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ANNOUNCEMENTS, COMMENTS AND NOTES

ANNOUNCEMENT

S.J.J. DE SWARDT-AGREKON PRIZE AND DEBUTANT PRIZE

The S.J.J. de Swardt Agrekon Prize for 1986 with a prize money of R350,00 has been awarded to Profs J. van Zyl and J.A. Groenewald for their article "A comparison of certain decision-making techniques under risk - an empirical investigation of maize cultivar selection" which appeared in the February 1986 edition of *Agrekon*.

The S.J.J. de Swardt Agrekon Debutant Prize for 1986 with a prize money of R150,00 has been awarded to Messrs A.S. Myburgh, J.P. Lombard and Dr M. Sinclair for their article "Supply limitation according to product quality" which also appeared in the February 1986 edition.

Mr S.J.J. de Swardt, former Secretary of Agricultural Economics and Marketing, was responsible for the foundation of the S.J.J. de Swardt Agrekon Prize in 1962. He made a bequest to the Department for the award of prizes for meritorious contributions in the field of agricultural economics published in *Agrekon*. The Editorial Committee of *Agrekon*, in 1984, in consultation with Mr De Swardt also instituted the S.J.J. de Swardt Agrekon Debutant Prize for the best debutant article with a view to encouraging younger and less experienced agricultural economists in particular, to write for the journal.

RESEARCH NOTE

THE PRICE AND INCOME ELASTICITY OF DEMAND FOR FOOD IN THE RSA, 1961-1985

Research note by G.J. Conradie and J. van Zyl,
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INTRODUCTION

The composition of the South African population has changed during the preceding decades, and so also their distribution, their relative income, and their tastes and preferences. Nearly all developing countries are diverse in their culture, their social and economic circumstances (Todaro, 1985:21). As countries develop, structural changes take place (Terreblanche, 1980) that compel a population or portions thereof to change their customs and lifestyle with specific reference to their eating habits and demand for food.

In this study it was attempted to identify some of the characteristics of the demand for food in the RSA with specific reference to the price and income elasticities thereof. These values should be useful for especially macro-economic policy decisions. According to Döckel and Groenewald (1970), demand curves perform a central role in economic theory, and have several application possibilities in practice.

THEORETICAL CONSIDERATIONS IN THE ANALYSIS OF THE DEMAND FOR FOOD

In economic theory a demand curve indicates the quantity of a product consumers are willing to purchase at different prices (McKenzie and Tullock, 1978:36). This ratio, however, holds only under a strict set of assumptions - the so-called *ceteris paribus* assumptions. It is impossible to keep these factors constant, and such changes should therefore be built into the model. Empirical demand analysis is no more than an estimate of the complicated reality, with the result that the validity of demand analysis may always be questioned to a greater or lesser extent (Döckel and Groenewald, 1970).

Fitting regression lines in order to obtain representative demand curves lead to several problems (Van Zyl, 1986). According to Du Toit (1982:15) the most important of these are the identification and aggregation problems.

Quantitative techniques have already found wide acceptance for particularly three reasons. Firstly, because they prove to be more usable in the decision-making process. Secondly, they are

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reasonably accurate and thirdly, because quantitative techniques have, with the aid of modern computer technology, become more sophisticated in the use of large quantities of data (Taneja, 1978: 1-3).

DATA USED AND CHOICE OF VARIABLES

In contrast to Döckel and Groenewald (1970) who concentrated on the period 1947 to 1968, this study covered the period 1961 to 1985. In both models annual data was used. The demand for food was measured for the country as a whole, including tobacco and beverages. In accordance with Thomson and Foote (1952:28), per capita data was used. Food prices and disposable income figures were deflated with 1980 as base (Schiffman and Kanuk, 1978).

The following functional relationships between certain variables were hypothesised and tested:

PKVV = f(PKBI; R; VSP; RKV; T; VPI)

Where:
PKVV	-	real per capita food consumption
PKBI	-	real per capita disposable income
R	-	interest rate (prime overdraft rate)
VSP	-	ratio of urban to rural population
RKV	-	relative cost of food
T	-	time
VPI	-	food price index

Data on income figures was obtained from several editions of the *Quarterly Journal of the Reserve Bank* (Reserve Bank, 1968-1985), while interest rates and consumer price indices (excluding food) were obtained from *South African Statistics* (Department of Statistics, 1970; 1976; 1980). The food price indices and population data were obtained from the *Abstract of Agricultural Statistics* (Directorate of Agricultural Economic Trends, 1987).

