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MEASURING PRICE PROTECTION IN ZIMBABWEAN AGRICULTURE:

A PRELIMINARY ASSESSMENT

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MEASURING PRICE PROTECTION IN ZIMBABWEAN AGRICULTURE:
A PRELIMINARY ASSESSMENT

INTRODUCTION

Interventionist policies in Zimbabwean agriculture have a long history, dated back to 1931 when the Grain Marketing Board (GMB) was established. After independence in 1980, the government objectives for intervening in the agricultural sector assumed a new dimension as elucidated in the Transitional National Development Plan (1982-85). Some of the objectives included the use of pricing policies to achieve both national and regional food self-sufficiency, to intensify the role of agriculture as a major foreign exchange earner, and to bridge the economic imbalances of pre-independence era between the commercial and peasant agricultural sectors by integrating the latter into the mainstream of national agricultural system. While the above objectives, among others, were vigorously pursued by the government, it remains an empirical issue whether or not intended results were achieved and at what costs.

There has not been a concensus as to whether agricultural pricing policies pursued in Zimbabwe in the 1980s had been provisionist or protectionist in nature. The price policies pursued had a dual characteristic of stimulating both the producer and the consumer in such a way that the goals of maintaining food self-sufficiency and cheap food supplies were simultaneously achieved. Judging from an economic point of view, however, the interventionist price policy has been argued to imbed some level of distortions and is, therefore, inefficient. That is, even when producer prices provide adequate incentives, the structure of relative producer prices emanating from such policy may not reflect the optimum production pattern. This is much more so where both producer and consumer prices are negotiated prices--the outcome of a political process rather than of the forces of supply and demand.

In many African countries, monopsonistic marketing agencies have been used to undervalue and appropriate resources from export agriculture by setting administered producer prices exceedingly low (Bates). Unlike those countries, the policy

environment in Zimbabwe has not, relatively speaking, discouraged production incentives while consumer food prices were simultaneously kept low. The "cost" of the overall agricultural price policies, however, has resulted in large subsidies with a groaning effect on the treasury. The budgetary burdens of the price and subsidy policies, coupled with operational inefficiency and distributional inequity of the same, tend to negate the government's objective of economic growth with equity.

An apparent manifestation of distortions in the sector may be indicated by the magnitudes of losses incurred by the parastatal marketing boards, namely, Grain Marketing Board (GMB), Cotton Marketing Board (CMB), Cold Storage Commission (CSC), and Dairy Marketing Board (DMB). Table 1 shows the annual deficits of the four main agricultural marketing boards in Zimbabwe from 1981 to 1990. Given the magnitudes of the deficits, some relevant questions to be asked are: On whose behalf were these losses incurred-- the producers or consumers? Is there a more efficient way of minimising these losses? Who are the main beneficiaries?

The overall objective of this study is to quantify the welfare distributions of agricultural price policies with respect to producer and consumer subsidies and their consequent implications for food security in Zimbabwe. This objective is evaluated by measuring the extent to which the government has actually influenced economic incentives in the agricultural sector since independence and the distributional effects of price interventions on producers and consumers.

This paper is organised into five sections. Following the introduction, the second section analyses the theoretical implications of crop pricing policies in Zimbabwe. The third section presents the analytical framework of this study. Section four discusses the study results. The fifth section concludes the paper by drawing some policy implications in light of the current economic structural adjustment program that is now taking place in the country.

The theoretical implications of agricultural price policy in Zimbabwe's crop sector can be explicated with the use of the classical production function alongside demand and supply relationships. The classical production function depicts the technical relationship between inputs and outputs, while the conventional demand-supply relationship indicates the responses of market participants to changes in prices.

Zimbabwe's agricultural sector in the 1980s was characterised by massive government interventions right from the production to retail market levels. While most of the agricultural policies pursued had been in place prior to independence, the relevant question to ask is whether or not the policies are achieving the intended objectives and at what costs. Herbst noted that "apart from steel and fertiliser, agricultural products are the only commodities whose prices are determined by the full Cabinet." This shows the government's level of commitment to maintaining food self-sufficiency and to avoiding the political embarrassment of depending on South Africa for food imports.

