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SOUTH AFRICAN AGRICULTURE AND INFLATION PHENOMENA

by J.A. GROENEWALD*

ABSTRACT

From 1973 tot 1982 South Africa experienced double digit inflation, more rapid rises in food than general price levels and slower increases in agricultural producers' prices than for inputs and consumers' goods. Agriculture earns much of its revenue through exports. Demand-pull inflation probably didn't cause the sharp food price increases. Farmers contribute to demand-pull inflation through injudicious purchases of inputs.

Input prices rise faster locally than overseas. This decreases competitive power on international markets. Tariff protection of inputs and monopolistic conditions are contributory factors. Agricultural profitability decreases, debts rise and risks increase. Eventually this will result in smaller supply and higher food prices.

Monopolies reduce agriculture's bargaining power. The Marketing Act attempts to improve this. Some boards, however, become statutory monopolies and contribute to cost-push. Such actions and the monopolistic actions of some Co-ops are harmful. In general, monopolies warrant more attention.

INTRODUCTION

It is normally expected of agriculture to provide sufficient food for the population at reasonable prices and this is often regarded as an important contribution of agriculture to economic development. According to Brand (1969) South African agriculture has historically fared well in this respect. A probable consequence of such success is that it may have a retarding effect on wage demands in other sectors and hence also on cost-push inflation. In this respect, South African agriculture has traditionally performed well. The question is whether agriculture still performs this role or not in the present era of inflation. Table 1 provides some background information in this regard.

Table 1 indicates that inflation, as measured by the general consumers' price index, was above 10 per cent right through the period. Food prices rose faster than prices of all consumers' items; in 6 out of 9 years food price increases exceeded those of all consumers' goods. Producers' prices of farm products rose more slowly than those of any of the other three groups in the table. This phenomenon was also evident in most individual years. One result is a decrease in the producer's share of the consumer's rand, as reflected, among other things, in the producer's share of consumer value in the food basket *Abstract of Agricultural Statistics*, (1984, Table 106).

South Africa is also a net exporter of agricultural products. In 1982 imports of agricultural products amounted to R200 million, that is 1,1 per cent of the country's total imports. In the same year, exports of agricultural products amounted to R2 063 million, contributing 10,2 per cent of total exports. To a large extent South African agriculture depends on such exports. The sum of R2 063 million represents, for example, 28,2 per cent of the gross value of agricultural production (R7 316 million) in 1981/82 (*Abstract of Agricultural Statistics*, 1984 Table 81). This propensity to export varies between different agricultural industries. Karakul pelt production is almost exclusively exported and so also is the major portion of wool and mohair production. Certain field crops and horticultural products have a high export propensity. The most important ones are listed below with export's percentage share of the total mass produced in

TABLE 1 - Increase rates (percentages) in certain prices, Republic of South Africa, 1973-1982

Period	Consumers' prices		Producers' prices of farm products	Farm inputs
	All items	Food		
1973-74	11,7	14,9	10,8	18,3
1974-75	13,5	14,9	9,4	21,8
1975-76	11,1	7,4	8,6	15,6
1976-77	11,3	10,2	8,8	12,7
1977-78	10,9	12,9	6,2	13,5
1978-79	13,2	15,7	18,7	20,6
1979-80	13,8	18,9	18,0	16,3
1980-81	15,2	22,1	13,8	11,0
1981-82	14,7	11,2	10,4	17,6
1973-82	12,8	14,2	11,6	16,4

Source: Figures processed from data in the *Abstract of Agricultural Statistics*, 1984, Tables 97 and 98

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1975/76 to 1981/82 or 1982/83 (depending on the availability of data in the *Abstract of Agricultural Statistics,* 1984, in parentheses: Maize (43,0 %); grain sorghum (28,4 %); groundnuts (22,8 %); sugar (46,6 %); apples (47,4 %); pears (31,9 %); plums (45,6 %); avocados (49,3 %); oranges (59,9 %); lemons (58,3 %); grapefruit (69,2 %)

