5 Evaluation of Policy

5.1 Introduction

In this chapter the values of each of the parameters used in the study are presented. These values are derived from the literature. Information on the data and parameters is provided in Section 5.2. In Section 5.3 the estimated results are presented and Section 5.4 deals with the costs and benefits of the GMP policy. In Section 5.5 an empirical discussion of the estimated results is provided. Section 5.6 covers sensitivity analysis and a final summary of results.

5.2 Data and Parameters

This section presents the data and parameters required for calculating the net impact of the GMP policy.

5.2.1 Data

The period of analysis is from 1974 to 1991 since this was the period of the maize price support scheme. The unit of measurement for all the food items used is metric tons and the currency is Ghanaian cedis.

Data on output and prices of maize were obtained from the Ministry of Agriculture, and GFDC, Ghana. These in turn were compiled by field staff of the Ministry and the corporation for their own 'internal' use. However, they can be considered as the most legitimate data for the study since they form the basis of all government major agricultural policies and decisions in the country.

Some of the data, particularly, on population, foreign exchange rate and international prices of maize were obtained from international publications such as the World Bank (1992; 1993; and 1994) and the IMF (1993).

Retail rather than wholesale prices are used for maize. For the purpose of simplicity, all the retail prices reflect those which prevailed in Accra, the capital city of Ghana and a major maize-consuming centre. On the other hand, the producer prices are based on Nkoranza prices. Nkoranza is used as a base point because it is a high maize-producing district and geographically located in the middle of the whole maize-
growing belt in the country. For the reasons indicated above, the retail and producer prices as prevailed in the two localities reflect the true national situations.

5.2.2 Required increase in the production of maize to achieve self-sufficiency

A self-sufficiency requirement is defined as the percentage increase in output needed to avoid imports of maize in all but extreme situations such as occurred with the severe drop in domestic maize production due to the drought and bush fires in 1983.

As shown in Table 5.1, the average net domestic production of maize from 1974 to 1991 was 461.08 thousand metric tons. The average of maize imports for the same period of time was 12.92 thousand metric tons and this is assumed as the required increase in maize production. Thus the target output was 474.00 thousand metric tonnes - a growth of 2.8 per cent from the average production level for the period 1974 to 1991. This seemed an achievable growth rate compared with the average annual population growth rate of about 2.6 per cent (Ministry of Agriculture 1991a).

5.2.3 Household consumption of maize

Schiff (1994) defined marketable surplus as equal to output less rural demand. The proportion of marketable surplus differs among the country's ten regions, but it is estimated to be about 50 per cent of the total maize production (FAO 1989 in ODA 1991). This is a higher percentage in comparison with other low income countries due to the importance of maize as a cash-crop and the range of alternative starch staples available to maize producers (ODA 1991).

In the present study, it is assumed that the average marketable surplus at the market-determined price $P_d$ in Figure 3.5b for the period 1974 to 1991 is 230.54 thousand metric tons. This constitutes 50 per cent of the total national production of 461.08 thousand metric tons. Changes in the level of the marketable surplus, however, depend on the existing producer price of maize and the price elasticity of household consumption of maize (which is assumed to be -2.0). Referring to Figure 3.5b, assuming $P_dN$ or $OJ$ is equal to 230.54 thousand metric tons and home consumption elasticity is (-2.0), $P_sM$ or $OR$ is then estimated as 215.25 thousand metric tons. In effect, at a higher producer price of $P_s$, the marketable quantity is increased by quantity $RJ$ (or 15.29 thousand metric tons).
Table 5.1: Ghana population, maize production and imports: 1974 - 1991

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<tbody>
<tr>
<td>Population¹</td>
<td>9,621</td>
<td>9,834</td>
<td>10,023</td>
<td>10,177</td>
<td>10,327</td>
<td>0,501</td>
<td>0,740</td>
<td>11,030</td>
<td>11,366</td>
<td>11,747</td>
<td>12,168</td>
<td>12,620</td>
<td>13,073</td>
<td>13,526</td>
<td>13,977</td>
<td>14,425</td>
<td>14,870</td>
<td>15,324</td>
</tr>
<tr>
<td>Gdp²</td>
<td>631.16</td>
<td>445.97</td>
<td>371.43</td>
<td>405.19</td>
<td>349.35</td>
<td>494.29</td>
<td>496.10</td>
<td>491.17</td>
<td>449.74</td>
<td>745.97</td>
<td>534.80</td>
<td>725.97</td>
<td>776.62</td>
<td>779.22</td>
<td>928.57</td>
<td>718.00</td>
<td>1,209</td>
<td></td>
</tr>
<tr>
<td>Ndp³</td>
<td>486.0</td>
<td>343.40</td>
<td>286</td>
<td>312</td>
<td>269</td>
<td>380.6</td>
<td>382.0</td>
<td>378.2</td>
<td>346.3</td>
<td>574.4</td>
<td>411.80</td>
<td>559.00</td>
<td>598.00</td>
<td>600.00</td>
<td>715.00</td>
<td>553.00</td>
<td>931.00</td>
<td></td>
</tr>
<tr>
<td>Imports⁴</td>
<td>0</td>
<td>0.8</td>
<td>10.6</td>
<td>0</td>
<td>0</td>
<td>0.122</td>
<td>12.61</td>
<td>27.0</td>
<td>81.70</td>
<td>61.80</td>
<td>38</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
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</table>

Note:  
¹ = population in thousands.  
² = gross domestic production in thousand tonnes  
³ = net domestic production is Gdp minus 23% for seed and post-harvest losses - in thousand tonnes  
⁴ = imports in thousand tonnes

The results of a recent survey by Ofosu (1987) cited in Ministry of Agriculture (1991) showed losses in stored maize to be about 16.1% in Ghana. This is contrary to the unsubstantiated levels of 30% often quoted for seeds and post-harvest losses of cereals for developing countries. The average for the two figures, that is, 23% is used in the present study.

Source: (i) World Bank 1994 (information on population).  
(ii) Ghana Statistical Bureau 1993 (information on maize production and maize imports).
5.2.4 Price elasticity of maize demand \( (\alpha_m) \)

Estimates of price elasticities of supply and demand for agricultural products in developing countries have been well documented by Scandizzo and Bruce (1980). For example, Gerrand (1983) estimated the own-price elasticity of demand for maize to be \((-0.898)\) in Tanzania. The estimate of the own-price elasticity of demand for maize for Ghana is available from Haessel (1976) as cited in (Stryker 1990). Haessel's estimate of \((-1.689)\) was on the basis of 1954 to 1970 time-series data. Even though the said value represents the value for the three coarse grains, namely, maize, millet and sorghum lumped together and it is somewhat dated, it is the best estimate available.

5.2.5 Price elasticity of maize supply \( (\beta_m) \)

The cost of a price support policy is determined, among other things, by the own-price elasticity of supply. Using annual time series data for the period 1954 to 1985, Stryker (1990) estimated the short-run elasticity for maize production in Ghana as \((0.79)\) and the long-run elasticity as \((0.93)\). In the present study, the average of Stryker's (1990) two estimates is used, that is, \((0.86)\). The reason is that, maize, being an annual crop, would necessarily involve both short- and long-run production decisions.

5.2.6 Price elasticity of home consumption of maize \( (\mu_m) \)

In Ghana, maize is grown for home consumption as well as for cash sale. Because producers of maize are also major consumers, it is important to distinguish between the price elasticity of production and the price elasticity of marketed surplus for any given production. Unlike Ahmed's (1979) model, the marketed quantity of maize in Ghana is shown in Figure 3.5b to be sensitive to the prevailing producer price. For instance, at the producer price of \(OP_s\), the marketed quantity is \(RQ_o\), compared with quantity \(JQ_o\) when the producer price falls to \(OP_d\).

In his study of elasticities of marketed surplus in Ghana, Haessel's (1975) estimates of the price elasticity of home consumption ranged from \((-2.0)\) to \((-2.7)\). He also found the total short-run price elasticity of marketings to be positive and ranged from \((2.7)\) for the entire sample to over \((3.0)\) for the larger farmers. This confirms most studies on developing countries which obtain positive values for price elasticity of marketings for staple food crops.
In the present study, Haessel's (1975) estimate of (-2.0) is used since maize production in Ghana is dominated by small-scale farmers who are likely to have a lower elasticity value.

5.2.7 Domestic producer price of maize (as prevailed on the private market-\(P_p\))

The absence of data on small private food traders makes it difficult to assess producer prices offered to maize farmers by private traders. As such, a number of strong assumptions are made to derive these prices from the average retail prices prevailing in Accra.

i. Financial needs at harvest and lack of appropriate on-farm storage capacity prevent many farmers storing large quantities over long periods of time.

ii. A study by the Ministry of Agriculture (1988) cited in Ministry of Agriculture (1991b) showed that a maize farmer in the maize belt received at the farmgate about 70 per cent of the consumer price in Accra during periods of maize price peaks in May and June.

iii. According to a survey by Ministry of Agriculture (1991b), the farmgate price in the maize producing area is about 44 per cent of the consumer price in Accra during periods shortly after harvest, that is, September and October.

In order to reflect the price trend in recent years, the average domestic retail price of medium quality maize in Accra is estimated for the period 1980 to 1991 as 39,739.17 cedis/t. This includes the costs of all marketing services and the margin for the private traders. Based on the assumptions ii and iii, on the average, maize farmers in the private sector receive a producer price of about 57 per cent of the retail price in Accra and this works out to 22,651.33 cedis/t. The validity of the assumption can be tested against the estimated figure of 54.5 per cent made for Nigeria by Ahmed and Rustagi (1985) since the two countries share similar economic and agricultural characteristics.

5.2.8 Government-announced ceiling price of maize (as operated by GFDC-\(P_c\))

The average government-announced retail price of medium quality maize is estimated as 38,866.67 cedis/t for the period 1980 to 1991. This includes all the costs of marketing services provided by the corporation and its margin. According to Ministry
of Agriculture (1986) the corporation makes an average of 43.5 per cent gross margin on all maize sales, thus leaving 56.5 per cent of the retail price to the producers. For the purpose of the present study, the same margin of 57 per cent as exists in the private sector is assumed.

Applying the same margin as exists in the private sector, maize consumers who are serviced by the corporation face a ceiling price of 22 154.00 cedis/t of maize. This excludes the costs of marketing services provided by the corporation and the corporation's margin.

5.2.9 Government-announced support price of maize (operated by GFDC-PS)

The average government-announced floor or support price offered to producers is estimated for the period 1980 to 1991 as 28 887.50 cedis/t.

5.2.10 International price of maize (Pw)

The international market for maize is of a highly residual nature. Because of the residual nature of the maize trade, international prices are mainly determined by the volume of world exports. Under the assumption of a 'small-country-importer', Ghana's impact on the world market is negligible. According to (Tsakok 1990 and Ellis 1992) world market prices represent the opportunity cost to a country for producing various commodities. However, if a domestic market is competitive and there are no currency distortions, market prices reflect relative scarcity and can serve as efficiency benchmarks.

