PRODUCER SUPPORT ESTIMATE (PSE) FOR SOUTH AFRICAN AGRICULTURE FOR 1996, 1997, 1998

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This paper endeavours to update the series of PSE calculations based on the 1998 OECD methodology (OECD 1998) which is a slightly revised methodology from the earlier calculations. The OECD terminology also now means that PSE stands for ***Producer Support Estimate*** *and is calculated by classifying policy measures under a slightly different set of categories.*

1. INTRODUCTION

Throughout much of the 1990s the debate on the reform of the international agricultural trade system was dominated by issues related to domestic agricultural policy and more specifically to the levels of domestic support given to farmers. One of the aggregate measures of support adopted during the period of negotiations to assess countries' varying levels of domestic support was the Producer Subsidy Equivalent (PSE). The PSE methodology was developed by the Organisation for Economic Co-operation and Development (OECD) in the early 1980s as an indicator of the value of the monetary transfer to agriculture resulting from agricultural policies in a given year. More simply, the PSE measures the extent to which agricultural policies support farm receipts.

According to this approach there are five categories of agricultural policy measures included in the calculation:

i. Measures that transfer money to producers through affecting producer and consumer prices simultaneously (market price support);

ii. Measures that transfer money directly from taxpayers to producers without raising prices to consumers (direct payments);

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iii. Measures that transfer money to producers through lowering input costs (reduction of input costs);

iv. Measures that reduce costs to the agricultural sector as a whole and are not received directly by producers (general services);

v. Other measures, the main elements of which are subnational (e.g. measures funded by state or provincial governments) and certain tax concessions (other support).

A number of studies have calculated the PSE for South African agriculture. These include Van Heerden (1992), Helm and Van Zyl (1995) and Helm and Steenkamp (1996). These calculations have shown that South Africa's PSE declined dramatically from the mid 1980s, mainly as a result of the rapid process of deregulation in the agricultural sector. The last calculation of the PSE for South African agriculture was for the 1995 production year (Helm & Steenkamp, 1996), and it showed that the aggregate PSE for agriculture was 12.14 percent, representing one of the lowest levels of support to agriculture in the world.

This paper endeavours to update the series of PSE calculations based on the 1998 OECD methodology (OECD 1998) which is a slightly revised methodology from the earlier calculations. The OECD terminology also now means that PSE stands for ***Producer Support Estimate*** and is calculated by classifying policy measures under a slightly different set of categories. The results from these calculations are also timely and relevant since they provide a clear indication of the impact of the last processes of market deregulation, which was completed during 1996 and 1997, on the total levels of support to agriculture.

PSEs were calculated for 16 selected commodities, which together make up **69%** of the total gross value of agricultural production in South Africa. Although the largest proportion of horticultural production, including fruit and vegetables, was excluded from the calculations, these results provide a more than sufficient representation of South African agriculture, as the horticultural sector has been completely deregulated. The commodities included in the analysis are thus those that were (are) the main receivers of government and market support and have for some time been the focus of most deregulation and scaling down efforts. The commodities included are wheat, maize, other grains (barley, oats, grain sorghum), oilseeds (groundnuts, sunflower seeds, soya beans), sugar (refined equivalent), milk, beef and veal, pigmeat, poultry, sheepmeat, wool, eggs.

The paper starts by providing a brief overview of the methodology used in the calculations, documents the data sources used and, where appropriate, highlights the approach and assumptions followed in calculating market price support which is the most important component of the PSE. The paper concludes with a discussion of the results and places these within an historical and international context.

2. METHODOLOGY

According the OECD methodology applied in this paper, the Producer Support Estimate (PSE) is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policy measures which support agriculture, regardless of their nature, objectives or impacts on farm production or income. The PSE is essentially comprised of two main components namely a Market Price Support (MPS) component and a "budgetary payments to producers" component. Market Price Support measures the monetary value of transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices. In contrast, as the name suggests the "budgetary payment to producers" component represents the various budgetary payments made directly to producers. These payments (policies) are classified according to certain implementation criteria. These are set out below:

(i) Producer Support Estimate (PSE) [Sum of A to H]