A large number of agricultural producers therefore depend on export markets for an important part of their revenue. Agriculture is also, in other respects, of considerable importance to the economic life of South Africa. By 1980 the percentage of the economically active population involved in agriculture, hunting, forestry and fisheries amounted to 15 per cent. In particular, many Coloureds (16 %) and Blacks (18,6 %) were involved (*Abstract of Agricultural Statistics*, 1984) (Table 3). In addition agriculture forms an important market for other economic groups. Farmers' families and families of farm workers spend large amounts on consumption goods and agriculture also purchases large quantities of inputs from other sectors. If it is assumed that gross capital formation in fixed improvements and in farm machinery can also be regarded as purchases from other sectors, the agricultural sector purchased inputs for at least R3 429 million in 1982/83 (Table 2).

TABLE 2 - South African agriculture's purchases of inputs from other sectors, 1982/83

Purchases and gross capital formation	R million
Purchases of intermediate inputs:	
Packing material	103
Fuel	579
Fertilisers	537
Stock feed	992
Dips and sprays	170
Gross capital formation:	
Fixed improvements	377
Tractors, machines and tools	671
Total	**3 429**

Source: *Abstract of Agricultural Statistics*, 1984, Tables 77 & 85

Furthermore large amounts of money are used for other services such as transport, repairs, insurance, accountancy fees, etc. Industrial raw materials of agricultural origin are also important to the secondary sectors. According to unpublished data from the South African Agricultural Union, factories devoted mainly to the processing of agricultural products produced approximately 27 per cent of the gross production value of the factory sector in 1976 and employed about 28 per cent of the factory labour force.

It may therefore be stated without any fear of informed contradiction that agriculture still plays a key role in the South African economy.

It is therefore, on the one hand, appropriate to devote attention to the extent to which agriculture has been a contributing factor to inflation in South Africa and on the other hand, to the extent to which agriculture suffers as a result. If it should indeed happen that agriculture, as is feared at present in many circles, suffers a drastic collapse, the effects will obviously be felt throughout the economy. If agriculture materially contributes to inflation, it is also extremely important to identify these problems and to rectify them if possible.

THE NATURE OF INFLATION

As in many other writings on this subject, Dernberg and McDougall (1960, chapter 18) distinguish between three basic types of inflation, viz demand-pull inflation (excessive demand), structural inflation (rapid changes in demand components) and cost-push inflation. It is the opinion of these authors that cost-push inflation can develop only because of government intervention in a country's economic life. "In a world devoid of politicians susceptible to pressure and intimidation, it seems quite likely that the concept of cost-push inflation would not exist" (Dernberg & McDougall, 1960, p. 208)

It may be interesting to speculate on whether demand-pull inflation will in any way affect agriculture more than other industries and also whether agriculture can play an important causal rôle in this regard. Little has been written on this aspect and one is therefore compelled to speculate purely on theoretical grounds.

It may be argued that the larger the income elasticity of demand for a product, the bigger will be the shift to the right, in other words, the increase of demand during demand-pull times of inflation. Two efforts to determine the income elasticity of demand for food are known to the author. In one, the income elasticity of demand was estimated at 0,60 (Döckel and Groenewald, 1970) and in the other, at 0,27 (Brand, 1969). The demand for food products therefore cannot be expected to increase as fast as the monetary increase in total consumer demand. The more rapid increase in retail food prices referred to above should therefore rather be ascribed to supply conditions. Here a combination of factors may play a rôle: inelasticity of supply of agriculture at farm producers' level, rigidities in the processing and distributive trades, or cost-push with a concomitant decline and therefore a shift to the left, in supply. These factors will later receive more attention.

Agriculture has nevertheless probably contributed to demand-pull inflation by virtue of its expenditures on inputs. Farmers have obviously not economised sufficiently. As is shown in Table 3 farmers did not respond rationally to relative price changes. In this table it was assumed that total expenditure, deflated by changes in price indices, may be regarded as real expenditure, that is volume of goods purchased.

