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# The Impact of the Voluntary Anti-Inflation Program on Retail Food Prices

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## Abstract

The general purpose of the voluntary anti-inflation program was to limit price increases in markets where firms have discretionary price-setting power. Results suggest that the program was partly successful with respect to some domestic food markets. Retail prices for cereals and bakery products, sugar and sweets, other prepared foods, and processed fruits and vegetables all increased significantly less in 1978 and 1979 than they would have if there had been no anti-inflation program. Prices for other foods have not been affected, however.

## Keywords

Anti-inflation program, Food prices, Econometric model

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## Introduction

In October 1978, the Carter Administration implemented a voluntary program of pay and price standards as part of a general anti-inflation effort. The basic goal was to limit pay and price increases in markets where firms had discretionary price-setting power, while giving fiscal and monetary policies "time to work." The program was designed to be voluntary and self-administered, with the Government reserving the right to withhold contracts from noncomplying firms. Large companies were requested to submit data to the Council on Wage and Price Stability (CWPS), which was assigned the task of implementing and maintaining the program.

Despite substantial evidence of active cooperation by most large corporations, the voluntary pay and price standards program has been criticized as ineffectual. On one side, economists like Trebing (11)<sup>1</sup> have argued that a voluntary program cannot work because it conflicts with the profit-maximizing objective of firms. On the other side, as Alperovitz and Faux (1) recently noted, many liberal economists urge the implementation of mandatory price controls because of enforcement difficulties and monitoring problems associated with the current program. CWPS (4) itself acknowledges the controversy concerning the effectiveness of the voluntary program, but it maintains that without the program the "underlying" inflation rate would have been 1.0 to 1.5 percentage points higher and the "overall" inflation rate about 0.50 to 0.75 percentage points higher since 1978.

The voluntary anti-inflation program does not cover markets for raw foodstuffs, but the food industry is subject to the general price standard applied to all industries.<sup>2</sup> As alternatives, however, a "percentage gross margin" standard is available to food wholesalers and retailers and a "gross margin" standard is available to food manufacturers, an optional "profit margin limitation" standard is available (with CWPS approval) to any firm which experiences unusual cost increases. CWPS has not publicly asserted that these standards have influenced retail food prices, but Hiemstra (5) has presented evidence that voluntary restraint has significantly limited food price inflation.

In this article, I determine what impact, if any, the voluntary anti-inflation program has had on retail food prices. To do this, I re-estimate the econometric model of the food industry developed by Lamm and Westcott (9), incorporating binary variables to measure program impacts.

## The Program

During the first program year, the general price standard limited price increases by firms to a maximum of 9.5 percent, while it limited wage increases to 7 percent. The percentage-margin standard was made available to food wholesalers and retailers in lieu of the price standard because of the complexity of computing price changes for hundreds of different products. This standard was satisfied if a firm's adjusted net sales less the cost of goods sold as a percentage of net sales did not exceed its margin trend, or if its margin percentage in the program year did not exceed that of the base year. The gross margin standard, available for food manufacturers and

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<sup>2</sup>The program was designed partially to limit increases in most administered prices in the economy. Hence, competitive markets for agricultural products, other commodities, exports, and financial securities were excluded.

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<sup>1</sup>Italicized numbers in parentheses refer to items in the references at the end of this article.

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processors as an alternative to the price standard, was satisfied if the change in gross margins (adjusted net sales less the cost of goods sold) from the third quarter of 1978 to the third quarter of 1979 did not exceed 6.5 percent.

The profit margin limitation was available as a third alternative to both food manufacturers and processors and to wholesalers and retailers. This standard could be used by companies unable to satisfy the price standard because it was impossible to compute average price changes, because of uncontrollable cost increases, or because of undue hardship or inequity. The profit margin limitation was satisfied if the ratio of profit to net sales was no higher than the average profit margin for 2 of the 3 years in the base period (1975-77) and if program-year profit did not exceed base-year profit by more than 6.5 percent. CWPS approval for eligibility was required for this standard, however, and most firms in the food industry attempted to comply with the margin standards.