In setting prices for the controlled crops, the cost-of-production (COP) approach was used for determining respective producer prices. The COP approach for setting prices is theoretically untenable in the sense that it poses another question. That is, whose cost should be used in order to attain efficiency as well as equity? The COP approach cannot adequately answer this question. By its nature, the COP approach inhibits the willingness to devise cost-reducing innovations and attracts excess resources into the sector because it imbeds an implicit subsidy. The President of Commercial Farmers' Union of Zimbabwe confirmed at a seminar in 1990 that "we are high-cost producers."

Figure 1 can be used to explain the above point of view. The COP approach, coupled with preplanting announcement of producer prices (instituted in mid-1970s), has encouraged farmers to pursue, among others, the goal of maximising yields. From panel A of Figure 1, given the input-output price ratio (P_x/P_y), the yield maximising level of input is X_a at ouput B, whereas profit (or efficiency) could have been maximized using input X_c to

produce output T.

Relating panel A to panel B, the pricing policy pursued by the government (i.e., using the COP approach to arrive at negotiated prices for controlled crops) can be further explained by using the supply and demand relationship. In panel B, the market-clearing price P_e is obtained at output Y_e where supply and demand equilibrate. But the agricultural pricing policy in Zimbabwe has introduced some income transfer measures into the sector. The policy has generated both consumer and producer subsidies, as well as some dead-weight losses. The maize pricing policy in the 1980s can be used to bolster this argument.

In panel B, P_p represents the producer price paid to farmers by the Grain Marketing Board (GMB), while P_s is the controlled, selling price. The assumption here that P_p is greater than P_s is not unrealistic, given the prevailing situation in the early 1980s whereby many peasant farmers shifted towards selling all their grains since they could purchase heavily subsidised maize meal in return (Stanning and Muir). Child, Muir and Blackie also noted that consumer prices have continually fallen below producer prices, and that the situation has made the national food subsidy to increase from Z$26 million in 1979/80 to Z$128 million in 1982/83. This was also confirmed in the Economic Review of the Agricultural Industry of Zimbabwe (1983) that:

> "there were fewer retentions than anticipated due to all classes of farmers delivering maize to the Grain Marketing Board and buying back their requirements in the form of milled roller meal, which was available at heavily subsidised rates" (p.13).

The above observations contradict Schneider's generalisation that "efforts to procure domestic staples through official parastatal organisms are seldom successful for institutional reasons....[t]his lack of success is apparent, for example, in all the Sahelian countries, where the state is the sole legal purchaser of cereal grains, yet in none does the state purchase a significant portion of the market surplus. State monopsonies in the cereals sector are rarely capable of competing with private traders, especially where farm size is small, agricultural

production is dispersed, and transportation is poor" (p.843).

Inspite of all the conditions indicated by Schneider, the observations are obviously inapplicable to the situations in some southern African countries like Zimbabwe, Zambia and Malawi. In Zimbabwe, the communal area farmers increased their sales to the GMB from 38,000 tonnes in 1980 to 819,000 tonnes in 1986. The transport subsidy emanating from panterritorial pricing probably encouraged greater maize production and sales to the GMB, while perceived subsidies, coupled with regulations, inhibited private trading. Similarly in Zambia, maize is sold through the cooperative movement and the National Agricultural Marketing Board (NAMBOARD). Sipula et al. noted that "for maize the rural market is almost nonexistent (in Zambia). There is little rural storage for off-season sales or for own consumption.... farmers sell their crop as soon as the marketing season opens and start purchasing maize flour from the market" (p.67). In these countries, it was possible for the governments to purchase a significant portion of the market surpluses because of the pricing policy. "For example, before May 1987 NAMBOARD purchased a 90 kg bag of maize at K55.00 and sold it at K35.00 to millers. The difference of K20.00 was absorbed by the government as an explicit subsidy" (Sipula et al., p.69).

In view of the above, the pricing policy in the 1980s had been used to transfer incomes to both consumers and producers. The relative magnitudes of these transfers, however, depend on the elasticities of demand for and supply of output. The dead-weight loss imbedded in the agricultural pricing policy represents the cost of inducing excess resources into production. For example, in Figure 1, the optimum level of input use is X_e (panel A) and the optimum level of output is Y_e (panel B). Because of the nature of the pricing policy adopted, X_s input was used, leading to production of Y_s. While output Y_s may be suboptimal from an economic point of view, it meets the sufficient condition for production from the political point of view.