Distortions in the trade regime in the country were so great that they prevented the trade of maize. If free trade had been permitted at the official rate of exchange, production of rice and maize would have virtually ceased by the early 1980s (Stryker 1990). The government imposed rigid import quotas, tariffs and embargoes so as to protect local producers. The direct effect of import restrictions, coupled with the overvalued exchange rate, has generally been to increase domestic prices, increase production and reduce consumption. Between 1985 and 1990, domestic prices of maize were about 50 per cent above the world prices (Ministry of Agriculture 1991a).

As pointed out by Ellis (1992) the world price needs to be converted in order to bring it into comparison with domestic prices. The world price is converted into the domestic currency equivalent using the official fixed exchange rate. The resulting
The average value for the period 1974 to 1991 is estimated as 18,503.30 cedis/t of maize at c.i.f. Tema (Ghana). It is the border price and regarded as the efficiency benchmark (Tsakok 1990). The c.i.f. price captures the landed price at the port of entry to the recipient country. It is converted at the point of entry because the domestic producer price is estimated at the farm level, implying that the point of competition is at the farmgate and at the entry point. It is justifiably assumed that the quality differences between Ghana and world traded maize grains are not much and as a consequence it is clear that domestic prices are above world levels.

5.2.11 Premium on foreign exchange savings

There were many distortions in the market for foreign exchange and traded goods during the period under consideration. Prior to the introduction of the ERP, the market for foreign exchange was strictly controlled and it was possible to purchase foreign exchange for only permitted purposes. These controls were put in place because the fixed official exchange rate was overvalued and this resulted in the demand for foreign exchange greatly exceeding supply. Consequently, the country had a foreign exchange premium for all her maize imports prior to 1984. According to Perkins (1994) the foreign exchange premium measures the extent to which the official exchange rate understates the true amount of local currency that residents would be willing to pay for a unit of foreign exchange, or its true opportunity cost to the economy.

For the reasons discussed above, there was a divergence between the official exchange rate and the marginal social value of foreign exchange which was involved in the use of importing maize into the country. Before any meaningful comparison between domestic and border prices can be made, it is essential to choose the appropriate world price and then to convert that price at an appropriate exchange rate into domestic currency units. In determining the appropriate exchange rate to use, there is also the need to consider the parallel rate. The parallel rate rather than the official exchange rate is considered a better assessment of the scarcity value of the foreign exchange in the domestic economy. This would mean using the parallel rate as the shadow exchange rate, that is, the official exchange rate adjusted by the anticipated premium.

According to Tsakok (1990) the parallel rate is likely to overstate the opportunity cost of foreign exchange because it reflects not only market scarcity but also the risks involved in the illegal trade. Despite its shortcoming, it is the best available information since no estimation of premium on foreign exchange has been made for Ghana during the period of study. Using the average parallel rate of foreign exchange
for the period 1973 to 1991, the foreign exchange premium is estimated as 7049.00 cedis/t of maize imported at the government official exchange rate.

5.3 Results

The key results of the analysis based on the autarky assumption are presented in Table 5.2. For the sake of brevity, they have been converted into millions. They represent the situation of costs and benefits of the GMP as against the economy being exposed to free trade in maize. The findings confirm:

Table 5.2: Costs and benefits of GMP policy (million cedis per annum)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Government sector market</th>
<th>Private sector market</th>
<th>Total maize industry</th>
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<tbody>
<tr>
<td>Net producer benefit</td>
<td>+56.73</td>
<td>+941.21</td>
<td>+997.94</td>
</tr>
<tr>
<td>Net consumer benefit</td>
<td>-67.90</td>
<td>-1 236.58</td>
<td>-1 304.48</td>
</tr>
<tr>
<td>Net government cost</td>
<td>-320.25</td>
<td>0</td>
<td>-320.25</td>
</tr>
<tr>
<td>Savings in foreign exchange</td>
<td>-</td>
<td>-</td>
<td>+239.06</td>
</tr>
<tr>
<td>Foreign exchange premium</td>
<td>-</td>
<td>-</td>
<td>+91.07</td>
</tr>
<tr>
<td>Net social benefit</td>
<td></td>
<td></td>
<td>-296.66</td>
</tr>
</tbody>
</table>

Note: + = Gain in benefits
- = Loss in benefits

Parameter Values:

Price elasticity of maize demand ($\alpha_m$) = -1.689.
Price elasticity of maize supply ($\beta_m$) = 0.86.
World price of maize ($P_w$) = 18,503.30 per tonne
Price elasticity of home consumption of maize ($\mu_m$) = -2.0
i. A prior expectation that the 'costs associated with well-planned adjustment programs are outweighed by the long-term benefits of the more rapid and viable growth results' (Nicholas 1988; Asiedu-Saforo 1989, p.368). There are many social costs of the policy change that removes the GMP in terms of income and employment losses to farmers and a loss of foreign exchange to the government. But the efficiency gains in terms of consumer benefits and government budgetary savings is greater in the long run. The benefits that may be derived from an increased efficiency in marketing is expected to exceed any costs that will be incurred in improving the system.

ii. The basic neoclassical postulate that social economic efficiency, measured as the sum of producer and consumer surplus, decreases with government intervention. This implies that there are some savings that can be made in the industry if the GMP policy is abolished and the maize industry is opened to free trade. The magnitude of the savings is about 296.66 million cedis per annum. From the results, the account of government intervention through GMP has negative impact on the total economy although it has positive impact on producers and also resulted in savings in foreign exchange.

iii. The competitive paradigm which suggests that government intervention that reduces distortions will generate improvement in efficiency over time (Tsakok 1990). It confirms the implicit views held on structural adjustment that intervention equals mismanagement. A country pursuing its comparative advantage derives dynamic benefits in terms of learning-by-doing, technology acquisition and productivity growth (Krueger 1993 cited in Smith 1995). Competition induces greater attention to costs and greater effort in cost reduction, than a sheltered economy. It confirms the conclusion by Boadu and Farris (1991) and Stein (1994) that distorted markets reduce market performance and efficiency.

iv. Observations by Haessel and Vickery (1975 p.16) that starchy foods such as maize and sorghum appear to have low export potential in Ghana. Though the said study was based on elasticity values 'imported' from countries like India, Pakistan and Indonesia and do not therefore offer a reliable and a strong support, they do not invalidate the findings.

v. The optimum amount of government support price to induce the self-sufficient level of maize production is estimated as averaging 23 391.01 cedis/t for the period under study. Due to increasing pressure from farmers, the government has been 'compelled' to announce and pay out an annual average of 28 887.50 cedis/t. This shows an increase of 5496.49 cedis (23.5 per cent) over the optimum price.
support level. The increased support price has been evident in considerable increases in production and has consequently resulted in maize export to neighbouring countries like Mali and Burkina Faso. For example, in 1985 and 1986, 16 500 m/t of maize were exported at the prevailing lower world market price - implying Ghana has been subsidising consumption in the importing countries. Production increases were directly attributable to the extension of high-yielding varieties and improvements in fertiliser use, all of which were made possible by the relatively high guaranteed price. This confirms Timmer's (1989) observation that countries that maintain prices to farmers well above border prices often produce surpluses that must be stored or exported at a loss.

vi. The border price paradigm which argues that all agricultural prices should reflect their opportunity costs at the border, no matter what the international market processes are that determine the prices. The result of such a pricing strategy is supposed to be optimal efficiency of resource allocation, as well as minimal rent-seeking activity with its associated losses in efficiency (Timmer 1989).

vii. With a liberalised maize market, trade would reflect comparative advantage based on the country's endowments. In other words, the country would operate as predicted by Hecksher-Ohlin-Samuelson, and thus reap the predicted economic rewards (Stein 1994).

5.3.1 Net producer benefits

As shown in Table 5.2, farmers benefit on both the government and private sector markets. The GMP policy emphasised the income of producers and specifically the welfare of farmers. It is important to note that the size of the benefit per ton of maize is relatively bigger on the government than on the private sector market. Without the policy, the producer price is estimated to have declined by 22.42 per cent and 26.42 per cent respectively on the private and the government sector markets.

Under the GMP policy, farmers are better off because they receive greater revenue for their current production. Using supply elasticity of 0.86, it is estimated that they find it profitable to expand production from $Q_e$ (349 851t) to $Q_0$ (433 420t) on the private market, and from $Q_n$ (21 379.50t) to $Q_{g0}$ (27 665/t) on the government sector market (as shown in Figure 3.5a (i and ii)). In totality, domestic production rises from 371 230.50t to 461 085.00 t.

In sum, farmers gained an average of 997.94 million cedis per annum under the price support policy and other forms of trade restrictions designed to restrict maize imports,
if interactions with related markets are ignored. Consequently, domestic maize producers have been protected from the low cost foreign maize producers. Without continual subsidy and import restrictions, the Ghanaian maize industry, with production costs higher than the world prices, was not competitive with foreign maize producers or with the domestic producers of substitute food crops such as millet and sorghum.

The GMP policy has therefore moved the domestic terms of trade substantially in favour of maize farmers to the detriment of consumers' income and other crops. It created basic distortions in the agricultural sector and resulted in diverting resources away from uses with potentially higher value (Schreiner, Badger, Welsh and Suprapto 1989). It was not surprising, therefore, that resources were shifted from cocoa to maize production (Ministry of Agriculture 1990; Stryker 1990). Corden (1957, p.35) described such distortion of production incentives as 'the essence of the protective effect'.

An evaluation of the results in this section leads to the rejection of the first hypotheses. This implies that the GMP has led to an improvement in the welfare of the Ghanaian maize farmer.

5.3.2 Net consumer benefits

The Ghanaian maize policy has maintained the domestic prices at levels that have been higher than the world market prices. This has allowed the transfers of income to maize farmers from maize consumers, retailers, wholesalers and processors whose welfare could be improved by buying or dealing in the lower priced foreign maize. As such, consumers, processors and other market participants are 'forced' to pay some of the costs of the price support scheme since they lose on both sectors of the market (as shown in Table 5.2). However, the loss per metric tonne of maize is lower on the government than on the private sector market. In totality, the policy resulted in an average substantial burden of 1304.48 million cedis per annum on the consumers, processors and other market participants if interactions with related markets are ignored.

Furthermore, the cost of the maize program is borne by the taxpayers who stand to get a tax break without the burden of the maize policy, or benefit from the reallocation of the tax revenue from the maize program to other public services and programs.

Domestic consumers and processors are clearly worse off under the GMP policy because they face a higher price for the commodity than before. With the GMP policy
in place, consumers and processors on the government- and private-sector markets experienced 19.73 per cent and 22.42 per cent increases in maize retail prices respectively. It is, however, beyond the scope of the study to disaggregate and apportion the total loss among the principal participants on the consumer side of the market due to lack of relevant data.

In this case, consumers demonstrate an own-price elasticity of (-1.689) and as shown in Figure 3.5a (i), under the GMP policy, the total quantity demanded on the private sector market declined from \( Q_i \) (567,477t) to \( Q_o \) (433,415t). Referring to Figure 3.5a (ii), the effective demand on the government sector market also declines from \( Q_{g1} \) (35,364t) to \( Q_{g0} \) (27,665t).