Of the input groups mentioned, only the prices of dips and sprays declined relative to producers' prices of farm products and the relationship between prices of products and of packing material remained fairly static. Prices of all other groups of inputs and those of the total of the group increased relative to product prices. Economic logic dictates that in such a situation one should economise by using fewer of the inputs concerned. Table 3, however, shows that less packing material was used and it also indicates a

TABLE 3 - Purchases of inputs by the agricultural sector relative to price changes, 1974 to 1982*

Items	Value purchased	Price index	Volume or real expenditure	*Price of input* price of agriculture product
	1974 = 100			1974 = 1,00
Packing material	213,6	247,3	86,4	1,02
Fuel	638,2	587,3	108,7	2,43
Fertiliser	313,0	319,6	97,9	1,32
Feed	491,5	306,9	160,2	1,27
Dips and sprays	395,6	219,4	180,3	0,91
Machines	348,0	323,6	107,5	1,34
Total	453,6	334,1	135,8	1,38
Agricultural production	-	241,5	113,3**	-

Source: *Abstract of Agricultural Statistics*, 1984
*Where necessitated by data, 1973/74 was taken as 1974 and 1981/82 as 1982
**Calculated on the base of an average increase of 1,63 per cent per annum

modest reduction in fertiliser purchases. With respect to the other input groups, South African farmers acted irrationally in economic terms by purchasing larger volumes[1]. This action of farmers undoubtedly aggravated some of the inflation effects on agriculture and, to the extent to which in statutary price fixing increased costs of production are reflected in increased product prices, it stimulated cost-push inflation.

THE EFFECTS OF INFLATION ON THE FARMING SECTOR

As has already been mentioned, agriculture depends on exports for a large portion of its income generation. The weal and woe of many agricultural producers in South Africa therefore depend appreciably on what happens on international markets and also on factors such as shipping costs, railage tariffs and domestic input costs which affect production costs and competitive capacity.

On overseas markets, the South African share, in the case of the majority of products, is too small to enable South Africa to have an appreciable effect on prices (excepting mohair and karakul pelts) and therefore international prices must be accepted as given. In addition, exports are directed at highly competitive international markets where government intervention is rather common. The EEC, for example, to which South Africa channels much of its agricultural exports, has high import tariffs and subsidises exports. During the 1982 GATT talks in Zurich, this was a source of serious dissension between the EEC in the one corner and the USA and Australia in the opposite one, whilst South Africa maintained a quiet which the author finds difficult to understand. On overseas markets South African agriculture is not able to shift increased costs on to consumers. The extent to which this is possible domestically will be dealt with later. At this stage, however, it is already clear that if input prices rise more rapidly in South Africa than in those countries with whose farmers South African farmers compete on international markets, the competitive position of the South African export-oriented farmer will decline and his income will suffer accordingly.[2]

In a recent study it was shown that over the period 1973-1980, with few exceptions, agricultural input prices rose appreciably faster in South Africa than in other countries competing with South Africa on export markets (Groenewald, 1982a). There are indications that the structure and protection of local manufacture of farm inputs made a substantial contribution to this state of affairs. Le Clus (1982) claims that in 1982 the prices at which some of the protected industries delivered inputs to agriculture exceeded the price at which these could be imported by between 20 and 87 per cent. Neither are monopolistic conditions unknown in these industries. They have, for example, been identified in the fertiliser industry (Board of Trade and Industries, 1976). The increases in input prices inevitably caused the exchange rate of agricultural product prices in South Africa to deteriorate considerably in relation to input prices and, measured internationally, in relation to what is experienced by farmers in by far the most countries in the world (Groenewald, 1982a and b). Between 1972 and 1981, producers' prices of farm products increased by 210 per cent, therefore at a rate of 13,4 per cent per annum. Prices of inputs rose by 267 per cent, therefore by 15,5 per cent per year. The consequences were predictable. Louw (1979) predicted, based on simulation models, that if relative price changes such as had been occurring since 1973 were to persist, average and less than average managers would not be able to weather the storm. Even above-average managers would find it difficult, particularly if they had a high debt : asset ratio. Groenewald (1980) made a similar forecast after simulating change over a period of time for a "typical" farm unit without considering risk.

