreage; p^* represents the expected price of a tonne of sugar and c^* is the expected labour cost of producing a tonne of sugar. The labour cost is the wage times the product produced by an extra unit of labour:

(2) $c = wq$

w is the wage rate and q is the output per person employed.

Our working assumption is that farmers do not expect prices and costs to change significantly over the crop cycle of one year to eighteen months. Therefore, the acreage reaped eighteen months hence will be proportionate to today's prices, wages and output of labour.

Next we explore the hypothesis that farmers' planting decisions are influenced by alternative uses of land in addition to the profitability of sugar. We need not delay much in considering other agricultural uses of land. No other export agriculture has seriously competed for cane lands in living memory. Export agriculture is seen as complementary to sugar. As for agricultural production for local consumption, the domestic market is too small to offer a viable alternative even when tourism demand is fully taken account of (in terms of person days, 500,000

tourists spending an average of six days increase the domestic market size by 3.3%). The principal competition for agricultural land has come from real estate development. Widespread alienation of agricultural land, often in areas which are most suitable for agriculture, has been a major factor in the decline of acreages under cane. The percentage change in acreages should therefore be related to the profits from real estate development as well as to the profits from sugar.

The decision to abandon agriculture is irrevocable and is unlikely to be made in the same incremental fashion as responses to the price of sugar. To uncover this relationship, one should apply a smoothing process to the series. The average over various periods may well show the effect of competition from real estate where the yearly fluctuations would not reveal this relationship.

We may proceed in alternative ways. If we have a notion of the average period of decision-making, we could use that as the principal for inferring a relationship between moving averages of the variables. While we cannot be absolutely sure, three years seems a reasonable period over which to average the data and that will be the basis for our test.

The alternative is to separate the long-term relationship from short-term variations by testing the series themselves for certain characteristics. Recent econometric theory suggests that some types of time series may be divided into (a) a long run relationship and (b) what are called "short run dynamics". In order to use this technique we must uncover a relationship in which changes in the explanatory variables fully explain changes in the dependent variable except for random influences. That is said to be the form of the long-run relationship. In order to fully represent the changes in the dependent variable the long-run variables must be combined with an "error correction mechanism" which captures the short-run behaviour. It has been demonstrated that such an error correction mechanism may be derived by regressing the levels of the dependent variables against the levels of the explanatory variables in the long-run relationship. This is the second form in which this hypothesis is tested.

Tests

Our first hypothesis is that the percentage change in the acreage reaped in any year is proportionate to the percentage change in the price of sugar and in the percentage change in the labour cost of producing an extra tonne. We test two versions of this

hypothesis in order to accommodate to the data we have available. The first test is in the form:

(3) $a = b_{01} + b_{11}\, p(-1) + b_{21}\, c(-1)$.

All variables are expressed in rates of change. Prices and labour costs have separate effects on the acreage reaped in this equation and their effects are not necessarily equal and opposite. The data we have are on an annual basis so we assume that last year's prices and costs affect this year's acreage. The alternative would be to use a two year lag. That is less plausible but the conclusions we reach are not altered if one uses a two year lag in experiments that we performed (They are not reported in this paper.)

Note in Chart 2 the extraordinary decline in acreages between 1972 and 1976 and from 1981 to the present. These suggest that other factors were at work during those periods: demoralisation within the sugar industry, leadership crises, a loss of direction, conflicts within the industry and conflicts between the industry and Government. These factors undoubtedly interfered with the response that farmers might otherwise have had to price and cost signals. We therefore test for differences in the reaction as measured by Equation 3 during these two periods. The standard device used by statisticians to detect such differences is the use of what are known as "dummy" variables.

We calculate the value of c (the marginal labour cost per unit of output) in two ways: using the actual marginal product of labour each year (c_1) and using the trend value of marginal product (c_2), the latter being a single value for the entire period. The actual value fluctuates considerably from year to year because of unpredictable circumstances such as variations in the length of the harvest, changes in the ratoon cycle and the timing of rainfall, the incidence of labour disputes and cane fires. All of these cause considerable variation in the relationship between increases in output and increases in the labour force employed from year to year. On the other hand, a single value for the marginal product of labour may conceal significant differences that develop over time. We have tried to accommodate this by using dummy variables to measure possible shifts. Since both methods have their weaknesses we report on tests which use them both.