The results confirm other evidence that trade protection generally levies a tax on consumers as well as processors who must import and utilise as inputs and this generally impedes development (Boadu and Farris 1991). Despite this, protection often continues because the results are not highly visible, especially, in Ghana, where international price information is not publicly available.

From the results in this section, the second hypothesis is accepted. This implies that maize consumers have experienced a declined welfare under the GMP policy.

5.3.3 Net government cost

The net government cost is in respect of GFDC procuring maize from farmers at a price in excess of the price at which it is sold on the private market and reselling it at a lower price than prevails on the private sector market. Implementation of the GMP policy placed fiscal burden on the government budget if the cross-effects with other taxes and subsidies in the system are ignored. As shown in Table 5.2, the net government cost amounted to 320.25 million cedis per annum which formed 1.19 per cent of the government's average recurrent expenditure for the period under study and 0.06 per cent of the gross national product (at market prices) (World Bank 1994). This should be considered against the background that public funds for economic development are scarce in a developing country like Ghana.

An assessment of the result in this section leads to the rejection of the third hypothesis. It implies that the government's direct involvement in the maize trade entailed some budgetary cost.
5.3.4 Net savings in foreign exchange

The policy increases availability of foreign exchange to the economy if cross-effects with other sources of inflows and outflows of foreign exchange are ignored. From Table 5.2, the import-saving effect of the GMP is estimated as 239.06 million cedis per annum. It represents the savings in foreign currency outgoings resulting from the reduction in the volume of imports of maize due to the implementation of the GMP policy. The premium on foreign exchange saved due to the policy is estimated as 91.07 million cedis per year - implying a net foreign exchange saving of 330.13 million cedis per year. This represents the resource effect of the policy.

5.3.5 Net social benefits

From Table 5.2, the GMP policy led to a net social loss of 296.66 million cedis per year. A change in the price of a commodity serves to reallocate resources in the economy. With the GMP policy in place, distortions in the pattern of protection have encouraged over-investment in maize production; reduction in consumption of the commodity by consumers and maize processors; and the transfer of surplus from the government, maize retailers and wholesalers to the producers.

From an efficiency point of view, the sector should produce those outputs for which it is internationally competitive and for which a sufficient demand exists (Tsakok 1990). Like all price distortion policies, the GMP involved some efficiency losses, also referred to as deadweight social losses. This welfare loss comprises the lost consumer, retailer, wholesaler, processor and government surplus that is not recovered by producers. It is represented in Figure 3.5a (i) by triangle AEG. In Figure 3.5a (ii), it is represented by the sum of triangles TUZ and UNR. In totality, it is estimated at 626.79 million cedis per year, and it forms 5.83 per cent of the total value of maize production at the self-sufficient level (valued at the domestic market price). It, however, excludes the resource gain in the form of foreign exchange savings estimated at 330.13 million cedis per year.

As explained by Tsakok (1990), the deadweight social loss is made up of net economic loss in consumption and net economic loss in production. The net economic loss in consumption is a loss in efficiency because consumers and processors are now paying a higher price for the protected commodity and getting a reduced amount of output, a situation that is clearly damaging to consumer and processor well-being. The net economic loss in production is a loss in efficiency because resources are being pulled into maize production from other activities where
their productivity is higher. In other words, increasing costs are being incurred as more production of maize is generated.

5.4 Costs and Benefits of the GMP Policy

5.4.1 Costs

The cost of GMP policy consists of both direct and indirect items. For the country to achieve self-sufficiency in maize production, the direct items of costs incurred by the central government is estimated as 320.25 million cedis per year. A less visible cost of the policy entailed the implicit subsidies from consumers, retailers, wholesalers and processors to producers and it is estimated as 1 304.48 million cedis per year at the self-sufficiency level of output. Another less visible cost of the government intervention policy has been the effect of the support price on the agricultural sector. The guaranteed support price was intended to act as a production incentive to farmers, while the ceiling price was to subsidise consumer's expenditure. In reality, however, when considered against the world market price, both measures have tended to 'tax' consumers, retailers, wholesalers and processors.

The indirect cost items consists of a number of elements, such as the government guarantees; concessional rates of interest on bank loans for maize purchases; and the use of interest-free government's counterpart funds for maize purchases by the corporation.

5.4.2 Benefits

Net gains of the policy have two components - one corresponding directly to purchases by the corporation at the government support price and the other corresponding to open-market purchases at the market-determined price, but through 'the trickle-down effect' of the former.

The direct gains of the policy is the savings in foreign exchange which would have been used in imports and it is estimated at 239.06 million cedis per year. A less visible benefit of the policy entailed the implicit gain of 997.94 million cedis per year which is estimated to be accrued to the producers as a production subsidy. Another less visible benefit is the premium on foreign exchange saved.

It is possible to make some comments on the distribution of benefits. Clearly, the direct benefits of the policy tend to disproportionately benefit the urban population,
large-scale farmers and those farmers who operate in 'not-too-rural' areas. This is because most of the GFDC's retail shops are relatively more accessible in urban areas. Besides, most of its procurement outlets are relatively more accessible to large-scale producers and farmers who operate in semi-urban areas and 'not too rural' areas.

5.4.3 Ratio of benefits to government costs

Both benefits and costs of public distribution are highly sensitive to a number of assumptions (Scandizzo and Swamy 1982). Therefore, conventional methods of estimating costs and benefits with and without intervention may lead to incorrect conclusions.

The direct fiscal cost of the GMP policy is the producer and consumer subsidy incurred by the government towards the policy and the direct benefit is the savings in foreign exchange. For the period 1973 - 1991, the estimated producer and consumer subsidy of 320.25 million cedis per year and direct savings in foreign exchange of 239.06 million cedis per year indicate a benefit-cost ratio of 0.75:1.

When the indirect costs are considered, then all the less visible costs become relevant items of cost (George 1988). The average annual economic cost of the policy for the period is 1,624.73 million cedis and the economic benefits to the economy is estimated as 1,328.07 million cedis - implying a ratio of benefits to cost of 0.82:1.

5.4.4 Conclusion

According to Pinstrup-Andersen (1988) the magnitude of government costs is a key consideration in most food subsidy programs. Thus, while benefits are important, the feasibility of the GMP policy is determined in large part by its fiscal cost. From a pure 'efficiency' point of view and going by Harberger's (1984) definition of 'traditional cost-benefit analysis', the GMP policy was not a good policy. This was because the economic costs attributable to the policy outweighed the economic benefits. But as pointed out by him, other non-economic values are difficult to incorporate systematically into the analytical framework of cost-benefit analysis. Many of these other considerations of non-economic values form the core of the next chapter.
5.5 Discussion of Results: An Empirical Approach

The results, as outlined in section 5.3 emphasise the World Bank's (1983) view of the relationship between prices, distortions, government intervention and the impact on growth and efficiency. This doctrine of the relationship between pricing and efficiency has been commonly referred to as 'getting prices right' by Timmer (1989); Guillaumont (1994) and Stein (1994). It can broadly be characterised as market-oriented and outward-oriented; and is believed to speed up development by increasing overall efficiency by improving incentives and production responses to market signals (Cornia 1987).

The theoretical root, as outlined in World Bank (1983, p.42) is that 'prices influence production decisions and that production efficiency is increased if distortions are removed and market prices move closer to efficiency prices'. If the economy is producing efficiently, scarcity values must be equal to opportunity costs and their common value is the efficiency price - which, for imports and exports, will then be identical to the border price (Stein 1994). Efficiency, in this sense is completely neoclassical, using the Pareto criterion that 'an economy is considered production efficient if the supply of any good or service cannot be increased without reducing the supply of some other good' (World Bank 1983, p.42). This facilitates specialisation on the basis of comparative advantage and thus local prices of traded goods, on average, departing much less from world prices (Smith 1995).

The argument of the World Bank on the need to get prices right is buttressed with its claim that success among the East and Southeast Asian countries is linked to the avoidance of price distortions. The Bank also pointed to higher GNP growth rates, higher savings rates, higher additional output per unit of investment and higher growth rates in agriculture, industry and export volumes in countries with lower price distortions (World Bank 1983).

It is important to note, that, structural adjustment programs as they are currently formulated in developing countries, and for that matter Ghana, are heavily influenced by the World Bank's neoclassical economic precepts (as outlined above).

Contrary to the World Bank's neoclassical model of development which are emphasised and focused in their ERPs, the simple idea that development would be favoured by free trade is not universally accepted. An alternative explanation has emerged since the early 1980s. The new alternative has attributed the economic success of the Northeast Asian economies to selective intervention by the states (Gold 1986; Wade 1988; and Chang 1993; all quoted in Stein 1994).
According to Stein (1994) government policies in the Northeast economies were not neutral but active, interventionist and distorting, often with positive results. There were government-induced methods to increase the sophistication and depth of industrialisation. Governments in every country, not excluding the Newly Industrialising Countries (NICs), have made choices, not only in support of broad strategic shifts, but also to encourage very specific industries. They have backed these choices with a wide array of instruments including tax breaks, subsidies, priorities in foreign exchange, banking policies and expenditures on education and infrastructure aimed at benefiting specific sectors (Stein 1994). According to Wade (1990) governments in the NICs have guided or governed market processes of resource allocation so as to produce output and investment outcomes different from those that would have occurred in a free market. The states are thought to have anticipated shifts in comparative advantage and intervened aggressively to develop national champions for international markets.

For instance, in the case of Japan, the interventionist role of the Ministry of International Trade and Industry in influencing corporate decision-making and other commercial outcomes was given much of the credit for the country's strong industrial performance (Smith 1995). Even in Hong Kong (the country hailed by the neoclassical economists as *laissez faire*) there are important forms of intervention which are clearly market distorting (Smith 1995).

More importantly, contrary to the World Bank neoclassical role assigned to agriculture in a country's economic development, agriculture in the NICs was made completely subservient to industry. Agriculture's role in the early stages of the region's industrialisation was to provide cheap sources of food for the expanding urban workforce (Stein 1994, p.298). For example, in Taiwan, farmers were legally requested to grow rice on designated paddy areas and obliged to meet state quotas for procurement. The rice market was also manipulated by the state through other means, such as trader licenses, direct allocation of rice to government personnel and the low fixed price at which government-procured rice was released to private traders (Moore 1988). Contrary to the World Bank/IMF view, this is a clear demonstration of the involvement of the governments in the development of the NICs.

Overall, it is clear that the NICs' policy towards agriculture was somewhat different from the one the World Bank prescribes for Ghana under the ERP. More generally, there are serious doubts about the primacy of any particular form of economic organisation as such from the perspective of economic and social efficiency (Cornia 1987).
The purpose of the section is not to determine which of the two models can be relied upon to solve Ghana's current economic problems, but to offer an opportunity for an open-minded and well-balanced discussions in the next chapter.