Retail food prices rose dramatically during the first year of the program, largely because of significant increases in the price of raw foodstuffs. This was especially true in the first half of 1979 when the Consumer Price Index (CPI) for food increased at a seasonally adjusted annual rate of 20.9 percent in the first quarter and 11.2 percent in the second quarter. During this period, the farm-to-retail price spread for the food industry increased much faster than marketing costs, resulting in higher food industry profits. This situation led to an August meeting between President Carter and representatives of the food industry at which the President urged restraint (see Lamm (8) for a review).

On September 28, 1979, the second year's program was announced by CWPS (3). Many of the basic rules established during the first year of the anti-inflation program were continued. However, a tripartite pay advisory committee was created, a price advisory committee was established, and most standards were extended to apply across 2 program years. Furthermore, firms were expected to limit their price increases in the second program year to no more than 8.5 percent (compared with 9.5 percent the first program year) and the profit-margin limitation was revised, growth in dollar profits was limited to 13.5 percent over both program years.

The basic policy toward violations was continued. CWPS first notified noncomplying firms privately to encourage voluntary adherence. If a firm failed to comply within a reasonable period, public pressure was utilized. Noncomplying firms in the food industry generally responded through vol-

untary price or margin reductions without public pressure, and there was substantial evidence of a persistent effort by firms to satisfy the program standards.

## The Model

Using an econometric model to quantify any complex policy like that represented by the voluntary pay and price standards is difficult. The usual procedure in modeling such policies is to use a binary variable to represent the period over which the program is applied. This procedure makes it possible to approximate the program impacts if no other exogenous change occurs simultaneously, and it is the approach I follow here using the Lamm-Westcott model.

The Lamm-Westcott model (9) consists of a system of 20 linear equations, 15 of which link percentage changes in retail food prices, as represented by various components of the CPI for food, to changes in prices for raw farm products and other food marketing costs, such as labor, energy, and packaging materials. The model is essentially a single "stage-of-processing" model similar to that proposed by Popkin (10). It focuses on both the components of the farm-to-retail price spread and the changes in farm-level commodity prices with food marketing costs and raw foodstuffs prices considered as exogenous. The original version of the model was estimated with data from the second quarter of 1968 to the fourth quarter of 1977 and is currently used by the U.S. Department of Agriculture to forecast food prices.

## Results

To perform the analysis, I added a binary variable representing the program implementation period for which data were available (the 5 quarters from fourth quarter 1978 to fourth quarter 1979) to each of the 15 food price equations in the Lamm-Westcott model. I then re-estimated each relation by ordinary least squares, using data from second quarter 1968 to fourth quarter 1979. This extended the time period covered in the original model, allowing for an explicit evaluation of the program effects.<sup>3</sup>

Table 1 presents the estimated structural coefficients for the binary program variables included in each food price equation. The reader is referred to the original Lamm-Westcott paper for the complete model specification. Each coefficient

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<sup>3</sup>This procedure represents a disaggregated approach to program evaluation in which cross-effects are modeled explicitly. An alternative would be directly estimating an aggregate food CPI equation.

represents the percentage change in food prices attributable to the program. Table 1 also presents *t* statistics for tests of the null hypothesis that the binary program variable is zero, F statistics for tests of the null hypothesis that the addition of the binary variable adds significantly to the explanatory power of each equation, and statistics measuring the contribution of the program variable to the explanatory power of each equation.

The results indicate that the estimated coefficients for the voluntary anti-inflation program binary variables are marginally significant in only four cases: cereals and bakery products, sugar and sweets, other prepared foods, and processed fruits and vegetables. The critical *t* value at the 90-percent confidence level is slightly less than 1.70, while the critical F value at the 90 percent level is approximately 2.85, implying the same inference regardless of which test statistic is used.<sup>4</sup>

Indications are that the implementation of the voluntary anti-inflation program had a 0.74 percent negative impact per quarter on the change in the CPI for cereals and bakery products, a 1.86-percent negative impact per quarter on the change in the CPI for sugar and sweets, a 0.65 percent nega-

tive impact per quarter on the change in the CPI for other prepared foods, and a 1.50-percent negative impact per quarter on the change in the CPI for processed fruits and vegetables. These results seem plausible given the actual changes in the CPI's for these foods over the period studied.