A second version of the first hypothesis assumes that farmers will want to adjust their acreages to achieve an equilibrium relationship between the marginal product of labour and the price; at that level they will maximise their returns. The high

output levels of the late 1960s are taken as an indication that those were equilibrium years when farmers found a desirable balance between their prices and the cost of labour inputs. We therefore create an index (r) which measures the deviation of price/cost relationships from a benchmark which is based on the average of 1965-1970. We then perform a test on the Equation:

(4) $a = b_{02} + b_{12}\, r(-1)$.

In this relationship prices and costs have equal and opposite effects. As before, we include dummy variables for the periods of steep decline in acreages.

All variables were tested individually for persistent trends. If two variables are tested for an interrelationship between them and they both have similar trend, often "spurious" correlation may be observed. That is, what appears to be a relationship between the variables of interest is no more than a reflection of the similarity of the trends embodied in them both. Fortunately, there is no evidence of persistent trends in the variables we use for the first suite of tests (see Appendix A).

Our second hypothesis suggests that in the medium-term farmers may quit agriculture if the trends are for real estate profits to rise much faster than profits in agriculture. The profit in each sector is the difference between the price of the final product and the cost of labour, raw materials, capital goods and finance used in its production. The difference in profitability between the sectors therefore depends on differences between the sectors with respect to these factors. Assuming a one-period lag between the time decisions are made and the time they are reflected in the acreage harvested, we derive an equation for the percentage change in acreage as follows:

(5) $a = b_{02} + b_{13}\, p\,(-1) + b_{23}\, p_h\,(-1) + b_{23}\, w\,(-1) + b_{43}\, l_s\,(-1) + b_{53}\, l_c\,(-1)$
$+ b_{63}\, P_p\,(-1) + b_{73}\, i\,(-1)$

The variable p_h is the price of housing used as a proxy for the price of output in the real estate sector. Wages (w) are the same for agriculture and construction for similar levels of skill. l_s and l_c are the percentage changes in the average product of labour in the sugar and construction sectors respectively. P_p is the producer's price index approximated by a weighted average of imported construction materials and the prices of capital goods.

Equation 5 is tested in two ways. In the first case all variables are averaged over three years and a conventional ordinary least squares regression is run after testing the variables for stationarity. For the second test we first test whether all the variables are of the same order of integration i.e. that they can all be converted to stationary variables by taking first differences of each. We then run the variables in first difference form to establish whether they are cointegrated i.e whether one may accept the hypothesis that their residuals from the regression are not serially correlated. If that is the case we can derive an error correction mechanism by running the long-run relationship in level form. The error correction mechanism is the auto-regressive relationship of the residual from this Equation. We then run the relationship in first differences including the error correction mechanism.

Results

The results shown in Tables 1 and 2 (for equations (3) and (4)) indicate that price and labour costs are not the main factors in the precipitate decline of the sugar industry. None of the equations captures more than 20% of the variance of the acreage as reflected in the value of R^2 adjusted for degrees of freedom. The coefficients measuring the effects of price and cost variables are not significant using the accepted statistical criteria.

In Equation 1.1 in Table 1, the extraordinary circumstances of 1972-76 and 1981 to the present, do make for a significant difference in behaviour during these periods as compared with the remaining years. Little else can be said with confidence. The coefficients of prices and labour costs are not significant. The small values shown probably do not reflect any systematic relationship, judging by the usual test of significance (t ratio). This equation explains only 5% of the overall variance in the acreage.

Equation 1.2 confirms these findings. Tests were performed to observe whether during the periods of especially rapid decline the effects show up in somewhat different fashion. Instead of altering the relationship in a once for all manner, the reactions to price and costs might have changed in proportion to the price and costs during these periods. It is not clear that they did and, in any case, the conclusions with respect to the influence of prices and costs are the same as for Equation 1.1.

Using the trend of the marginal product of labour to compute the unit labour cost produces similar results (Equation 2.1). This Equation explains rather more of the variance in the acreage. Equation 2.2 corresponds to Equation 2.1, when c_2 is used instead of c_1.

In Table 2 we report the Equations which constrain the price and cost to have equal and opposite effects on the acreage, as explained above. The distinctive post-1981 pattern again shows up but the differences between the 1972-76 period are not evident in this Equation. The price/cost variable has no significant effect. Equation 3.2 is a variant where the pecularities of the various periods affect the coefficients rather than the constant parameters. They do not cause us to reconsider our inferences.