### 5.6 Sensitivity Analysis

In order to observe the sensitivity of results to changes in key parameter values, a neighbourhood of alternative assumptions is selected and their corresponding results identified. The key parameters are the own-price elasticity of demand for maize ($\alpha_m$); the own-price elasticity of supply of maize ($\beta_m$); the price elasticity of home consumption of maize ($\mu_m$); and the world market price of maize ($P_w$). These four parameters were varied because it is thought that they strongly influence the results and because a certain degree of controversy and discretion surrounds the particular values chosen. For instance, Lee and Helmberger (1985) found that supply elasticities differed between 'free market' and 'farm-program' regimes in the USA. Though the study was conducted in a different economic environment, the results have some validity for Ghana. Even though the present study covers only the period of the GMP policy, all the three elasticity values were estimated for periods before and during the policy. Hence, their appropriateness needs to be tested.

To test the implications of a lower own-elasticity of demand for maize, an alternative value of (-1.25) was chosen. Referring to Table 4.1, all the available elasticity values for other countries are lower than the original value of (-1.689). The value (-1.25) represented the own-price elasticity of demand for rice (a close substitute to maize) estimated for Ghana by Stryker (1990).

To test the implications of a lower own-price elasticity of supply for maize, (0.62), representing the average figure estimated for Kenya, Tanzania and Sudan was analysed. Although these three countries operated in a different agricultural policy environment from Ghana, all the four countries shared similar economic characteristics and structures. The lower value is in conformity with Lee and Helmberger's (1985) findings that soybean acreage response appeared less own-price-responsive in the presence of farm programs than under free market.

Although the value of the price elasticity of home consumption of maize is considered realistic, an alternative value of (-2.7), representing the upper limit of Haessel's (1975) estimate for Ghana was analysed to assess the sensitivity of the results of this parameter.
The world price of maize is a major determinant of the size of the producer and consumer surplus and the government cost of the policy. With the adoption of ERP in many developing countries and the resulting liberalisation of domestic food markets, countries like Ghana with no comparative advantage in grain production are likely to import, thus inducing increases in the world market price. To analyse the implications of a sharp rise in the world price of maize, an alternative price level of 20 per cent higher than the original value was chosen for analysis.

As shown in Tables 5.3, 5.4, 5.5 and 5.6, the net social benefit for all the parameter changes is negative with the lowest relating to the increase in the world price of maize ($P_w$) and the highest relating to the increase in the price elasticity of home consumption of maize ($\mu_m$).

As shown in Table 5.3, with a lower own-price elasticity of demand for maize, the loss in consumer surplus in the government and private sector markets falls by 6.9 per cent and 5.8 per cent respectively. The other parameter values remain unchanged. The net social benefit of the industry falls from 296.66 million cedis to 220.72 million cedis per year - a fall of 25.6 per cent.

If the own-price elasticity of maize supply ($\beta_m$) is decreased from 0.86 to 0.62, it results in a 7.56 per cent increase in the producer surplus in the government sector market and a 12.9 per cent fall in the producer surplus in the private sector market. All the other parameter values, however, remain unchanged. The net social loss increases from 296.66 million cedis to 399.99 million cedis per year - an increase of 34.83 per cent. The optimum support price to induce self-sufficiency level of production increased from 23 391.01 cedis/t to 23 683.78 cedis/t - an increase of 1.25 per cent.

The third part of the sensitivity analysis involved increasing the world market price of maize ($P_w$) from 18 503.30 cedis/t to 22 203.96 cedis/t - a rise of 20 per cent. As shown in Table 5.5, apart from the net government cost of the policy which remained unchanged, all the remaining parameter values were significantly changed. More importantly, the net social loss was decreased from 296.66 million cedis to 66.56 million cedis per year - a fall of 77.56 per cent.

The implication of an increase in the price elasticity of home consumption of maize ($\mu_m$) from (-2.0) to (-2.7) is shown in Table 5.6. It led to the highest net social loss of 458.70 million cedis per year - an increase of 54.62 per cent.
From the above analysis, altering the world price of maize ($P_w$) and price elasticity of home consumption of maize ($\mu_m$) are found to have more pronounced effects on the results than the other two parameters. Given the volatility of the world price of maize, an effort should be made for its update in any future study in the area. Being a staple food commodity, an own-price elasticity of demand ($\alpha_m$) and the price elasticity of home consumption of maize are not likely to change much over a short time. However, with the current government’s pricing policy under the ERP, the own-price elasticity of supply of maize is likely to change in the long run and future studies should address the possibility.

Table 5.3: Costs and benefits of GMP policy (million cedis per annum)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Government sector market</th>
<th>Private sector market</th>
<th>Total maize industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net producer benefit</td>
<td>+56.73</td>
<td>+941.21</td>
<td>+997.94</td>
</tr>
<tr>
<td>Net consumer benefit</td>
<td>-64.25</td>
<td>-1 164.29</td>
<td>-1 228.54</td>
</tr>
<tr>
<td>Net government cost</td>
<td>-320.25</td>
<td>0</td>
<td>-320.25</td>
</tr>
<tr>
<td>Savings in foreign exchange</td>
<td></td>
<td></td>
<td>+239.06</td>
</tr>
<tr>
<td>Foreign exchange premium</td>
<td></td>
<td></td>
<td>+91.07</td>
</tr>
<tr>
<td>Net social benefit</td>
<td></td>
<td></td>
<td>-220.72</td>
</tr>
</tbody>
</table>

Note: + = Gain in benefits

- = Loss in benefits

Parameter values:

- Price elasticity of maize demand ($\alpha_m$) = -1.25
- Price elasticity of maize supply ($\beta m$) = 0.86.
- World price of maize ($P_w$) = 18 503.30 per ton
- Price elasticity of home consumption of maize ($\mu_m$) = -2.0
Table 5.4: Costs and benefits of GMP policy (million cedis per annum)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Government sector market</th>
<th>Private sector market</th>
<th>Total maize industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net producer benefit</td>
<td>+61.02</td>
<td>+833.59</td>
<td>+894.61</td>
</tr>
<tr>
<td>Net consumer benefit</td>
<td>-67.90</td>
<td>-1 236.58</td>
<td>-1 304.48</td>
</tr>
<tr>
<td>Net government cost</td>
<td>-320.25</td>
<td>0</td>
<td>-320.25</td>
</tr>
<tr>
<td>Savings in foreign exchange</td>
<td></td>
<td></td>
<td>+239.06</td>
</tr>
<tr>
<td>Foreign exchange premium</td>
<td></td>
<td></td>
<td>+91.07</td>
</tr>
<tr>
<td>Net social benefit</td>
<td></td>
<td></td>
<td>-399.99</td>
</tr>
</tbody>
</table>

Note:  + = Gain in benefits
       - = Loss in benefits

Parameter values:

- Price elasticity of maize demand \((\alpha_m)\) = -1.689
- Price elasticity of maize supply \((\beta_m)\) = 0.62
- World price of maize \((P_w)\) = 18 503.30 per ton
- Price elasticity of home consumption of maize \((\mu_m)\) = -2.0
Table 5.5: Costs and benefits of GMP policy (million cedis per annum)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Government sector market</th>
<th>Private sector market</th>
<th>Total maize industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net producer benefit</td>
<td>+28.66</td>
<td>+300.67</td>
<td>+329.33</td>
</tr>
<tr>
<td>Net consumer benefit</td>
<td>-13.72</td>
<td>-347.31</td>
<td>-361.03</td>
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<td>Net government cost</td>
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<td>-320.25</td>
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<td>-</td>
<td>+274.92</td>
</tr>
<tr>
<td>Foreign exchange premium</td>
<td>-</td>
<td>-</td>
<td>+10.47</td>
</tr>
<tr>
<td>Net social benefit</td>
<td>-</td>
<td>-</td>
<td>-66.56</td>
</tr>
</tbody>
</table>

Note: + = Gain in benefits
- = Loss in benefits

Parameter values:

- Price elasticity of maize demand ($\alpha_m$) = -1.689
- Price elasticity of maize supply ($\beta_m$) = 0.86
- World price of maize ($P_w$) = 22 203.96 per ton
- Price elasticity of home consumption of maize ($\mu_m$) = -2.0
Table 5.6: Costs and benefits of GMP policy (million cedis per annum)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Government sector market</th>
<th>Private sector market</th>
<th>Total maize industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net producer benefit</td>
<td>+58.30</td>
<td>+806.09</td>
<td>+864.39</td>
</tr>
<tr>
<td>Net consumer benefit</td>
<td>-69.07</td>
<td>-1 257.45</td>
<td>-1 326.52</td>
</tr>
<tr>
<td>Net government cost</td>
<td>-326.70</td>
<td>0</td>
<td>-326.70</td>
</tr>
<tr>
<td>Savings in foreign exchange</td>
<td>_</td>
<td>_</td>
<td>+239.06</td>
</tr>
<tr>
<td>Foreign exchange premium</td>
<td>_</td>
<td>_</td>
<td>+91.07</td>
</tr>
<tr>
<td>Net social benefit</td>
<td>_</td>
<td>_</td>
<td>-458.70</td>
</tr>
</tbody>
</table>

Note: + = Gain in benefits
- = Loss in benefits

Parameter values:

- Price elasticity of maize demand ($\alpha_m$) = -1.689
- Price elasticity of maize supply ($\beta_m$) = 0.86
- World price of maize ($P_w$) = 18 503.30 per ton
- Price elasticity of home consumption of maize ($\mu_m$) = -2.7
6 Policy Implications

6.1 Introduction

Until 1991 the maize policy in Ghana was based on a combination of price support and trade restrictions to maintain domestic production and to guarantee a sizeable share of the Ghanaian maize market for the domestic producers. Support for the policy was based on self-sufficiency and strategic considerations as well as on the 'protection of domestic industry' argument. According to Stryker (1990), there are important forward and backward linkages between agriculture and other sectors in the Ghanaian economy. For this reason, the policy issues related to the removal of GMP resulting from the study are analysed within the broader macro-economic environment.

ERP, as prescribed for Ghana, contains three categories of policy - those related to demand, supply-side policies and more general institutional reforms. In general, the program has concentrated mainly on the macro balances, leaving the meso implications to 'fall-out' of the existing system. On the other hand, the 'human face approach to adjustment', as described by the UNICEF (Streeten 1987), focuses on the aggregate macro balances in the economy, and also includes meso policies as an integral part of adjustment policies (Cornia 1987).

In this chapter, an attempt is made to answer the question: what are the practical implications of the results of the study as outlined in Chapter 5? In Section 6.2 the policy implications of the results for the international financiers are discussed. They are followed by the implications for the Ghana government: food marketing; food security and stability in Sections 6.3, 6.4 and 6.5 respectively. Other considerations related to the ERP form the core of discussion in Section 6.6. Section 6.7 deals with the policy implications for the maize farmer. The policy implications for the maize consumer and the private sector (both as a trader and as an investor) are discussed in section 6.8 and 6.9 respectively. A final summary and conclusions are outlined.
6.2 Implications for the International Financiers (Donor Agencies)

In the early 1980s, the dominant emphasis of economic packages was on securing a sustainable balance of payments position and non-inflationary domestic conditions. The fate of vulnerable groups, such as the poor rural farmers and poor urban consumers was considered to be a matter for national governments to deal with in their own way and not an issue of adjustment policy (Cornia 1987).