Based on the reported test statistics, and since the original equations in the model passed a variety of validation tests, it seems that the parameters presented in table 1 are reasonable estimates of the effects of the voluntary anti-inflation program on retail prices for cereals and bakery products, sugar and sweets, other prepared foods, and processed fruits and vegetables. Consequently, we can conclude that the voluntary anti-inflation program had a restraining impact on prices for these foods. Similarly, the 11 price equations for which the program variable was found not to be statistically different from zero also seem to be reasonable representations, implying that the voluntary anti-inflation program had no impact on prices for 11 major food categories. These included: beef and veal, pork, other meats, poultry, fish and seafoods, eggs, dairy products, fats and oils, beverages, fresh fruits, and fresh vegetables.

Using the relationship between changes in CPI components and changes in the CPI aggregates and the relationship between re-estimated price equations for cereals and bakery products, sugar and sweets, other prepared foods, and processed fruits and vegetables, I estimate that the implementation of the voluntary anti-inflation program had a negative impact of approximately 0.3 percent per quarter on changes

<sup>4</sup>Note that the program variable for the cereals and bakery products equation is significant at the 85-percent level on the basis of the *t* test and at the 82-percent level on the basis of the F test. The decision to accept this low level of confidence is arbitrary.

Table 1—Estimated coefficients for binary variables representing the impact of the voluntary anti-inflation program on food prices

Consumer Price Index	Estimated coefficient	Statistic		Contribution to R <sup>2</sup>
		<i>t</i>	F	
Beef and veal	0.61	0.50	0.28	0.10
Pork	1.09	1.08	11	23
Other meats	.37	.93	31	09
Poultry	-.75	-.65	43	11
Fish	-.30	-.59	04	43
Eggs	.13	.08	.01	00
Dairy products	-.05	-.12	.02	.01
Cereals and bakery products	-.74	-1.44	2.08	.72
Fats and oils	-.55	-.63	.43	.14
Sugar and sweets	-1.86	-2.12	4.55	.98
Other prepared foods	-.65	-1.93	3.83	1.14
Nonalcoholic beverages	-1.45	-1.27	1.60	.99
Fresh fruits	1.36	1.07	1.02	.22
Fresh vegetables	.08	.03	0	.01
Processed fruits and vegetables	-1.50	-1.91	3.65	2.86

*Because food processors and distributors are covered by the program, and most have used margin standards as a guide for limiting prices, it would seem that the greatest price-limiting impacts of the voluntary anti-inflation program would be on those foods with relatively large farm-to-retail margins*

in the CPI for food consumed at home. Because the CPI for food consumed at home rose an average of 2.0 percent each quarter from fourth quarter 1978 through fourth quarter 1979, we may conclude that the voluntary anti-inflation program has had a moderate restraining effect on food prices.

### Implications

The voluntary anti-inflation program limits price increases in markets where firms have discretionary pricing power, but does not cover markets for raw foodstuffs which are basically competitive. Because food processors and distributors are covered by the program, and most have used margin standards as a guide for limiting prices, it would seem that the greatest price-limiting impacts of the voluntary anti-inflation program would be on those foods with relatively large farm-to-retail margins, more of the final price of these foods is subject to control under voluntary compliance.

Cereals and bakery products, sugar and sweets, "other prepared foods," and processed fruits and vegetables are foods with relatively large farm-to-retail margins. Manufacturing and retailing jointly account for about 85 percent of the total value of cereals and bakery products, sugar processors and distributors account for almost 55 percent of the total value of sugar, and manufacturers and distributors of processed fruits and vegetables account for almost 80 percent of the total value of processed fruits and vegetables (table 2). For this reason, one would expect the voluntary anti-inflation program to have affected retail prices for these products substantially, given discretionary pricing power. That is precisely what the estimates suggest.

Table 2—Approximate value-added by food processors and distributors as a percentage of the cost of food to consumers

Food group	1977	1978	1979
	<i>Percent</i>		
Meat products	45	42	43
Dairy products	50	49	48
Poultry	46	43	46
Eggs	35	33	32
Cereals and bakery products	87	86	85
Fresh fruits	71	68	71
Fresh vegetables	67	68	70
Processed fruits and vegetables	82	81	81
Fats and oils	64	66	66
Sugar and sweets	61	55	55
All domestic foods	63	61	61

In contrast, food processing and distributing account for only one-third to one-half of the total value of meats and meat products, dairy products, poultry, and eggs. Therefore, the final price of these products would be less subject to control under voluntary compliance and the program might not have as much impact on retail prices. Again, the estimation results support this conclusion.