One of the government's policy objectives was to attain food self-sufficiency without critically examining the cost of achieving the same. In panel B, the area designated as the dead-

weight loss resulting from the pricing policy may also be interpreted as the cost of food self-sufficiency. This is particularly so considering the amount of export losses incurred annually by the **Agricultural Marketing Authority (AMA)**. As shown in Table 2, some of the excess food grains purchased domestically are being exported at a loss. While the dead-weight loss due to export dumping or subsidy may be politically acceptable, it indicates that the structure of relative producer prices had failed to signal the optimum production pattern required for economic efficiency.

Export dumping of food grains may be justified from other grounds which are not essentially political. Export reduces the storage costs of unwieldly carry-over stocks and facilitates the raising of domestic producer prices. Export also provides an access to international trade share and hence foreign exchange earnings. To the extent that the above points may be true, one has to examine critically whether or not the associated benefits outweigh the costs. There is no doubt that there are gains associated with bilateral trading, of which exporting is a component part. Thus, if the producer prices paid to farmers were competitive world-market prices, exporting excess grains will be an ideally prudent policy. In such a case, prices received by the farmers are sustained by increases in demand which resulted from export market expansion. But if the domestic producer prices are higher than the parity prices, excess production generated for the sake of export in response to a false price stimulus will be detrimental to the economic well-being of the nation and will not be sustainable. This is so because a competitive atmosphere is not fostered.

From the above points of view, we can surmise that the pricing policy agenda pursued in Zimbabwe during the 1980s might have responded well to political needs but not to a sustainable economic agenda.

ANALYTICAL FRAMEWORK

The focus of this analysis is limited to the pricing policies in the 1980s, just to serve as a guide to necessary

policy adjustments for the 1990s. The objectives of this research will be accomplished by measuring the level of price protection in Zimbabwean agriculture. Simply put, price protection is determined by comparing the percentage difference between the domestic and border prices of a given commodity. Border prices, defined as c.i.f. import prices of imported goods or f.o.b. export prices of exported goods, are the reference prices that would prevail under no government intervention and represent the opportunity costs of tradable goods. Border prices are often used as a benchmark for assessing the effects of a pricing policy. If the domestic price is less (greater) than the border price, it means that the producers of that particular commodity are being taxed (subsidized) implicitly. The words tax and subsidy are used here to symbolize the incentive effects of a pricing policy. By measuring the extent of price protection we imply that there is a relationship between the level of price protection and the degree of sectoral income transfers vis-a-vis distortions in resource allocation in the sector.

Three crops are considered in this analysis, namely, maize, sorghum and wheat. Each of these crops is unique in its own way to the Zimbabwean agricultural economy. Maize grows well in the more fertile and wet parts of the country. Maize is a staple food crop, as well as an important export crop. In the 1980s maize had been used in barter or triangular trades to supplement the domestic requirements for wheat. Sorghum is the crop that grows well in the drier parts of the country, especially where most of the communal area farmers are concentrated. Herbst (p.89) remarked that "...the Cabinet linked sorghum price directly to maize price so that peasants who could not grow maize could still receive some drought relief from the government via its pricing policy." In the light of this, it will be interesting to see to what extent the government had used its pricing policy as a way of income transfer or political reward. Wheat is an important food crop in the country, if the long queues for bread in shops can be used as a "barometer" for measuring importance. The country is not self-sufficient in wheat production and domestic requirements are often met by

importing-- sometimes by triangular or barter trades. Wheat grows in Zimbabwe during the dry, winter season and must therefore be irrigated. As a result of the huge capital outlay involved, wheat is entirely grown by large-scale, commercial farmers. Some analysts have argued that if the price is right such that it provides adequate production incentives, Zimbabwean farmers could produce enough wheat (Morris). From this line of argument, it will be interesting to examine how the pricing policy had affected production incentives of this essential crop.

The Cost of Foreign Exchange Regulation

In order to analyze the nature of price protection with respect to the above-mentioned crops, the theory of exchange rate will be brought to bear in the analysis. Considering the fact that Zimbabwe pursues a stringent foreign exchange policy, government intervention in the market place usually results in a state of excess demand for foreign exchange. This is particularly so in the sense that the official exchange rate (OER) is below the equilibrium exchange rate, leading to an over-valued dollar. While regulations are linked to parallel or black markets for foreign currencies, desperate buyers who could not obtain enough from the official source will be ready to pay a "premium", i.e., pay over and above the OER. The amount that these individuals will be ready to pay above OER (i.e., the premium) will be greater as the divergence between OER and the black market exchange rate is greater and as the regulatory structure, penalties, transaction costs, etc., make it more difficult and costly to supply foreign currency to the black market (Culbertson).