The results of the test of the hypothesis that sugar acreages are influenced by competition from real estate do not give us any reason to believe that sugar prices provoke much of a reaction. The first Equation in Table 3 reports on the regression using a three-year average of each of the variables. (The average product of labout in the construction sector has not been included in these tests because of a scarcity of data.) Unfortunately, we cannot draw inferences from this Equation because four variables - the acreages, the price of housing, wages and the price of producers' goods - exhibit systematic auto-correlation. In each case the percentage change in a moving average centred on any year is apparently related in a systematic fashion to the moving average centred on the previous year. This is not the case with the remaining variables. The regression results may therefore not be interpreted by conventional statistical measures. We cannot place any degree of confidence in the apparent disincentive effect that the price of housing has on the acreage in sugar, though it is a suggestive result.

The results from the alternative procedure are shown in the second Equation of Table 3. In this case we took logs of all the variables so that the Equations are stated in first differences would be more directly comparable to previous results which were stated in rates of change. For any variable, the comparability may be illustrated by the following Equation:

(6) $d \log x = \log x - \log (x-1) = \log [x/x (-1)]$

Unfortunately, we had no better luck with this procedure. The trends in the log of the acreage, the log of the price of sugar, the log of wages, the log of the

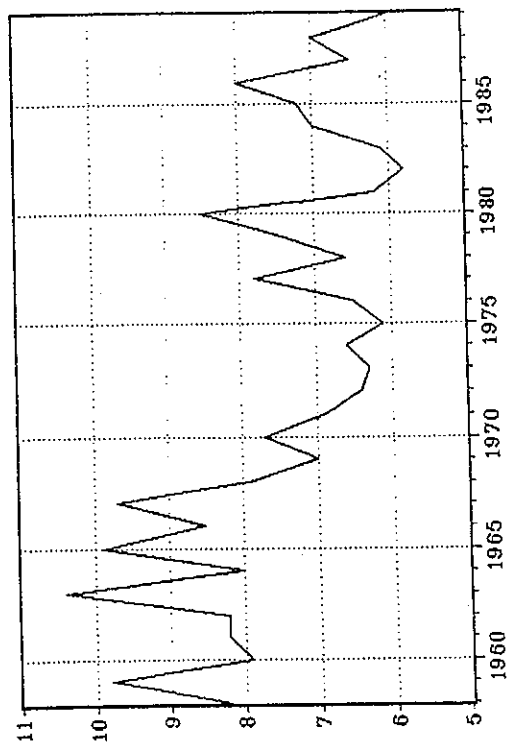
average product of labour in the sugar sector, the log of producer's prices and the log of interest rates may all be eliminated by taking first differences of each variable before running the regression. But first differencing does not serve to eliminate the trend in the price of housing, which is a principle object of our focus. The results which again show an adverse effect of housing prices on sugar acreage would not be viewed with confidence by statisticians. However, the hypothesis that real estate competes with sugar seems a promising line of attack and is worthy of further exploration.

Conclusions

The results do not lead us to conclude that the precipitate decline in the sugar industry is primarily a result of price and cost factors primarily. The reasons must be sought in industry organisation, in the lack of management skills, in the residual hostility to the industry by some sectors of the population, and in the lack of official support in areas such as insurance against price fluctuations. The effects of the lure of housing and commercial development and the alienation of agricultural land need to be further explored. Such developments have been accelerated by the efforts of entrepreneurs in search of capital gains.

We should caution that the conclusions of econometric investigations such as this should always be regarded only as the best working hypothesis for the time being. It is possible that farmers' plantings do respond to prices and costs, but in ways which our initial hypotheses do not envisage. That might imply a different form of the relationship than we have tried, though we believe that the specification we suggest is sound. Moreover, some alternatives, tried subsequent to our initial results as a form of insurance do not bring our conclusions into question.

CHART 1



Appendix A

Stationarity of Data Series

Statistical theory does not permit reliable inference from a tested equation if each year's observation is sytematically linked to a previous year's observation. Before performing tests, one needs to assure oneself that the variables have no built-in time trends. Sometimes such trends may be easily detected by observation but a check of the plot of the variables used in our tests reveals no obvious trends. A rather more robust test now commonly employed was popularised by Hendry, Granger and others. A statistic has been suggested by which one may test the hypothesis that a variable is systematically related to its value in a previous time period. This test, based on the t ratio, and known as the Dickey-Fuller test, was carried out on each variable with the results shown in Table A1.