Processing of all data was done by means of the NWA STATPACK's multiple regression program (Northwest Analytical, 1982). Although various regression fits were done (both with actual and real prices), only two real fits are presented. As measure of significance, the F- and t- test, the signs, the coefficient of determination (R^2), the reliability of fit (F-value) and the Durbin-Watson test, to test for serial correlation in the residual, were imployed. Multicollinearity was, as far as possible, counteracted using correlation matrices in the elimination of certain mutually highly correlated variables.

Due to a lack of sufficient data to calculate the ratio of urban to rural population, ten-yearly census data were utilized to fit a linear regression which simulates the missing data.

EMPIRICAL RESULTS

A simple correlation matrix was used to test for multicollinearity. Table 1 shows the results.

TABLE 1 - Correlation between independent variables

	PKBI	R	VSP	RKV	T	VPI
PKBI	1,00					
R	0,79	1,00				
VSP	0,20	0,19	1,00			
RKV	0,87	0,79	0,24	1,00		
T	0,46	0,49	0,89	0,18	1,00	
VPI	0,83	0,89	0,03	0,85	0,32	1,00

Several linear functions were fitted, amongst others:

$$PKVV = 0{,}225 + 0{,}2289\ PKBI + 0{,}02\ R - 0{,}137\ RKV \text{----(1)}$$
$$7{,}48^{***} \qquad 1{,}54^{b} \quad -1{,}74^{a}$$

$$F = 75{,}02^{***} \qquad R^2 = 0{,}9147 \qquad d = 1{,}99^{***}$$

According to the coefficient of determination (R^2), 91,5 per cent of the variation in the per capita real expenditure on food is explained by the equation. The signs of all the variables are in accordance with prior expectations. The Durbin-Watson test is decisive at a probability of one per cent, as is the F-value. The level of significance for the t-values ranges from 1 per cent to 20 per cent.

A logarithmic transformed model (natural or Napierian logarithms) was fitted to compare with the linear model:

$$Ln\ PKVV = -8{,}512 + 0{,}551\ ln\ PKBI - 2{,}182\ ln\ VSP + 1{,}743\ ln\ T \text{----(2)}$$
$$2{,}54^{**} \qquad -1{,}56^{b} \qquad 1{,}88^{a}$$

$$F = 76{,}61^{***} \qquad R^2 = 0{,}9163 \qquad d = 1{,}72^{***}$$

According to the coefficient of determination (R^2) 91,5 per cent of the variation in the real expenditure on food is explained by this model. The fit between the data and the model is highly significant. The Durbin-Watson value shows a lack of autocorrelation at the 1 per cent level of significance.

Although this transformation does not appear to be a drastic improvement on that of Equation 1, the log transformation simplifies the calculation of elasticities.

ELASTICITIES

Equation 1 was used to determine the following elasticities:
- Income elasticity of demand for food = 0,690
- Price elasticity of demand for food = -0,337
  In the case of Equation 2:
- Income elasticity of demand for food = 0,551

CONCLUSION

Notwithstanding several structural changes in the Republic of South Africa, these results show a close resemblance to Döckel and Groenewald's (1970) study, where an income elasticity of demand for food of 0,60 was calculated for the period 1947-1968. The corresponding price elasticity of demand for food was found to be -0,3035, which once again closely resembles the results of this study. These results are also in accordance with those of

Barr (1983), who used the Houthakker-Taylor continuous time model on 1946-1972 data, and estimated price elasticity of demand for food at -0,361 over the short run and at -0,235 over the long run.

According to these results it appears that the demand for food is still to a great extent influenced by the income of the RSA consumer. An increasing demand for food is thus only foreseen in the event of sufficient job opportunities being created in order to increase the average per capita income of the RSA population, together with an equitable distribution thereof.

NOTE

Student's t-values according to the one-sided probability of exceedance table: *** = 1%; ** = 2%; * = 5%; a = 10%; b = 20%. Significance of F-values: *** = 1%; ** = 2,5%. Significance of d-values: *** = 1%.

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