Thus, the voluntary anti-inflation program has had the greatest impact on those food prices which are subject to the most potential control, and it has had no identifiable impact on the retail prices of foods whose margins represent a smaller percentage of total food value.

In addition, substantial price-limiting gains would be expected for food industries having the most price-setting power. Firms in these concentrated industries would not be harmed substantially by limiting price increases in the short run because they presumably already extract some excess profit as a result of their market power. They could "afford" to comply, because public exposure from noncompliance might adversely affect their market share. In contrast, the incentive to avoid compliance is greatest in those industries which are fairly competitive and not highly concentrated, price restraints might induce less than normal returns, causing some firms to leave the industry.

The results presented here support these contentions. Most industries which manufacture foods classified in the CPI categories for cereal and bakery products, sugar and sweets, and other prepared foods are among the most highly concentrated in the U.S. food manufacturing sector (table 3). Manufacturing industries producing processed fruits and vegetables are not highly concentrated nationally but are moderately concentrated after adjustment for local market share (see Connor (2)). In contrast, food industries like meat-packing, poultry processing, fluid milk processing and other food manufacturing industries are less concentrated.<sup>5</sup> Hence, the voluntary anti-inflation program has had a significant impact on more concentrated industries and no impact on less concentrated ones. This implies that the program has tended to affect substantially price increases in food industries with the most discretionary pricing power.

<sup>5</sup> Food manufacturing industry classifications do not match exactly the product classifications used in the CPI, although an approximation can be obtained. For example, the creamery butter, cheese, condensed and evaporated milk, ice cream and frozen dessert, and fluid milk industries produce most of the products included in the dairy products CPI.

Table 3—Concentration ratios for selected food industries, 1972

Industry <sup>1</sup>	Concentration ratios		
	4 firms	8 firms	20 firms
	<i>Percent</i>		
Meatpacking plants (2011)	22	37	51
Sausages and other prepared meats (2013)	19	26	38
Poultry dressing plants (2016)	17	26	42
Poultry and egg processing (2017)	23	36	65
Creamery butter (2021)	45	58	78
Cheese (2022)	42	53	65
Condensed and evaporated milk (2033)	39	58	76
Ice cream and frozen dessert (2024)	29	40	58
Fluid milk (2026)	18	26	42
Canned specialties (2032)	67	81	94
Canned fruits and vegetables (2033)	20	31	53
Dehydrated fruits, vegetable soups (2034)	33	51	76
Frozen fruits and vegetables (2037)	33	46	62
Flour and other grain mill products (2041)	33	53	75
Cereal breakfast foods (2043)	90	98	99
Rice milling (2044)	43	68	92
Blended and prepared flour (2045)	68	81	92
Bread, cake, and related products (2051)	29	39	50
Cookies and crackers (2052)	59	69	83
Raw cane sugar (2061)	44	62	84
Cane sugar refining (2062)	59	85	99
Confectionery products (2065)	32	42	59
Chocolate and cocoa products (2066)	74	88	99
Chewing gum (2067)	87	98	100
Shortening and cooking oils (2079)	44	70	93
Bottled and canned soft drinks (2086)	14	21	32
Fresh and frozen fish (2092)	20	32	53
Roasted coffee (2095)	65	79	92
Macaroni and spaghetti (2098)	38	53	76

<sup>1</sup>Standard Industrial Classification (SIC) numbers are given in parentheses  
 Source: U S Department of Commerce, 1972 *Census of Manufactures*

## Conclusion

The basic finding of this study is that the voluntary anti-inflation program restrained increases in retail food prices by approximately 0.3 percent over each of the five quarters from fourth quarter 1978 through fourth quarter 1979. This negative impact was greatest on retail prices for cereals and bakery products, sugar and sweets, other prepared foods, and processed fruits and vegetables. This might have been expected, however, as the potential gains from control would be substantial for these food groups, farm-to-retail margins have been the largest and concentration has been the highest in these industries.

These findings show how the voluntary anti-inflation program has affected prices in the food industry and also that the program has had an impact. Proponents of the program may find these results encouraging. However, the model estimates are less than perfect statistically and the binary

program variable is less than satisfactory. Nonetheless, the findings partly validate the contentions of those who claim that the anti-inflation program did restrain increases in retail food prices.

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*Charles F Sarle*  
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