A. Market Price Support
B. Payments based on output
C. Payments based on area planted/animal numbers
D. Payments based on historical entitlements
E. Payments based on input use
    1. Based on use of variable inputs
    2. Based on use of on-farm services
    3. Based on use of fixed inputs
F. Payments based on input constraints
    1. Based on constraints on variable inputs
    2. Based on constraints on fixed inputs
    3. Based on constraints on a set of inputs
G. Payments based on overall farming income
H. Miscellaneous payments

Other annual budgetary transfers from taxpayers to provide services to the collective agricultural sector, are included in the General Services Support Estimate (GSSE). The classification of policy measures covered by the GSSE is as follows:

(ii) General Support Estimate (GSSE) [Sum of I to O]

I. Research and development
J. Agricultural Schools (training)
K. Inspection services
L. Infrastructure
M. Marketing and promotion
N. Public Stockholding
O. Miscellaneous

For more detail on the policy measures included in the various classifications readers are referred to the OECD documentation (OECD, 1998).

Applying this methodology to South Africa proved to be quite a challenge since it is based on the typical support structures of European and US agriculture. The easy part was that South Africa has no measures or payments in categories B to D. The challenge was however related to classifying the expenditure of the National Department of Agriculture and the provincial departments of agriculture into categories E to H and I to O. As a result of the declining support to farmers in South Africa we expected that very few payments by the government would be classified in the categories E to H. However the OECD considers extension services and veterinary services as part of payments based on the use of on-farm services and as a result category E2 represented a substantial amount of money. The biggest chunk seems to be classified under the GSSE (I to O) which does not influence the PSE calculations. This proves to be true because, according to our classification more than 66 percent of total government expenditure in agriculture during 1998/99 can be classified as General Support Services, which does not influence the income of farmers. The following provides an understanding of how government expenditure on agriculture in South Africa was classified.

E. Payments based on input use

Here we have included all input subsidies, interest concessions and cost reductions as a result of irrigation water schemes, etc. The budgetary payments for extension and veterinary services as well as much of the financial aid provided to emerging farmers were included here.

F. *Payments based on input constraints*

During the 1996 – 1998 period the government(s) spend some funds on alleviating a number of constraints relating to the use of variable inputs and also acquiring fixed structures on farm. These expenditures were largely done under the BATAT framework but featured in a number of programmes.

G. Payments based on overall farming income

Payments related to tax concessions, disaster payments as well as drought assistance schemes were included under this category.

All other government expenditures such as the annual ARC allocation, administration, etc. were all included under general support services. These items will not have an impact on the PSE calculations since these payments are not related to any commodity and do not influence farmer incomes. Table 1 below is the summary of the totals of our classifications as applied in the PSE calculations.

The most important component of the PSE calculation relates to the calculation of market price support. For this calculation data on production levels, producer prices and an appropriate world reference price were required. The latter proved to be quite a challenge especially since there is likely to be some difference in quality between the commodity traded in the world market and the commodity produced locally. This aspect is discussed in more detail in the section on data sources below. Once the level of market support has been estimated the PSE can be calculated – the sum of A to H. This will give the total PSE in monetary terms (in Rands).

An important indicator is the % PSE and is calculated as a ratio of the total monetary value of PSE to the total gross farm receipts (value of total production at farm gate prices plus budgetary support). Thus:

$$\%\ PSE = Total\ PSE\ /\ [Total\ production\ value\ at\ farm\ prices + producer\ payments\ (\Sigma B\ to\ H)]\ x\ 100.$$

In addition we also calculated the nominal assistance coefficient to producers (NAC). This is calculated as a ratio of total PSE to the value of total gross farm receipts valued at world market prices without budgetary support.

$$NAC = 1 + [Total\ PSE\ /\ total\ production\ value\ at\ border\ prices]$$

Table 1: Classification of South African agricultural budget expenditures according to the OECD categories (1996/97 – 1998/99)