For the international financiers (The World Bank and IMF), the negative net social benefit associated with the GMP policy is justification enough (on economic efficiency grounds) to call for its discontinuation. Clearly, maize producers benefited from the policy (as shown in Figure 3.5a (i) and (ii)). However, these benefits could have come at high social costs, because the public costs of transferring a unit value of the benefit to the farmer exceeds that unit value (Schreiner et. al. 1989). It would therefore be less costly to make a direct transfer to the farmer.

It is important, however, to consider how to design an adjustment package which will minimise the costs involved in the process of discontinuing the GMP while best meeting priority objectives. As such, there is a more urgent need to incorporate the well-being of vulnerable groups into the objectives of adjustment programs. The inevitability of these social costs and the differing impact of reforms on various poor groupings in the country require that the social dimensions of the program be treated as an integral part of program design instead of being entrusted to ad hoc, palliative measures hastily drawn up at later stages (Asiedu-Saforo 1989). The ERP as implemented in Ghana failed in this respect in that until recently nothing was being done to resolve the social effects of the economic crisis and the dislocations arising from the ERP.

Growth alone is not sufficient, as the example of Brazil in the 1970s and 1980s and Sri Lanka in the 1980s has indicated (Longhurst 1987). To ensure that low-income and vulnerable groups do not suffer permanent damage, protection of their basic living standards has to become an explicit objective of adjustment and programs must be devised and monitored on this account. There is the need for donor agencies to identify potential bottlenecks and unintended effects of their prescriptions and consequently to discover measures to contain them. Inflows of fund and bank resources by themselves cannot offset the hardships inflicted by the end of price controls, removal of subsidies and the introduction of a foreign exchange market (Asiedu-Saforo 1989).
The assumption of speedy response is integral to the World Bank/IMF model of structural adjustment. Lags are almost always under-estimated in stabilisation. Initial measures are typically adopted without adequate attention to identifying either optimal sequences or sequential interactions (Colclough and Green 1988). According to Edwards (1987) any process of trade liberalisation will require an adjustment period in which firms retool and labour acquires new skills. In many cases, this adjustment process will take time and will be costly. The idea of minimising adjustment costs is generally translated into two forms of policy recommendations (Edwards 1987, p.28):

- gradual liberalisation of trade; and
- the provision of adjustment assistance.

In the case of Ghana, such conditions were virtually absent when the GMP policy was removed in 1991. Consequently, the failure of the program to generate quick and visible benefits has allowed political opposition to overwhelm it. This has been manifested in a series of workers' and farmers' protest throughout the major cities (Afari 1995; National Reporter 1995).

Compared to the strong focus on reviving export production, the adjustment program in Ghana seems to have given relatively little attention to the achievement of food self-sufficiency (Loxley 1988). In part, the fight for food self-sufficiency may have been hindered by the adjustment program itself. As the market mechanism was allowed to operate freely, it was expected that the differentials in favour of cash crop production would gradually narrow with food prices being dragged along in response to relative shortages (Kusi 1991). Eventually both markets would move to equilibrium levels of output as prices adjusted. Contrary to expectations, the adjustment program has had the effect of turning the domestic terms of trade dramatically against food producers. This is essentially the result of the exchange rate policy which has raised not only the prices of non-food items faster than the increase in food prices, but also succeeded in improving the returns to cash crop production, especially cocoa, relative to those of food production.

6.3 Implications for the Government: Food Marketing

From Table 5.2 the GMP policy cost the government an average of 371.8 million cedis a year and yielded an annual saving of 239.0 million cedis (in foreign exchange). The policy change is, however, to open up the economy to maize imports to supplement domestic output rather than have the government support domestic prices to induce increased production. Despite the attractiveness of the policy change in
terms of economic efficiency and government cost objectives, policy makers may question the wisdom of the policy in the light of the burden it places on poor farmers.

With the discontinuation of the GMP policy, the domestic price will be the same as or close to the world price $P_w$ (18,503.30/t) as shown in Figure 3.5b. Based on the estimated price elasticity of demand of $-1.689$, consumers will be willing to purchase quantity $Q_F$ (603,696t) at the price. At this relatively low price and based on the estimated price elasticity of supply of (0.86), domestic producers will be willing to produce only the quantity $O_I$ (372,178t).

Haessel (1975, p.114) concluded from his study on Ghana that farmers as consumers are price and income responsive. This implies that higher prices will result in larger quantities marketed and vice versa. Thus, a policy of attempting to stimulate output through higher prices will also be consistent with eliciting a larger proportion of the output produced for non-farm consumers. From the policy standpoint, this means that as market price falls, the farmers will retain a larger per cent for consumption purposes and make a smaller per cent available for off-farm consumption. Hence, assuming the same price elasticity of home consumption of maize as estimated by Haessel as $(-2.0)$, at a lower producer price of 18,503.30/t, an estimated quantity of 206,767t will be retained for home consumption, leaving 165,411t as the marketable surplus. The difference between 603,696t and 165,411t (438,285t) valued at 8.109 billion cedis in foreign exchange, must be supplied from imports for there to be no price effect. On the other hand, if imports are not increased, the extra demand must be met by domestic producers, who will be unwilling to supply more maize unless prices rise. The key question is whether the free market can produce adequate food supplies at reasonable prices and whether the government can raise the foreign exchange required to support such massive imports? This should be a weighty and valid consideration for policy makers and politicians.

The ERP which Ghana has adopted virtually follows capitalist development strategies in planning the agricultural development of village-based farmers. Appraisal of agricultural prices has centred on cash crops such as cocoa and coffee. With food crops, the government's policy is that as far as possible, market forces should determine prices. It is therefore assumed that the government wishes to encourage the development of agricultural system that reflects what it perceives to be the good attributes of capitalist marketing system based on smallholder output (Fleming 1986). For the liberalisation move to lead to the envisaged competitive market and price mechanism with its resource-mobilising effects will require an efficient marketing system.
Marketing analysis shows that the formation of price margins is largely a function of two elements: the costs of transportation, storage and processing; and the efficiency with which these marketing services are provided (which itself is related to competition). According to Timmer, Falcon and Pearson (1983) efficient and low-cost marketing services are the most sustainable solution to the food price dilemma. The narrower the margin because of genuinely low marketing costs and highly efficient price formation, the more consumers and producers can both share in the productivity potential of a healthy agricultural economy. It enables producers, consumers and marketing agents to react quickly and efficiently to new price signals from the market. The government should therefore improve the competitiveness of the food marketing system by creating better market access for potential participants. The government should invest in the components of a marketing system to the extent that social benefits from lowered marketing costs match the social opportunity costs of the public resources needed for the investment.

The tendency of the private-sector operators to exploit opportunities for monopolistic or oligopolistic market behaviour is a latent risk, especially after liberalisation when private marketing systems are in the process of rehabilitation. It is therefore important to monitor market developments with a view to (Reusse 1987, p.315):

- facilitating market entry for medium-and small-scale operators;
- removing physical and institutional obstacles to the establishment of a fully competitive system;
- extending producer and consumer education on the seasonality of price developments; and
- ensuring improvement in market transparency.

The government's Medium Term Agricultural Development Program (MTADP) which focuses on the ERP, aims to raise agricultural growth through liberalisation of marketing and pricing, improved yields, better support services and input supplies (ODA 1991). Thus, emphasis has been upon creating a favourable environment to increase smallholder productivity through the use of proven technological packages and a general improvement of services to the sector. The government aims to improve the efficiency of the market and improve agricultural productivity in order to make the domestic producer competitive at the world price.

As a government-influenced maize marketing system is collapsed during a transition to a complete private sector system, some important institutions may not be replaced
automatically by the private sector and the provision of some critical marketing services can be interrupted (Lea 1994). Under a complete private sector system, essential tasks such as grading, grain-drying, grain-storage, and farmers education, no longer performed by GFDC, must be assumed by private sector organisations. Given the small quantity of maize the corporation handles and the seemingly minor role it performs in the maize sub-sector, these important roles can easily be overlooked during liberalisation. Policy makers should be aware not only that such private organisations are needed but that government policy plays a major role in their existence and motivation (Lea 1994).

Infrastructure and institutions are often 'inseparable' in facilitating agricultural market development. According to Breimyer (1976) the provision of certain types of infrastructural facilities or institutional services may provide little impetus to agricultural market development without the presence of other types of infrastructure or institutional services. In Ghana, inadequate rural roads and information network mean that markets are not spatially integrated and transport adds appreciably to marketing costs. A study by the Ministry of Agriculture (1990) revealed that transportation costs account for about 70 per cent of the difference between the farmgate price and the retail price and this is attributed to the poor state of rural roads. Although considerable expenditures have been devoted to the upgrading of urban roads, the existence of poor rural roads is likely to negate the benefits derived from them to food growers. Policy makers are to address such rural infrastructural problems if farmers are to benefit from the efficient market system. The price changes alone cannot by themselves be sufficient for agricultural growth.

Inspite of its reduced presence in a complete market-oriented economy, the government should continue to have a significant role in creating and maintaining the required structure that serves the economy. Government policies relating to credit, trade associations, information, private contracts and to other facilitating services influence how supportive these services are to a private-sector system and also influence how competitive that system is. The policy consideration is for the government to encourage the development of necessary physical and institutional capabilities to support the private sector. The government's expenditure programs should be directed to those items which can reduce the constraints farmers face in responding to better prices.

For the maize market to perform efficiently, there is a case for policy makers to reassess priorities in dealing with market risks faced by farmers and market
participants. The government may be required to create a less risky and more congenial environment that permits a more competitive maize sector to evolve.

Kuada's (1988) study on 'activities of maize traders in Ghana', concluded that their most serious problem is inadequate access to capital. Consequently, a large number of small traders cannot handle large-scale purchases to be able to reduce cost through economies of scale (Ministry of Agriculture 1987). To solve the problem of credit for both maize producers and maize traders, the government should establish a policy environment that would encourage responsible individuals or organisations to operate third-party grain banks. Because grain is 'a ready marketable staple' (Schneider 1941, p.3), it can be used as the collateral foundation for a credit system that promotes the flow of credit to both large- and small-scale producers and enterprises.

6.4 Implications for the Government: Food Security

In Ghana, maize is regarded as a key contributor to food security and it seems likely that the ERP will be deficient as a policy to ensure food security. The next question to ask is: what is the effect of the policy change on food security in the country? This is more important considering the number of macro-economic changes which are normally part of structural adjustment programs. According to Hindle (1990) all these macro-economic policies have immediate impact on food availabilities and thus food security. Food availability at the national level depends on domestic agricultural production and imports. With the policy change, domestic production is likely to fall (at least in the short run) and imports are likely to increase.

By the World Bank definition of 'food security', as specified by Hindle (1990, p.62), Ghana is only prone to transitory food insecurity situations. According to Maxwell (1990, p.2) 'a country and people are food secure when their food system operates efficiently in such a way as to remove the fear that there will be enough to eat'. The World Bank's version of food security as stipulated in the World Bank's policy statement on Food Security, Poverty and Hunger is outlined as follows (World Bank 1986):

i that public sector sales and purchases should be kept as low as possible, so as to provide incentives to farmers;

ii that stocks should be kept to the minimum required for emergency relief; and

iii inter-annual fluctuations should be handled largely by trade.
As stated above, the World Bank/IMF view seems to de-emphasise the role of the public sector in food security. It seems to give free rein to market forces to determine the course of the country's food security. It supports the view that the government's 'social' food security objectives can be met through a more efficient marketing system rather than with subsidies. Besides, according to Hindle (1990) the World Bank supports targeting of food security interventions as the most appropriate and realistic measure for all sub-Saharan African countries including Ghana. In opposition to such recommendations, to maintain the continuity of food supplies throughout the year, the government of Ghana, through GFDC operated a national food security reserves and buffer stock system until 1991 (Europa 1995).