These fears were realised. Tomlinson (1979) pointed out that the average gross margin of maize per ton in South Africa rose from R10,06 in 1963/64 to R20,50 in 1978/79, that is an increase of 103 per cent. Because of increases in prices of consumption goods, the real value, that is the purchasing power of the gross margin, declined at a constant money value by 24,4 per cent over the same period from R10,06 to R7,61. Le Clus (1982) also asserts that because of the rising input costs relative to product prices, profitability in maize—production is declining. According to his calculations, this meant, for example, that while harvesting 8,17 million tons in 1978/79 (an unfavourable season), the maize

industry yielded a "profit" in terms of surplus revenue over costs, of R34 million. In 1981/82, with a comparable crop size (8,22 million ton) it yielded a "loss" of R63 per ton.

In these times, farming debt rose drastically from R1 384 million at 31 December 1970 to R2 004 million at 31 December 1975, to R3 839 million at 31 December 1980 and R5 777 million at 31 December 1982 (*Abstract of Agricultural Statistics*, 1984). This entails the following rates of increase:

December 1970 - December 1982: 12,8 %
December 1970 - December 1975: 7,7 %
December 1970 - December 1980: 14,0 %
December 1980 - December 1982: 22,7 %

These increases are of an accelerating nature and have been above the inflation rate over the last few years. Drought conditions obviously aggravated conditons.

It is, however, safe to state that at the rate at which the exchange rate of agriculture deteriorated, the drought merely accelerated the process. All considered, agriculture is a disadvantaged party.

SUPPLY OF AGRICULTURAL PRODUCTS

As far as is known, only one study has yet been done to determine empirically the supply elasticity of South African agriculture as a whole (Nieuwoudt, 1972). In this study, the demand for practically all important inputs was found to be relatively inelastic over the short run for the period 1940-1965. In the long run, however, the elasticity of most, excluding labour, exceeded 1,0. The elasticity of demand for labour over the long run was estimated at -0,6, therefore was still relatively inelastic.

It therefore follows that over the short run, the effects of unfavourable price changes are minimal. As soon as farmers have had sufficient time to adjust to such changed circumstances, however, they will reduce their purchases of commercial inputs. Over the short run, as is shown in Table 3, the change was in the opposite direction. This factor will eventually, also because marginal cost curves of firms such as farm units shift upwards, lead to a decline in supply and hence to increased prices, except if demand for the products concerned also declines. In the light of the relatively low income elasticity of demand for agricultural products it is doubtful whether demand curves for most agricultural products shift substantially as the money supply or even real income increases or decreases.

Although a substantial variation in price elasticity of demand occurs among agricultural products, and although the demand for certain individual products is relatively elastic, demand for most is relatively inelastic. The price elasticity of demand for food as a group of products in South Africa has been estimated at -0,3035 (Döckel & Groenewald, 1970).

With such a low price elasticity of demand, changes in supply will have to have a considerable effect on product prices. Therefore, in addition to the reasons already mentioned, increases in prices of inputs relative to those of products, if these increases persist long enough, will have an inflationary effect via shifts in supply.

COMPETITIVE STRUCTURE

According to many economists, effective competition is one of the most efficient manners of reducing rigidity, improving efficiency and increasing the adaptability of a sector to changed circumstances. Where monopolistic and semi-monopolistic conditions prevail, prices are artificially increased and held high and the quality of services rendered deteriorates.

Effective competition and perfect competition, which requires a large number of competitors, are not synonymous concepts. According to Alderson (1957), very effective competition may exist among a small number of firms provided the market is free, or relatively free of such monopolistic influences as may hamper free market action[3]. It is largely competition for differential advantage which brings about effectiveness and, in so doing, retards or even prevents long-term cost-push inflation.