Programme classification	1996	1997	1998
E. Payments based on input use			
1. Based on use of variable inputs	224,185,000	203,081,000	125,019,000
2. Based on use of on-farm services	550,195,948	498,350,342	457,661,080
3. Based on on-farm investment	14,085,000	65,365,756	62,043,000
F. Payments based on input constraints			
1. Based on constraints on variable inputs	0	0	0
2. Based on constraints on fixed inputs	0	0	0
3. Based on constraints on a set of inputs	0	0	0
G. Payments based on overall farming income			
1. Based on farm income level	75,111,484	28,230,588	14,072,000
2. Based on established minimum income	0	0	0
H. Miscellaneous payments	0	0	0
1. National payments	0	0	0
2. Sub-national payments	0	0	0
General Services Support Equivalent (GSSE)			
I. Research and development	725,771,574	613,793,070	544,625,400
J. Agricultural Schools	37,021,000	53,683,000	43,128,000
K. Inspection services	117,240,024	221,166,660	211,414,500
L. Infrastructure	163,674,654	132,426,228	132,361,020
M. Marketing and promotion	81,496,000	14,546,000	39,038,000
N. Public stockholding	0	0	0
O. General admin.	479,540,750	640,523,700	592,594,000
P. Land use planning*	15,471,000	31,797,000	14,369,000
Q. Community projects*	20,217,000	28,882,000	0
Total	2,504,009,434	2,531,845,344	2,236,325,000

* *These categories were added since the expenditure did not fit the OECD classifications*

3. DATA SOURCES AND ASSUMPTIONS

Data on total production levels for the various commodities were obtained from official publications such as the Abstract of Agricultural Statistics or commodity organisations such as the South African Grain Information Service (SAGIS). The majority of producer prices were also obtained from the Abstract but in certain cases we obtained information from commodity organisations and/or original sources from which the average prices for the Abstract were

calculated. In the case of sugar the South African Sugar Association (SASA), provided the raw equivalent price of sugar.

In the absence of import tariffs, export subsidies and market intervention should by definition imply zero market price support for the commodity in question. South Africa has since 1990 gradually removed all forms of producer subsidies and also dramatically liberalised the agricultural trade regime. Based on information obtained on tariffs and policy support wheat (1996 and 1997 only), oats, barley, groundnuts and eggs should by definition have a zero market price support.

4. SUMMARY OF RESULTS

In general, the PSE results obtained per commodity are consistent with existing levels of protection. For example, the high duty payable on sugar as well as the industry level payments is reflected in the high positive PSE results obtained. The same applied to some of the meat commodities, where an import tariff of 40 percent also resulted in positive PSEs. The results of the PSE calculations per commodity are summarised in Tables 2 and 3.

Table 2: Total PSE per commodity (Rand) and 1996-1998

Commodity	1996	1997	1998
Wheat	21,154,408	360,700,914	482,788,355
Maize	-633,244,016	-94,658,142	-761,566,441
Barley	1,225,478	1,178,320	926,902
Oats	88,391	68,093	46,744
Grain sorghum	-86,027,910	-32,894,707	-25,569,171
Total other Grains	-84,714,041	-31,648,294	-24,595,525
Sunflower seed	-282,548,565	-233,050,241	-86,667,080
Groundnuts	913,268	993,541	740,285
Soya beans	1,992,105	17,376,844	-85,993,349
Total Oil Seeds	-279,643,192	-214,679,856	-171,920,144
Sugar	1,064,412,576	1,429,205,242	1,381,204,919
Dairy	57,214,783	436,361,142	549,247,183
Beef and Veal	351,812,834	435,357,865	679,481,016
Pork	-232,507,673	-113,015,877	-271,513
Poultry	230,303,612	557,995,680	-1,562,008,379
Sheep meat	142,664,802	111,016,015	114,090,248
Wool	5,036,730	3,856,805	172,975,240
Eggs	14,489,222.33	13,202,141.81	8,326,947.60
Livestock Products	569,014,310	1,444,773,772	-38,159,257
Total PSE for SA (R)	656,980,045	2,893,693,636	867,751,907

Table 3: Percentage PSE per commodity

Commodity	1996	1997	1998
Wheat	1.48%	16.09%	19.44%
Maize	-9.68%	-1.55%	-18.25%
Barley	0.64%	1.01%	0.42%
Oats	0.88%	0.69%	0.47%
Grain sorghum	-38.73%	-16.48%	-15.56%
Sunflower seed	-41.18%	-49.04%	-10.79%
Groundnuts	0.30%	0.64%	0.37%
Soya beans	2.04%	10.31%	-38.91%
Sugar	25.09%	27.05%	25.27%
Dairy	2.85%	16.39%	20.92%
Beef and Veal	10.78%	13.64%	21.20%
Pig meat	-27.43%	-12.00%	-0.03%
Poultry	3.38%	6.23%	-15.78%
Sheep meat	47.67%	40.36%	49.28%
Wool	0.42%	0.34%	14.97%
Eggs	3.45%	2.82%	1.67%
Total PSE for SA (%)	**2.2810**	**8.8712**	**2.7170**

