

**MARKETING ORDER IMPACTS ON FARM-RETAIL PRICE SPREADS:  
THE SUSPENSION OF PRORATES ON  
CALIFORNIA-ARIZONA NAVEL ORANGES**

**BY**

**GARY D. THOMPSON AND CHARLES C. LYON  
IN AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS  
VOL. 71, NO. 3, AUGUST 1989**

**Summary**

The paper attempted to measure the impact of the suspension of prorate on California-Arizona (C.A.) navel oranges on the price differentials between retail and farm-gate rates. The exercise was to test the efficacy of the policy measure of volume control in an organised agricultural setting. The method used by the authors was empirical and four (4) seemingly unrelated linear equations were specified. The paper was structured into three (3) sections. The first section contained the history of the California-Arizona navel oranges and the events leading to the suspension. In the second section, the authors utilized four (4) price models for estimating the variables of the equations. The third section considered some policy implications of the model chosen to be the best fitted. The aim of this review is to highlight some of the major results of the study as well as to x-ray the methodologies employed in arriving at them.

In section one of the reviewed paper, the authors indicated the percentage shares of the C.A. navel oranges in the total U.S. fresh orange production, as well as fresh winter orange output. They also discussed the organisation that oversees the volume control of the navel oranges and its operational modalities in enforcing the control. According to the writers, the major factor that necessitated the suspension of the pro-rate on C.A. navel oranges was the severe freezes experienced in early 1985 in Florida and Texas, resulting in reduced output of oranges in the country. The authors, however, indicated the desirability of such suspension or removal of the order prior to the freezes. They informed readers about the arguments and controversies that such considerations had generated among market operators and scholars.

In section two, four (4) price models were considered based on different assumptions of price spread links to some independent variables. The first model examined was the Buse & Brandow model (J. Farm Econ. - 42, 1960), given as  $M = f(P_r, Q, Z)$ , indicating that price spread is a function of retail price and quantity of the commodity considered. The variables of the equation were defined as price spread ( $M$ ) = the difference between retail price and farm gate price ( $P_r - P_f$ ),  $Q$  (quantity) and  $Z$  (other variables). The second Model,  $M = f(P_r, M_c)$ , considered and referred to as Waugh or Mark-up model (U.S. D. of Agric. Tech Bull. No. 1316, 1964) assumed that price spread is a function of retail price as well as input costs for marketing services ( $MC$ ). The third theoretical model represented as  $M = f(Q, MC)$  took into account the cost of a bunch of marketing services with agricultural commodity supply and retail demand as exogenous variables in competitive market. The last equation reviewed by the authors was the relative model.

Mathematically, this was represented as  $M = f(P_r, P_r Q, (MC/P_r))$  and comprised all the variables mentioned earlier and retail demand. The key variable used in assessing the impact of the pro-rate suspension and its re-instatement was the farm-retail price spread. From these theoretical models they expanded their empirical estimations. In their study, three (3) cities thus (Atlanta, Dallas and San Francisco) were used as their retail outlets from which data were collected on weekly basis and fitted into the models specified. The periods of the study were 1985 (indicating the pro-rate suspension year), 1985/86 and 1986/87. The latter two years represented re-instated pro-rate periods. Twelve regression equations were generated based on the 3-city and 4 specifications approach utilized (i.e. each of the cities was applied to the 4 specifications).

The major results of the study showed the following:

- (1) That for the period of the pro-rate suspension (1985) price spreads in Atlanta and San Francisco reduced by a little over 1 ¢ (one cent) per pound, while it increased in Dallas.
- (2) That the coefficients on the dummy variable for the marketing order suspension were statistically significant for only Atlanta and San Francisco
- (3) That the third theoretical model, MC, using the marginal cost function was the only specification that showed increased price spreads for all the markets during the pro-rate suspension period.
- (4) That the nearness of Atlanta to Florida, the citrus producing area affected by the freeze, did not affect the price spread during and after the pro-rate suspension period.

From the different test of hypothesis, like classical non-nested and nested (or pair-wise testing approach) carried out by the authors, the Mark-up model was tentatively accepted to represent best estimate of the behaviour of navel orange spreads.

The last section of their paper which dwelled on policy implications of the model chosen, indicated that the result obtained for the short-run analysis might have embodied the expectation of producers, handlers and retailers that the pro-rate suspension would be a short-lived policy measure. Meaning that the expectations from these groups might have reduced some of the results that a wholly unanticipated suspension exercise might have had. From the econometric results they concluded that FOB-retail price spread narrowed during the suspension after discounting for the isolated effects of Texas citrus supply regions.

### Remarks

The empirical approach used by the authors in determining the effect of the pro-rate suspension on price spreads was highly commendable, as it deviated from the simulated approach of previous and similar studies. The quality and technical standards of the paper were quite high, as these were reflected in the statistical cross references employed by the authors in checking the statistical results obtained.

The short-run analysis of the paper, however, limited the generalizations of the results obtained. Nevertheless, the short-comings responsible for these were sufficiently and satisfactorily discussed in the paper.

Although, the system of pro-rates for agricultural commodities do not exist now in Nigeria, the attraction for its introduction to the agricultural sector in the foreseeable future could be a worthwhile consideration. It is believed that this type of system could be incorporated into the proposed commodities exchange, as a means of stabilizing the prices of some of the commodities traded. It could also be used in improving and increasing the production of some primary fruits and perishables for agro-allied industries. The re-instatement of the policy measure in the U. S. after the severe freezes was an indication of the vital role the pro-rate system was playing in the production of C-A navel oranges.

**Mr. A. K. AKINYEMI**  
Senior Economist  
General Economics Statistics Office  
Statistical Services Division.