In South Africa, as indeed in most countries of the world, agriculture is practised on a large number of farms by a large number of operators, spread over a wide area. This renders co-operation among farmers, particularly with respect to market action, rather difficult. It makes monopoly or oligopoly formation in agricultural production a very rare phenomenon. In an uncontrolled situation, agriculture is also not able to pass cost increases directly on to consumers.

The same cannot be said of industries which handle agricultural products further, or which supply inputs to agriculture. Some experts on agricultural policy regard economic concentration and monopoly formation in these industries as among the most important problems of the agricultural sector (cf. Gisser, 1982; Parker and Connor, 1979; Tweeten, 1969).

It cannot be doubted that considerable concentration occurs in some such industries, in South Africa as well as elsewhere. The Board of Trade and Industries (1976), as has been mentioned, has discovered monopolistic actions in the fertiliser industry, among others. There are only a small number of manufacturers and importers of farm machinery and chemicals. The same situation prevails in industries processing farm products. In reality, a monopoly exists at present in the supply of certain classes of diesel engines (including those for agricultural tractors). The South African Transport Services also enjoy monopoly powers.

Such factors obviously cause the bargaining power of agriculture to be relatively weak. Efforts to improve the bargaining power by means of voluntary co-operation have failed to achieve their goal throughout the western world. An important consequence was that the majority of governments in the western world attempted to protect agriculture in this sense by means of special legislation and special control or support measures.

In South Africa this is largely done by control

under the Marketing Act. Boards have been established to control, regulate or promote the marketing of a variety of agricultural products. Under the Marketing Act, 1968 (Act 59 of 1968), producers' representatives have a majority on each control board. A variety of marketing schemes are conducted by the 21 boards in terms of the Marketing Act. In addition, a few other agricultural industries are controlled by means of other special legislation.

The danger does, however, always exist that, depending on the type of scheme, product boards may lead to rigidity, ineffectiveness and consequently cost-push. In reality, some boards are in the position *of being statutory monopolies and experience has* not proved statutory monopolies to be free of all the *true disadvantages usually associated with* monopolies.

It has been shown that statutory bodies, in contrast with monopolists in the private sector, do not necessarily go under if they are inefficient and do *not satisfy a demand. A more efficient undertaking* does not get the opportunity to take over. "An inefficient government undertaking does not lose its resources to a more efficient custodian. It either *subsidises its inefficiency by taxing the people whose* needs it fails to satisfy, or else introduces protective legislation to prevent the private sector from competing." (Fiske, 1982, p.14).

Such conduct appears to have occurred in *statutory utilities serving agriculture, among others.* It is not impossible that this has also been the case with some agricultural products boards. The intense debates which rage about some boards from time to time, do not lead to any confidence that all is always well with all boards. A certain probability always exists that with some boards a bureaucracy may develop whose actions may not be regarded as market oriented. In 1971 the general manager of one of the boards stated as follows: "In the widest sense of the word, agricultural control boards will have to become agricultural marketing boards" (Scholtz, 1971, translation).

Abattoir location may be cited as an example of economically non-optimal decisions which eventually affect the consumer's pocket as well as the income of the producer unfavourably and lead to long-term inflationary cost-push effects. A comprehensive study on abattoir location in South Africa was completed in 1979 (Eales, 1979). In this investigation it was convincingly shown by means of operational research models that future abattoir development should be channelled toward production areas and away from metropolitan areas if efficiency is the goal. This would also be in accordance with what has been found in studies world-wide and what is world-wide practice (Cassidy *et al.*, 1970; Roe, 1969; Huie, 1970; Judge *et al.*, 1973; Yli-Jokipii 1971). In South Africa the development to date has been in the opposite direction.

Economies of scale are in many cases mentioned as justification for increasing concentration. The argument has, for example, been used in South Africa with respect to abattoirs and their location in the large consumer centres. Eales's study (1979) shows small abattoirs to be uneconomic, but also shows that from medium-sized abattoirs onwards, economies of scale are small and are overshadowed by railage savings. This result, once again, is in accordance with those reached world-wide (Roe, 1969; Huie, 1970; Yli-Jokipii, 1971; Logan and King, 1962; Parsons and Guise, 1971).