As pointed out by Dearden and Cassidy (1990), keeping of large stocks of food as strategic food reserves tends to be inefficient and costly. It can be more cost effective to use foreign exchange reserves and aid money to finance extra food imports. He, however, conceded that a modest level of domestic stocks is still likely to be justified as an emergency stopgap since an additional imports may take several months to arrive. Such a 'holdfort' stock arrangement is certainly desirable, given Ghana's high international costs, long import lead time and limited regional trade prospects. Some of the vital questions policy makers should address are: How does the state maintain the required emergency stock level? Does the private sector have the capacity, capability and requisite expertise to hold this stock? Can the state continue to rely on the GFDC's existing cleaning and drying facilities as well as its storage capacity of about 45 000 metric tons in silos and warehouses (Ministry of Agriculture 1986)?

The state should find it necessary to develop the institutional capacity at local as well as national level to mobilise and channel emergency assistance quickly to where it is needed. The state should ensure the strengthening of rural and urban safety nets, to prevent destitution and guarantee food security in emergencies (Maxwell 1990). In a country like Ghana where a strong competitive market is absent, household food security goals may not be fully achieved through private distribution (Pinstrup-Andersen 1988). Empirical evidence from Tanzania shows that while free market conditions were able to equate internal supply and demand in normal seasons (1956 - 1960), this was not true in severe drought (1961) when deficits occurred (Child, Muir and Blackie 1985). There is the analytical need for policy makers to identify clearly policy and investment recommendations of relevance to food security.

The World Bank's position on food security as reflected in the ERP for Ghana, emphasises on growth in agriculture as a contributor to food security through:
i growth in food production, to improve food availability and to lower food prices; and

ii higher incomes, to generate greater command over food.

This is based on the principle that cash crops and food crops are complementary rather than competitive in production because of technical relationships in farming systems (Maxwell 1990). It implies that increased cash cropping is associated with more rather than less food production. Furthermore, as argued by Kennes (1990), cash crops are often more labour intensive than food crops, so that incomes and access to food for the poorest are improved by a switch from food crops to cash crops, at least, in the short run.

In Ghana, these two conditions do not necessarily hold true. In some cases, maize is planted alongside newly planted cocoa seedlings to give shade for the initial years of the cocoa plants. Initially therefore maize output can be expected to increase in response to incentives to plant cocoa, but this increase will only be a short term outcome. Generally, maize and cocoa production in the Brong-Ahafo and Ashanti regions compete for both land and labour (Ministry of Agriculture 1990; Stryker 1990). The expansion of cocoa cropping causes the supply curve for food to shift to the left. At the same time, cash cropping results in an increase in income, so that the demand curve for maize shifts to the right. Increases in cash cropping could therefore, harm poor people who do not share in the higher incomes associated with cash crops.

According to Maxwell (1990), the size of a country's emergency reserves should be related to the lead time necessary to arrange for food imports or food aid to meet domestic consumption requirements. In view of the country's poor rural road network and the envisaged problems of insufficient access of imported food to the rural areas where the bulk of the population leaves, Ghana may have a strong case to intervene than the ERP may allow. With the policy change, policy makers would have to decide on which institution to play the role of maintaining strategic food reserves for the country. Private enterprises, which are profit driven, cannot be expected to play the role of market stabiliser or emergency stockpiler without recovering the full costs of doing so (Jiriyengwa 1993).

Contrary to the view expressed on behalf of the World Bank by Hindle (1990), targeting of food security interventions will not be easy in Ghana because the targeted interventions have to reach a high proportion of the population. Ghana does not have a track record of targeting consumers using administrative measures. Most relief food meant for the poor rural vulnerable groups is usually found in shops and towns and
not in the marginal areas where they are needed most. This confirms the findings by Maxwell, Swift and Buchanan-Smith (1990, p.52) in their study in Sudan that 'targeting food security interventions in sub-Saharan Africa to those who really need them presents special difficulties'.

6.5 Implications for the Government: Stability

In Ghana, there is considerable fluctuation in both production and consumption of cereals. For the period 1970 - 1980, the coefficient of variation of maize production and maize consumption was estimated to be 68 per cent and 32 per cent respectively (Atta-Konadu 1989 cited in ODA 1991). But according to Stryker (1990) both direct and indirect price interventions have decreased the variability of maize prices for both producers and consumers. To ensure stabilised supply and price conditions under the policy change, policy makers should address the problem of fluctuations, especially in supply.

World commodity prices are unstable because they are typically thin and are strongly affected by the weather and by variations in demand, especially from abroad (Houthakker 1976). With the discontinuation of the GMP policy and 'freeing' the domestic market, local producers would be left 'unprotected' and any variations in the world price will be transmitted directly into domestic price formation. This is more serious for a developing country like Ghana which may not command the relevant skills and techniques to predict the volatility of international prices. Besides, most domestic producers are unable to protect themselves against sudden falls in output prices and rises in input prices through insurance and forward contracts. It will be necessary for policy makers to consider how the country with her 'weak' foreign exchange position and a trade deficit of US$ 377.8 million (as at 1992) can respond effectively to volatility of border prices (IMF 1993; Europa 1995). The policy question is how best to develop contingency plans in order to respond to the volatility. More importantly, lower world prices would generally make it difficult for policy makers to improve farmgate price incentive without absorbing some cost to the domestic economy.

6.6 Other Considerations Related to the ERP

Another area ripe for improvement in policy making is the identification of those marketing functions that are not suitable for small market participants or in which
large marketing organisations have a strong comparative advantage (due to the existence of substantial economies of size). A typical example will be in the area of negotiating for export commodity contracts and bulk purchases of inputs from overseas. Thus, where the government may seek to completely privatise maize marketing, it may also seem probable that it will retain a number of non-commercial controls over the market, such as controlling export and import quality and buying for buffer stocks.

However, considering the country's current severe budgetary and balance-of-payments constraints, policy makers should welcome the private sector into maize import and export trade. Some of them can use their proprietary links with foreign merchant houses to draw on external resources for the financing of import or export transactions. In Ghana, for instance, such proprietary links of trading houses historically involved in food and agricultural commodity trade cover at least six European countries (Reusse 1987).

Considering the long-term shift in incentives for maize production, especially if the government is unable to create an efficient and an improved market system, it is not clear whether resources would be transferred from maize into other crops. It is possible that in response to declining maize incentives, the farm population, particularly, the new batch of public servants who were retrenched under the ERP and were attracted into the maize industry because of the high government support price offered may have drifted to domestic urban or foreign labour markets. There is also the possibility that the increased producer price of cocoa paid by the government may attract some of the resources.

Special attention should be given to problems arising in remote areas hitherto served by the GFDC at prices not reflecting real transport costs. As part of its social role, the corporation was often 'compelled' by the political authorities to operate at the government support prices in some very remote and inaccessible areas - in direct conflict with commercial criteria. In the short run when such areas still remain inaccessible, farmers in such areas will require a special treatment from the government to remain in maize production.

Under the GMP policy, the corporation's pan-territorial and pan-seasonal pricing distorted the market pricing system substantially since maize is more valuable in deficit areas than in surplus areas (Mwanaumo, Preckel, and Farris 1994). Given the production pattern, pan territorial pricing in particular eliminated the regional incentives to producers in deficit regions and unduly rewarded producers in surplus regions. The result was an inefficient increase in transport and marketing costs plus
an inequitable transfer - from relatively resource-poor farmers in deficit areas to relatively resource-rich farmers in surplus areas. Under the policy change, however, one would expect that price incentives in these regions would affect the pattern of production and consumption. The policy consideration is how the trend will affect regional development and regional unemployment situation in the country.

The policy change may entail some immediate costs such as unemployment and loss of income in GFDC. The corporation has since 1992 embarked on an intensive redundancy exercise to lay off about 40 per cent of its total strength of about 850 staffs. The government cannot ignore the likely social effects of the increasing unemployment rate in the country - currently reported by Lothian (1995a) as 20-25 per cent.

6.7 Implications for the Maize Farmer

Generally, maize farmers gained under the GMP policy (as shown in Table 5.2). However, farmers who had access to the government's support price gained much more. Most of the corporation's purchasing outlets are located in the semi-urban areas and thus favoured the large-scale and semi-urban farmers. Notwithstanding this, all maize farmers gained either directly or indirectly under the GMP policy. This implies that with the current policy change, farmers would be worse off by way of a lower producer price for their marketable output. Price comparisons with the international equivalent price would therefore suggest a disincentive to produce. For instance, a fall in national maize production from 930 000t in 1991 to 580 000t in 1992 (a decline of 37.77 %) should be of concern to policy makers (Europa 1995).

Successive currency devaluations and the removal of subsidies on agro inputs under the ERP have led to an increase in the domestic costs of inputs beyond the reach of most small-scale farmers (Asiedu-Saforo 1989). Its effect is in direct conflict with the government's objective of increasing smallholder productivity through the use of improved technological packages, most of which require agro inputs which need to be imported. As Cleaver (1985) implied, governments throughout Africa hold major responsibility for this flow of agro inputs, but the consequence of stabilisation policy (under the ERP) has generally been to decrease this flow. With the gradual removal of subsidies, the relative profitability of agro inputs has reduced considerably. For instance, profitability to the farmer as reflected in the fertiliser/maize price ratio reduced from 72.78 per cent in 1983 to 4.26 per cent in 1988 (Asiedu-Saforo 1989). Consequently, the level of fertiliser usage even among large-scale maize farmers, is presently low.
Like in all African countries, the policy thrust of the structural adjustment program in Ghana, has been on demand restraint, public expenditure reduction, exchange rate adjustment, contraction of the size of the public sector and adherence to the interplay of market forces as a mechanism for optimum allocation of resources (Ekouevi and Adepoju 1995). As part of the process of reducing government expenditure, the gradual phasing out of public sector involvement in the importation and distribution of agro inputs is likely to have an adverse impact on the policy of increasing small-holder productivity (Asiedu-Saforo 1989). The private sector to which responsibility for supply and distribution of agro inputs is being given may not be able to meet the increased demand for agro inputs associated with technology adoption. Problems of mobilising domestic financial resources to import inputs on an economic scale, foreign exchange constraints and time delays in securing funds are likely to limit private sector involvement in this activity. Supplies to the remote farming centres which are still not very accessible and where most of the small-scale farmers operate cannot be guaranteed by the private sector. Rather than a complete withdrawal of public sector involvement in the importation and distribution of agro inputs, public participation should therefore be maintained to act as a stabilising force in the market.