5. CONCLUSIONS

The results from this round of PSE calculations confirm the continuous decline in government and market support to South African agriculture. The 1998 figure of 2.7 percent is substantially lower than the previous figure of 12.14 per cent calculated in 1995. Figure 1 provides a visual indication of the change in the PSE for South African agriculture over the last decade.

Due to the limited influence of government expenditures on the PSE results for South African agriculture, it is expected that the percentage PSE per commodity will vary according to the market price support, which could be influenced by tariffs. Variations in the world reference price therefore play a critical role in the PSE calculations. It is furthermore important to note that 9 of the 16 commodities analysed have a negative market price support, which indicates that domestic market prices are in fact lower than border prices. This gives a further dramatic account of the extent of deregulation in South African agriculture.

Comparing South Africa's 1998 PSE figure with that of other countries also provides interesting reading. Table 4 below summarises the results of some selected countries. As can be seen, South Africa has one of the lowest PSE and

this is especially conspicuous when compared with the PSE of our major trading partner, the EU.

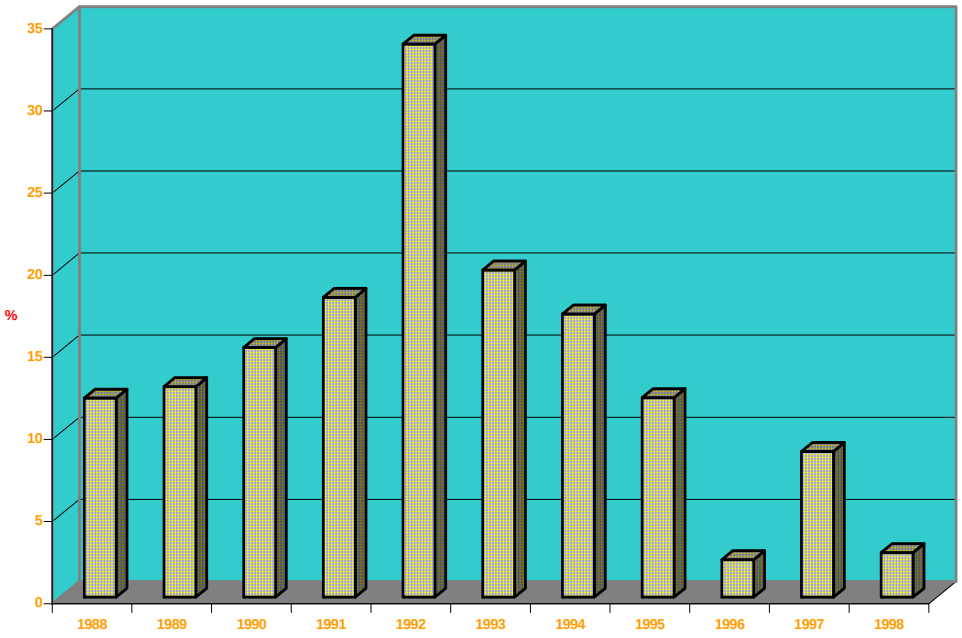

Figure 1: Percentage PSE for South African agriculture: 1988 – 1998

Table 4: International comparison of South Africa's PSE for 1998

Country	**PSE for 1998 %**
South Africa	2.7%
Canada	16.1%
Australia	6.8%
Czech Republic	17.5%
EU	45.3%
Hungary	11.8%
Iceland	68.9%
Japan	63.2%
New Zealand	0.8%
Mexico	16.7%
USA	21.6%

Source: *OECD (1998)*

In conclusion, Josling (1998) notes that the PSE should continue to be calculated if for no other reason than to have a valuable time series of the effects of policy on producers' incomes. In South Africa's case, this PSE time

series is not only a dramatic record of the agricultural deregulation process, it also highlights the need for the South African government to continue to insist upon global agricultural policy reform.

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