In view of this it may be asked whether limiting registration as applied by some commodity boards contributes materially to structural inflation or, otherwise stated, long-term inflation owing to non-competitive industry structures. The question may be posed, among others, whether today there is *over-concentration in this sense in the grain milling* industry. It is remarkable that since 1969/70 prices *of maize products over which the Maize Board has* no control have risen faster than sales prices of the *Maize Board. Price margins rose even faster, at rates* exceeding 20 per cent (Table 4).

TABLE 4 - Prices of maize and maize products, 1969/70 and 1982/83

Items	1969/70	1982/83	Annual rate of change
	R/ton		%
Sales price of maize	39,79	155,30	11,0
Unsifted maize meal	45,68	237,38	13,5
Sifted maize meal	48,87	245,63	13,5
Special maize meal	50,09	275,25	14,0
Margin:			
Maize - unsifted	5,89	82,08	22,5
Maize - sifted	9,08	99,33	20,2
Maize - special	10,30	119,95	20,8

Source: Maize Board

The policy of co-operatives not to compete with one another must also be questioned and investigated. It should be asked, among other things whether it is a healthy state of affairs for the brewery industry to be allowed the degree of concentration that prevails today.

Another example in South Africa where economies of scale have often been used as an argument to justify more concentration is sugar milling. A recent study gives rise to doubt as to whether such advantages are sufficient to overshadow transport disadvantages (Chadwick, 1983). It was also found in Australia that economies of scale are slight as sugar mill capacity exceeds 230 000 tons of sucrose (Ryland, 1969). Similar results were also obtained in Mauritius (Chadwick,1983).

It appears to be the case that in South Africa, in contrast to, for example, the USA that the authorities seldom regard monopolistic concentration as a problem. The result may be that long-term cost-push inflation becomes a real part of our lives.

CONCLUSION

Notwithstanding a slower increase in agricultural producers' prices than in the general retail price index, increases in finally marketed foods exceeded those of the general index. This gives the

impression that if agriculture contributed to inflation, this contribution probably stemmed from industries processing, transporting and distributing farm products rather than from the primary production sector.

During the past few years the purchase parity of agricultural products has declined has sharply and the competitive position of agriculture has weakened on international markets. Agriculture has undoubtedly been drastically affected by inflation.

Increased costs normally lead to a decline in supply and, given the relatively inelastic demand for food, this may be regarded as contributing to inflation. As the primary agricultural sector consists mainly of a large number of relatively small firms, monopoly formation there is improbable.

Concentration of economic power does, however, occur in some sectors supplying agricultural inputs or handling agricultural products further along the line. It also occurs in services sectors. The danger that the inefficiency accompanying monopolies is also encountered in statutory bodies cannot be ruled out.

It is possible that problems arising from competition structures in South Africa play an important, perhaps even a dominating, rôle in cost-push inflation. In South Africa concentration, or even over-concentration, is seldom regarded seriously - which is not the case in the USA, where the Anti-Trust Division regularly investigates any possible over-concentration.

Such structural inflation will, owing to its long-term nature be more serious than, for example, demand-pull inflation. Combating it will also be more difficult as monetary and fiscal measures will be of little value.

What will be needed for this is a reorientation of economic thought and policy. Such an exercise is a painful process which may eventually become imperative.

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1. In respect of feed, farmers were in a forced situation and more had to be bought because of drought. This argument does not hold for fuel and machines.

2. Should such a phenomenon occur in the majority of export industries, exchange rate changes will normally tend to overcome these advantages. In South Africa, where exports of gold bars and coins often constitute approximately 50 per cent of total export earnings and where gold prices therefore influence exchange rates materially, this semi-automatic correction does not occur. Gold prices are determined mainly by exogenous factors.

3. The classic work of Robinson (1948) is probably still one of the best descriptions of such influences.

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