Exchange rate policies have also raised the price of non-food consumer items faster than the increase in food prices, effectively turning the terms of trade dramatically against the agricultural sector. This is contrary to the common belief that structural adjustment programs lead to an increase in agricultural prices relative to the price of other goods and services (Guillaumont 1994). If a structural adjustment program actually leads to an increase in the relative or real price of agricultural products, agricultural production would be expected to rise.

The structural adjustment program implemented in Ghana has led to a drastic reduction in spending in the education and health sectors. The associated cash recovery strategies required the beneficiaries to participate in sharing the costs of education. The introduction of user charges, admission fees and the removal of subsidies on basic drugs have severely affected the vulnerable population, including small-scale maize farmers whose purchasing power has been drastically eroded under the policy change (as shown in Table 6.1) (Lothian 1995b).

Furthermore, according to Mosley and Smith (1989) as quoted in Guillamont (1994) in most African countries, expenditures allocated to agriculture, in particular those on which agricultural productivity depend, were significantly affected under ERPs. These expenditures are rural and they are in large part investment expenditures or expenditures for services that are particularly needed (such as health, extension and
research). The situation has not been any different in Ghana. As shown in Table 6.2, much of the meagre funds allocated to the sector is subsumed under recurrent expenditure.

Table 6.1: Real prices of maize in Ghana at 1980 prices, 1980 - 1986

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<tr>
<td>Maize</td>
<td>413.3</td>
<td>366.4</td>
<td>278.1</td>
<td>549.7</td>
<td>300.0</td>
<td>294.3</td>
<td>395.3</td>
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Table 6.2: Public expenditure on agriculture (%), Ghana, 1979-1990

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<tr>
<td>AE as % of TE</td>
<td>12.2</td>
<td>12.2</td>
<td>11.0</td>
<td>9.8</td>
<td>10.4</td>
<td>4.9</td>
<td>4.2</td>
<td>4.5</td>
<td>3.5</td>
<td>3.4</td>
<td>4.7</td>
<td>4.1</td>
</tr>
<tr>
<td>Share of DE in AE</td>
<td>14.7</td>
<td>27.8</td>
<td>17.2</td>
<td>14.0</td>
<td>9.6</td>
<td>29.1</td>
<td>34.2</td>
<td>33.7</td>
<td>25.4</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Share of RE in AE</td>
<td>85.3</td>
<td>72.2</td>
<td>82.8</td>
<td>86.0</td>
<td>90.4</td>
<td>70.9</td>
<td>65.8</td>
<td>66.3</td>
<td>74.6</td>
<td>-</td>
<td>-</td>
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Note: DE = development expenditure; TE = total expenditure; AE = agricultural expenditure; and RE = recurrent expenditure.
More importantly, these deteriorated social conditions within which peasant small-scale rural maize farmers operate, work against productivity improvements, the other element in structural adjustment needed to supplement the universally-accepted notion of 'getting prices right' (Guillaumont 1994). In the long term, factors other than prices influence agricultural production, either directly or through the parameters of price reactions: health, education in rural areas, agricultural extension, agronomic research, quality of feeder roads and access to credit. These non-price issues certainly deserve urgent policy considerations.

Lowering incomes of small rural farmers may also indirectly worsen urban conditions through an increase in the flow of rural - urban migration.

According to the Ministry of Agriculture (1987) maize farmers sell more than 30 per cent of their marketed surplus immediately after harvest. Within three to five months, 80 per cent of the marketed surplus is sold. Thus the majority of the farmers, particularly small farmers sell the largest percentage of their marketed surplus at low prices. For instance, in 1985, the percentage differences between the highest and lowest prices of maize was 54.4 per cent in the urban areas and 63.8 per cent in the rural areas (Ministry of Agriculture 1987). The lower prices of farm products immediately after harvest and the quick increases shortly after two to three months indicate the difficulties that the marketing system faces in allocating the flow of farm products over time. Policy decisions should be made to increase farmers' holding capacity to enable them receive attractive prices for their produce in the rural markets.

### 6.8 Implications for the Maize Consumer and Processor

Theoretically, under the policy change, all categories of consumers stand to gain since they are to buy at the lower world price. Even though maize is grown and consumed nationwide, there is a fair diversity of diets. The predominantly maize-consuming areas are the urban areas and those rural areas in the coastal savanna since there are more starchy alternatives in the main growing areas.

Direct access to the consumer subsidy for maize was with purchased maize from the corporation. The subsidy was untargeted as it was simply reflected in a lower selling price by the corporation. The fact that most of the corporation's sales outlets are located in the urban areas implies that beneficiaries of maize subsidies have been urban consumers. In some cases, purchases from the corporation was even easier for the rich and influential urban consumers than for the poor ones who genuinely deserved such a subsidy. Small deficit farmers and the poor rural landless did not
benefit from the government subsidy because they purchased at the farmgate price which was in turn raised by the government price support subsidy. Under the GMP policy therefore, an improvement in the living standards of the urban consumers was paid for by the poor rural consumers.

Both income and price elasticities for staple food such as maize tend to be large in absolute value among the poor (Alderman 1986 cited in Pinstrup-Andersen 1988; Tsakok 1990). The consumption of maize by the rich is assumed to be unchanged in response to a price change. Contrary, the poor are more sensitive to price changes for basic foodstuffs. Under the policy change, low income consumers are more likely than the average consumer to be favourably affected by a price fall for a food commodity such as maize. In the current economic environment, given the major role played by maize as a source of calories for the poor, low income urban households and the poor rural consumers may derive significant nutritional benefits from the lower price of maize. This deserves an urgent policy consideration in a country where 58 per cent of the average household's monthly expenditure is on food (Ghana Living Standards Survey Report 1992 quoted in Baffoe 1992).

Policy makers should consider the cross-commodity effects of the policy change. For instance, Haessel's (1976) estimate of a positive cross price elasticity of demand for maize with respect to the price of yam (another staple food) as (1.59) suggests that there is substitution between consumption of the two crops. In the face of a lower price for maize resulting from the policy change, domestic consumption of yam is likely to fall, with a subsequent drop in its producer price. With the government's current policy of promoting the export of yams (as a non-traditional crop), policy makers would need to introduce special measures such as an intensive export drive, to sustain existing farmers' interests and possibly attract 'new' farmers who may be leaving the maize industry.

6.9 Implications for the Private Sector

The private sector is the leading sector involved in the marketing of maize in the country. The increasing operational efficiencies of the sector should therefore receive priority and policy makers should seek the opportunity to increase the role of the sector. Like in every developing country, the agricultural sector contains the poorest part of the population. As a result, it may be generally unattractive to private investors since the capacity to pay for goods and services is likely to be more limited than elsewhere in the economy (Maddock 1987).
From the results, the private sector as maize market participants were losers under the GMP policy. Under the liberalised market, however, the findings of this study support the conclusion drawn by Reusse (1987) that greater emphasis needs to be given to the role of the middlemen - as an entrepreneur and in coordinating rural and urban economic activities - in the agricultural marketing system. The role of middlemen should be encouraged through direct policy assistance such as the provision of better credit facilities and the removal of unnecessary trading and investment bottlenecks. The government should create a congenial environment for the development of a capable private entrepreneurial sector responsive to the challenge posed by the liberalisation (Reusse 1987).

There has been little investment in private sector grain storage in the country. In the 1970s, there was a strong government disincentive to private sector storage because of the import of food grain at an over-valued exchange rate to lower food prices (ODA 1991). The associated fall in domestic grain prices and the apparent unpredictability of government actions deterred private sector storage development. As a short-term measure, maize traders should be encouraged to lease the slack public sector warehouse capacity.

In the long-term, investment decisions in the private sector depend not only on the level of incentives but on whether people can predict incentives on the basis of a rational evaluation of future economic events (Huang and Nicholas 1987). Incentives need to be 'transparent' and automatic: even if future economic events are uncertain. The government has the responsibility to provide a favourable economic and investment climate for the private sector. However, complete divestment by selling shares in GFDC may not be feasible because of the existence of a weak capital market in the country (Maddock 1987).

Under the structural adjustment program, the private sector is required to serve as an engine of growth as the government minimises state intervention in economic activities. If the private sector is undynamic or incapacitated by decades of neglect of the physical and institutional infrastructure, liberalisation may result in a precarious vacuum, inviting anti-competitive behaviour by the few who have the means to step in (Reusse 1987). Promoting small-scale private sector retailing, improving transportation, and investing in other private sector marketing activities are particularly promising because, in addition to being cost effective and reducing concentration of food marketing in the hands of a few, such a strategy will accelerate entrepreneurship and income generation among the poor (Pinstrup-Andersen 1988). But the government has the duty to pursue macro-economic and industrial policies
beneficial to private sector growth. As pointed out by Huddleton (1990), experience from Indonesia and India indicates a need to keep an appropriate balance between the roles of the public and private sectors.

According to an IMF study on Ghana in 1991, the response of the private sector to the improved macro-economic environment remained unsatisfactory, reflecting the time needed to restore confidence in a sector undermined by earlier policy mistakes (Europa 1995). Private investment has been low enough to raise questions about the sustainability of Ghana's growth performance (Boehmer 1995). Only the mining sector of the economy has benefited from substantial increases in private investment. If the adjustment program is to succeed in improving the efficiency of the food market, then private investment, both domestic and foreign, will have to play a much greater role than it has done so far. To achieve this objective, a number of issues have to be addressed. First, is the building of investors' confidence. The measures taken by the government so far, especially infrastructural development, the liberalisation of trade and foreign exchange markets, the establishment of Private Enterprise Foundation and the introduction of a new Investment Code, have all been designed to stimulate the private sector activity. But clearly, much more is required to inspire the confidence of private investors. Some of the suggested policies are already being pursued but are in urgent need of modification and fine tuning if the private sector is to respond to them.

6.10 Concluding Remarks

In general, if these market efficiency-improving policies are implemented, the economic efficiency of the maize market in Ghana will improve. Consequently, maize farmers' income will improve and this will lead to an improved productivity among small-scale farmers who form the bulk of the population in the rural areas. Since the rural sector accounts for the greater proportion of those falling below a poverty line (Baffoe 1992), the implementation of these policies is likely to improve their standard of living. It will also lead to a reduction in the wide gap between income levels of cash crop farmers and maize farmers.

Maize traders will benefit from a more transparent marketing system. Such an activity can contribute to the improvement in women's economic, social and political positions in the country since women dominate the private maize trade. It can also contribute to an improvement in consumers' well-being by way of lower food prices.
7 Summary and Conclusion

7.1 Introduction

The research question addressed in this study was to assess the GMP policy as it operated in Ghana. This is considered an important issue in view of the circumstances that led to its discontinuation and the series of protests it has attracted from maize farmers. Accordingly, the objective of the study was to estimate the net social benefit of the policy by analysing its impact on producer and consumer incomes, government budgetary burden and the foreign exchange savings.

In this chapter, the summary of the evaluation is presented. The contributions of the study are presented and a brief discussion on its limitations is made. Finally, an outline of areas for future research is suggested.