Table A1

Stationarity Tests

Variable	D/F	Probability of Stationarity In Excess of %
a	-2.75	95%
p	-4.06	99%
c_1	-3.07	97.5%
c_2	-2.32	90%
r	-3.84	99%
a*	-0.38	Not stationary
Δa*	-3.36	97.5%
p*	-2.92	95%
p_h*	-1.47	Not stationary
Δp_h*	-5.14	99%
w*	-1.63	Not stationary
Δw*	-3.89	99%
APL*	-3.01	97.5%

Table A1 Cont'd

P_p*	-1.54	Not stationary
ΔP_p*	-4.80	99%
r*	-3.76	99%
Log a	-1.73	Not stationary
Δ log a	-2.66	95%
Log p	1.45	Not stationary
Δ log p	-4.51	99%
Log p_h	1.66	Not stationary
Δ log P_h	-1.59	" "
Log w	4.29	" "
Δ log w	-2.58	90%
Log APL	-0.31	Not stationary
Δ log APL	-4.07	99%
Log P_p	2.24	Not stationary
Δ log P_p	-2.82	95%
Log r	0.10	Not stationary
Δ log r	-4.89	99%

A * indicates a 3-year moving average of percentage changes.

Appendix B

Variables and Sources

Data on the acreage reaped (a), the export price of sugar (p) and the production of sugar are to be found in the Annual Statistical Digest. Information on the wages index appears in the Annual Statistical Digest with earlier data to be found in Table 4 of the paper by Clyde Mascoll, "Wages, Productivity and Employment in Barbados, 1949-82", Central Bank of Barbados, Economic Review, Vol 12, No. 3, December 1985. Employment data is to be found in the Annual Statistical Digest with earlier information in the Barbados Statistical Services Abstract of Statistics, various issues. The first measure of the marginal product of labour (MPL_1) is the percentage change in q = (Q/N). The second measure (MPL_2) is the coefficient of p in the equation Q/N = f (t, D72, D77, D81) where D72, D77 and D81 are dummy variables with values of 1 for the periods 1972 - 76, 1977-80 and 1981-89, respectively.

To derive the variable r, we first calculated the average price of sugar for 1965 to 1970. We then calculated the average labour cost (ALC) for the same period where labour costs are the product of wages and output per person for each year. We converted the average labour cost for the 1965-70 period by a factor v such that the average price of sugar was equal to the adjusted average labour cost. We then applied the factor v to the entire series of average labour cost. r was then calculated as follows:

$$r = p - v.ALC.$$

The housing price index is to be found in the Annual Statistical Digest, with earlier data in the Abstract of Statistics. Import price data for more recent years comes from the ASD. Earlier data are derived from real import data in Winston Cox and Delisle Worrell, 'Import structure and economic growth in Barbados, 1957-77,' Central Bank of Barbados, mimeo, Nov. 1978, Appendix. Interest rates are found in the International Financial Statistics Yearbook.

Table B1

obs	AREA	PRICE	PRODN	WAGE	EMPLYMNT
1949	NA	NA	NA	8.400000	NA
1950	NA	NA	NA	8.400000	NA
1951	17.40000	158.0000	191.0000	11.20000	NA
1952	18.20000	184.0000	171.0000	11.20000	NA
1953	18.60000	196.0000	164.0000	12.50000	NA
1954	18.60000	199.0000	182.0000	12.50000	NA
1955	18.60000	189.0000	174.0000	13.00000	NA
1956	19.00000	191.0000	153.0000	13.00000	NA
1957	19.00000	199.0000	208.0000	14.50000	NA
1958	19.00000	204.0000	155.0000	14.50000	NA
1959	19.00000	198.0000	187.0000	15.50000	NA
1960	19.80000	195.0000	156.0000	15.50000	16.40000
1961	19.80000	201.0000	163.0000	17.00000	13.50000
1962	19.80000	206.0000	162.0000	18.70000	13.50000
1963	18.60000	242.0000	194.0000	18.70000	13.80000
1964	20.60000	218.0000	165.0000	18.70000	11.30000
1965	20.20000	198.0000	199.0000	20.20000	12.20000
1966	20.60000	209.0000	175.0000	20.20000	11.80000
1967	21.00000	199.0000	204.0000	21.00000	11.20000
1968	20.60000	226.0000	162.0000	23.20000	11.40000
1969	20.20000	225.0000	141.0000	23.20000	10.10000
1970	20.10000	221.0000	157.0000	26.00000	8.800000
1971	19.70000	219.0000	137.0000	26.00000	7.900000
1972	17.80000	289.0000	112.0000	33.00000	7.300000
1973	18.70000	288.0000	118.0000	33.00000	5.400000
1974	16.80000	548.0000	110.0000	47.00000	5.100000
1975	16.10000	835.0000	98.00000	65.00000	4.600000
1976	15.90000	628.0000	104.0000	65.00000	8.900000
1977	15.90000	683.0000	124.0000	65.00000	8.700000
1978	15.80000	731.0000	104.0000	78.00000	8.700000
1979	15.90000	697.0000	119.0000	78.00000	8.700000
1980	16.10000	915.0000	137.0000	100.0000	9.300000
1981	15.80000	966.0000	98.00000	100.0000	9.400000
1982	15.30000	776.0000	89.00000	107.2000	8.400000
1983	14.10000	717.0000	86.00000	120.0000	7.700000
1984	14.30000	748.0000	100.0000	135.1000	7.600000
1985	13.90000	755.0000	100.0000	135.1000	6.200000
1986	13.90000	628.0000	111.0000	141.8000	8.100000
1987	12.80000	1040.000	83.00000	145.3000	6.900000
1988	11.50000	1086.000	80.00000	149.7000	6.500000
1989	11.10000	1004.000	66.00000	161.9000	7.100000