7.2 Summary of Evaluation

This study of GMP policy in Ghana adds to the evidence that distorted markets reduce market efficiency and market transparency. It confirms evidence that the maize market would be more efficient and have beneficial effects on development if the distortions are removed. The free maize market would be more equitable for the rural poor and it could be expected to result in the release of public funds currently used for producer subsidies for infrastructural development.

7.3 Contributions of the Study

A major dilemma in the food sub-sector has been how to balance welfare and efficiency considerations. Measures to improve welfare in the short run also undermine incentives needed to improve efficient growth in the long run. The findings of the study and its policy options pose as important input to the debate. They demonstrate that policy makers can ill afford to ignore the welfare losses entailed in promoting efficiency and the efficiency losses entailed in promoting welfare.

The study demonstrates that the World Bank/IMF’s concept of 'getting prices right' must be seen merely as a necessary condition and not perhaps the most important, for sustained growth in the agricultural sector. The analysis points to other tools of
government policy that would be needed to accomplish these goals. The results have clarified the costs of government intervention and it is likely to strengthen the government's commitment to the policy change.

A major contribution this study attempts to make is to clarify the need for the government to evaluate the private-sector capacity in the maize marketing sector and secure its cooperation in planning and executing such liberalisation measures.

The results should be relevant to developing countries characterised by policies to achieve self-sufficiency of food staples such as Tanzania, Kenya, Nigeria and Zimbabwe.

7.4 Limitations of the Study

The study was conducted within a framework of some severe limitations. The data used in the study were secondary data. Therefore, they are likely to suffer from problems normally associated with secondary data as they were compiled by different people, for different purposes and under varying conditions.

The effects of adjustment on the agricultural sector are not easy to evaluate because agriculture, more than other sectors, is affected by exogenous factors independent of economic policy.

The study was based on 'borrowed' elasticity values which fell outside the study period. Though sensitivity analysis has been employed to deal with this weakness, the use of the results as a predictive tool should be with caution.

In this study only the static welfare effects of the GMP policy have been considered. However, the dynamic effects of the policy should not be ignored. The policy may result in static welfare loss, but it may be more difficult to justify when the dynamic effects are taken into consideration, more especially when the policy has significant spillover and feedback effects.

The welfare measures used in the study assume that the marginal utility of money is the same everywhere. The computation assumes that the price changes do not affect intra group distribution of income. Consequently, the distribution of income has been ignored.

The study implies the notion of using the world price as a standard, a notion that does not command universal agreement.
7.5 Areas for Further Research

An area for further study would be an extension of this model to incorporate a major cash crop such as cocoa. Since most farmers in the forest belt produce both maize and cocoa, and the SAP is reported to have different effects on the two crops, a study on the two crops can better portray how the average farmer is affected by the ERP.

In order to help those who have been affected negatively under the ERP, the government launched the Program of Action to Mitigate the Social Costs of Adjustment (PAMSCAD) in 1988 and obtained pledges of $140 million from donors to finance it (Europa 1995). It is clear from the results that small-scale maize farmers are identified among the vulnerable group under the ERP. A study to assess how they have benefited under the PAMSCAD scheme will be worthwhile.

According to Haessel and Vickey (1975), to appraise the net social benefit of a particular policy, any activity involving foreign exchange that could be affected by the policy, must be taken into account. For instance, to assess effectively the foreign exchange implications of the GMP, the production of tradeable commodities like cocoa and yams whose export levels were negatively affected by the policy, need to be considered. Moreover, if as a result of the increased foreign exchange savings, other imports increase by $\Delta M$ the GMP policy could be at least partly self-financing. Government revenue collected as tariffs on all imports $M$ could be sufficient to finance the price support scheme if $T^WM > D^PW$, where $T^W$ and $P^W$ are weighted average tariff and subsidy rates and $M$ and $D$ are total imports and domestic production level of maize. Further research into this possibility is worthwhile.

A potential area for future research will be to estimate the cost to the country of the government pursuing a pan-territorial and pan-seasonal pricing system. The study will be useful to most African countries which face similar problems.
Appendix

Procedures for Estimating the Effects of Price Support Monopolicy

A 1. Estimating the optimum support price to producers necessary to induce the self-sufficiency level of production (Qc) as shown in Figure 3.5b.

\[
\log P_s = \log P_d + \frac{1}{\beta_m} \log (1 + K)
\]

where:

\begin{align*}
P_s &= \text{optimum support price to induce Qc;} \\
P_d &= \text{market-determined producer price of maize;} \\
\beta_m &= \text{own-price elasticity of maize supply;} \\
Q_o &= \text{market-determined equilibrium quantity;} \text{ and} \\
K &= \frac{(Q_c - Q_o)}{Q_o}
\end{align*}

A 2. Estimating household consumption of maize at the government support price (Ps) in Figure 3.5 b.

Assumptions made:

i. Elasticity of home consumption of maize \((E_h) = -2.0\) (as estimated by Haessel 1975).

ii. Estimated average annual price support required to induce the production of self-sufficiency level of maize for the period 1974 to 1991 = 23 391.01 per metric ton.
where:

\[ E_h = \frac{(J - R)}{(P_d - P_s)} \]

where:

- \( E_h \) = elasticity of home consumption of maize (-2.0);
- \( J \) = home consumption requirement at the market-determined price;
- \( R \) = home consumption requirement at government support price;
- \( P_d \) = market determined price; and
- \( P_s \) = price support level {as estimated in A1 (above)}

A 3. Estimating the change in consumer surplus in the private sector market {as shown in Figure 3.5a (i)}

The fall in consumer surplus due to the implementation of the GMP policy is shown by area ABCG which is measured as area ABCF plus AFG.

But:

(i) ABCF is estimated as follows:

\[ ABCF = (Q_o - H_p)(P_{p0} - P_w) \]

where:

- \( Q_o \) = equilibrium quantity of maize supplied and demanded (94% of the total national output);
- \( H_p \) = farmers' household consumption (94% of the estimated household consumption at the market-determined price.

This is based on an estimated marketable surplus of 50% of the total national output. The price-elasticity of home consumption
is assumed to be (-2.0).

\( P_{p0} \) = market-determined producer price (when government support price is in place);

\( P_w \) = world market price of maize.

(ii) Estimation of AFG

In the interest of simplicity, the supply and demand schedules have been assumed as linear. With the assumption of linearity in demand and supply, point G or output level \( Q_i \) in Figure 3.5a (i) is obtained by using the formula:

\[
E_d = \frac{Q_i - Q_o}{P_{p0}} = \frac{Q_o}{P_w - P_{p0}}
\]

where:

\( Q_o, P_{p0} \) and \( P_w \) = as already defined.

Therefore,

\[
AFG = 0.5 \left( Q_i - Q_o \right) (P_{p0} - P_w)
\]

But,

\[ ABCI = ABCF + AFG \]

A 4. Estimating a change in consumer surplus in the government sector {(as shown in Figure 3.5a (ii)}

The fall in consumer surplus from the GMP is estimated as area Hg'LYRZ which is measured as area Hg'LYZ plus ZYR.
An assumption made:

The demand curve facing the government sector is parallel to the demand curve facing the private sector market. In effect, they have the same elasticity value.

(i) To measure area $Hg'LYZ$:

$$Hg'LYZ = (Q_{g0} - H_g) (P_c - P_w)$$

where:

- $Q_{g0}$ = quantity of maize supplied and demanded at the government support and ceiling prices (6% of the national total output);
- $H_g$ = farmers' household consumption (6% of the estimated household consumption at the government support price); and
- $P_c$ and $P_w$ = as already defined.

(ii) $ZYR$: To estimate $ZYR$, there is the need to estimate point $R$ or $Q_{g1}$ using the formula:

$$E_d = \frac{Q_{g0}}{(P_w - P_c)} \frac{(Q_{g1} - Q_{g0})}{P_c}$$

Therefore,

$$\Delta ZYR = 0.5 (Q_{g1} - Q_{g0}) (P_c - P_w)$$

But,

$$Hg'LYRZ = Hg'LYZ + ZYR$$
A 5. Estimating the change in producer surplus on the private sector market (as shown in Figure 3.5a (i))

The increase in producer surplus on the private sector market is shown as area ABCE which is estimated as area ABCF minus AEF.

\[ \text{ABCF} = (Q_0 - H_p)(P_{p0} - P_w) \]

where:

all the variables = as defined earlier.

But,

To measure AEF, there is the need to estimate point E or \( Q_e \) in Figure 3.5a (i).

It is assumed quite understandably that the elasticity of maize supply in both sectors of the maize industry is the same. Hence, the two supply curves are parallel and have equal elasticity values.

\[ E_s = \frac{(Q_o - Q_e)}{(P_{p0} - P_w)} \]

where:

\( E_s \) = own-price elasticity of supply of maize assumed to be 0.86;

\( Q_o, P_{p0} \) and \( P_w \) = as defined earlier.

Therefore,

\[ \text{AEF} = 0.5 \ (Q_o - Q_e)(P_{p0} - P_w) \]
And,

\[ ABCE = ABCF - AEF \]

**A 6. Estimating the producer surplus in the government sector {Figure 3.5a (ii)}**

It is estimated as area MLNT or MLYT - NYT.

\[ MLYT = (Q_{g0} - H_g)(P_s - P_w) \]

where:

- \( P_s \) = government support price to induce self-sufficiency production as estimated in A1;
- \( Q_{g0}, H_g, \) and \( P_w \) = as defined earlier.

NYT: With the assumed elasticity of maize supply (\( \beta_m \)) = 0.86, \( Q_n \) is estimated as follows:

\[ E_s = \frac{(Q_{g0} - Q_n)}{Q_{g0}} \frac{Q_{g0}}{(P_s - P_w)} \]

where:

- all the variables = as defined earlier.

Therefore:

\[ NYT = 0.5(Q_{g0} - Q_n)(P_s - P_w) \]
But,

\[ MLNT = MLYT - NYT \]

A 7. Estimating the government cost of supporting the GMP policy is shown in Figure 3.5b as area CMR’Y.

It is estimated as follows:

\[ CMR'Y = (Qc - R')(Ps - Pc) \]

where:

- \( R' \) = as shown on Figure 3.5b;
- \( Pc \) = government ceiling price determined;
- \( Qc \) and \( Ps \) = as already defined.

By implication, area CMR’Y in Figure 3.5b is equal to area WVZT in Figure 3.5a (ii).

A 8. Government net savings in foreign exchange from reduced import of maize is shown in Figure 3.5b as area OPwST or \( Pw(Qc - Qo) \)

where:

all the variables = as already defined.

A 9. Estimating the premium on foreign exchange saved from reduced import of maize as a result of the GMP policy

Premium on foreign exchange = parallel market rate of exchange rate* the average annual quantity of maize to have been imported with no GMP policy in place.
A 10. Net social benefit (NSB) in the total maize industry \{Figure 3.5a (i) & (ii); and 3.5b\}

\[ \text{NSB} = \text{Net producer benefit} + \text{net consumer benefit} + \text{net government cost} + \text{net savings in foreign exchange}. \]

A 11. Estimating deadweight social loss (DSL) attributable to the GMP policy in the total maize industry

\[ \text{DSL} = \text{Net producer benefit} + \text{net consumer benefit} + \text{net government cost}. \]
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