Notes

Area - thousand hectares; price - BBD per tonne; production - thousand tonnes; wage - index (1980=100); employment - thousands (there is a break in the series at 1975).

Table B2

obs	YIELD				
1945					NA
1950	NA	NA	NA	NA	NA
1955	NA	NA	NA	8.200000	9.800000
1960	7.900000	8.200000	8.200000	10.40000	8.000000
1965	9.900000	8.500000	9.700000	7.900000	7.000000
1970	7.700000	6.900000	6.400000	6.300000	6.600000
1975	6.100000	6.500000	7.800000	6.600000	7.500000
1980	8.500000	6.200000	5.800000	6.100000	7.000000
1985	7.200000	8.000000	6.500000	7.000000	6.000000

Notes

Tones of sugar per hectare

Table B3

obs	PH	APLSUGAR	PP	INTEREST
1953	18.16079	NA	NA	NA
1954	NA	NA	NA	NA
1955	NA	NA	NA	NA
1956	NA	NA	NA	NA
1957	NA	NA	23.18787	NA
1958	19.26591	NA	23.03017	NA
1959	19.59745	NA	28.51093	NA
1960	20.44471	9.512196	27.90736	4.180000
1961	21.07094	12.07407	28.32448	3.580000
1962	21.07094	12.00000	27.92376	3.770000
1963	21.07094	14.05797	27.31144	3.950000
1964	20.90518	14.60177	29.98593	4.320000
1965	21.03411	16.31148	30.86564	4.810000
1966	21.68551	14.83051	31.51276	5.120000
1967	22.48401	18.21429	26.34949	5.460000
1968	24.56431	14.21053	30.40159	6.360000
1969	25.72003	13.96040	33.51639	9.760000
1970	28.07349	17.84091	35.44865	8.520001
1971	30.91026	17.34177	40.14969	6.580000
1972	34.12526	15.34247	41.80113	5.460000
1973	42.99279	21.85185	54.86690	10.00000
1974	58.75261	21.56863	59.92866	10.00000
1975	65.98111	21.30435	62.97154	6.500000
1976	68.54471	11.68539	67.05337	5.000000
1977	75.31092	14.25287	79.11550	5.000000
1978	83.80021	11.95402	98.54633	5.000000
1979	97.90000	13.67816	96.94786	5.000000
1980	111.6000	14.73118	100.0000	6.000000
1981	125.3000	10.42553	106.2471	9.000000
1982	133.9000	10.59524	107.6537	10.00000
1983	141.2000	11.16883	107.7066	8.000000
1984	148.4000	13.15790	111.9946	7.000000
1985	151.9000	16.12903	108.0424	5.500000
1986	151.2000	13.70370	105.2644	5.000000
1987	160.7000	12.02899	108.3686	6.000000
1988	167.8000	12.30769	115.0906	5.000000
1989	178.8000	9.295775	103.9520	7.000000
1990	NA	NA	NA	7.000000

Notes

PH Housing price index

PP Weighted average of import price indices for construction materials and capital goods

Table 1

Prices, Costs and Acreages (1)

Dependent variable: % change in acreage reaped (a)

(Coefficients with t-ratios where applicable)

Explanatory Variable	Equation Number 1,1	1,2	2,1	2,2
Constant	-0.003 (-0.18)	-0.02 (-2.07)	- (-0.03)	-0.02 (-1.56)
Dummy, 72-76	0.05 (-1.83)		-0.06 (2.76)	
Dummy, 77-80	0.008 (0.27)		-0.002 (-0.09	
Dummy, 81-89	-0.04 (-1.89)		-0.05 (-3.09)	
p(-1)	0.02 (0.61)	0.29 (1.60)	0.001 (0.01)	0.21 (1.43
$c_{I(-1)}$	0.03 (0.63)	0.02 (0.32)		

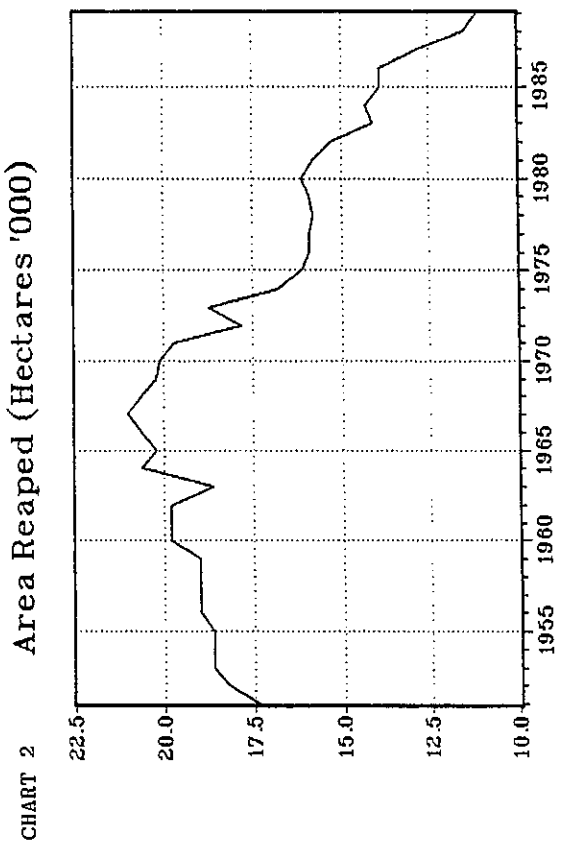


CHART 2

Table 1 Cont'd

Explanatory Variable Number	Equation Number 1.1	1.2	2.1	2.2
D72.p(-1)		-0.29 (-1.54)		-0.24 (-1.590)
D77.p(-1)		-0.28 (-1.17)		-0.26 (-1.20)
D81.p(-1)		-0.36 (-1.86)		-0.29 (-1.77)
c_2(-1)		0.42 (1.32)		0.20 (0.38)
R^2	0.0518	-0.0537	0.0274	-0.0337
SE	0.0457	0.0481	0.0379	0.0435
Sample	1963-89	1963-89	1953-89	1954-89
DW	2.65	2.25	2.67	2.17

Table 2

Prices, Costs & Acreages (2)

Dependent variable: % change in acreage reaped (a)

(Coefficients with t-ratios where applicable)

Explanatory Variable	Equation Number 3.1	3.2
Constant	- (0.03)	-0.02 (-2.45)
D72	-0.04 (-1.57	
D77	0.003 (0.10)	
D81	-0.04 (-1.86)	
r(-1)	0.001 (0.03)	-0.02 (-0.22)
D72.r(-1)		0.10 (1.05)
D77.r(-1)		-0.11 (-0.54)

Table 2 Cont'd

Explanatory Variable	Equation Number 3.1	3.2
D81.r(-1)		-0.04 (-0.51)
R^2	0.0552	-0.0197
SE	0.0456	0.0474
Sample	1963-89	1963-89
DW	2.71	2.27

Table 3

Sugar vs. Real Estate

Explanatory Variable	Moving Averages Equation (1)	Differences in logs Equation (2)
Constant	-0.01 (-1.48)	-0.01
p (-1)	0.01 (0.17)	0.08
p_h (-1)	-0.50 (-2.14)	-0.36
w (-1)	0.26 (1.22)	0.02
APL (-1)	0.05 (0.76)	0.00
P_p (-1)	0.19 (1.44)	0.19
i (-1)	0.04 (0.94)	-0.03
ECM		0.61
Adjusted R^2	0.0375	0.2728
SE	0.0251	0.0401
Sample	1963-88	1962-88
DW	1.06	2.11