This concept of the foreign exchange situation in Zimbabwe is realistic when one notes the intricacy of the foreign currency rationing process for business purposes. Up to as late as 1990, the foreign exchange allocation to commercial imports by individual firms was still linked to a firm's share of the 1964/65 imports of a specific tariff item. The implication of this policy was that any firm that had not existed would unlikely

exist under the system in so far as existence is contingent on ability to obtain foreign exchange (Cuthbertson and Wilson). Thus, the policy environment favored the flourishing of foreign exchange transactions through the black market.

To exemplify the importance of exchange rate policy in this analysis, the blocked fund arrangements (BFA) in the country illustrates the relevance of accounting for foreign exchange premium. The difficulty imposed by the foreign exchange policy necessitated BFA which stipulated special provisions for expatriating funds. Under the BFA, companies (individuals) could keep blocked funds for 20 years (12 years) with the Reserve Bank of Zimbabwe at a tax-free, interest rate of 4 percent after which the funds could be expatriated. The funds could otherwise be invested in the country without the opportunity to remit the same outside the country. Thus, the opportunity cost of obtaining foreign currency is very high.

As a result of the stiff foreign exchange regulations in the country, black-market trading becomes an essential consideration in a meaningful analysis of price protection of tradable commodities. According to World Currency Yearbook (p.212), black market activities in Rhodesian (now Zimbabwe) currency had begun at the beginning of World War II. Moreover, the isolation of the country during the Unilateral Declaration of Independence (UDI) era caused black-market transactions in foreign currency to flourish. The failure of the government to overhaul the foreign exchange regulations put in place for a purpose in the UDI era, coupled with overvalued OER, makes no change in the story of black-market transactions in foreign exchange today in Zimbabwe. The overvalued OER thus becomes an implicit tax on the export industries whereby there was not much incentive to supply enough foreign currency to equilibrate the market. The resultant effect was foreign exchange rationing in the form of an import licensing scheme. Table 3 shows the estimates of shadow exchange rates (SER) for the Zimbabwean dollar in the 1980s. The SER embodies the scarcity value of foreign exchange thereby accounting for transaction cost and risk premium.

Measuring Distributional Effects of Pricing Policy

The effects of pricing policies on incentives can be categorized into direct and indirect effects (Krueger, Schiff and Valdes). The direct price intervention (i.e., sector-specific) captures the effects of subsidies, price controls, quotas, and other policies affecting domestic prices. The indirect price intervention (i.e., economy-wide) captures the effects of all government policies, including overvalued exchange rate, fiscal, monetary and trade policies.

Two measures of agricultural price protection are used: nominal and net nominal rate of protection. Nominal protection rate (NPR) is defined as the percentage difference between domestic and border prices of a given commodity, where border prices are converted to the local currency unit by using the relevant official exchange rates (OER). NPR measures the effects of government price interventions comprising trade, fiscal, and monetary policies. Net nominal protection rate (NNPR) is obtained from the percentage difference between the domestic and border prices, when border prices are converted to the local currency unit by using the shadow exchange rate (SER). NNPR captures the totality of government policy effects. World commodity prices are obtained from FAO Production Yearbook and International Financial Statistics, and information on exchange rates are obtained from various issues of International Financial Statistics.

In addition to estimating the protection rates for the crops under consideration, the welfare impacts of the pricing policy are analysed by estimating both the producer and consumer subsidies embodied in the crop pricing policies of 1980s. The measurement, by commodity, are estimated on a year-to-year basis. Production data and domestic prices for the crops in question were obtained from various issues of Annual Reports and Accounts of Agricultural Marketing and Economic Review of the Agricultural Industry of Zimbabwe.

Producers' subsidy equivalent (PSE) measures the total policy transfers to producers. PSE is a broader measure of income transfer than the (net) nominal protection rates. In

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essence, it indicates the amount of subsidy that will be needed to compensate producers on removal of a government policy which affects a given commodity. This is estimated as the value of price protection plus direct (or budgeted) subsidy to producers.

(1) $PSE = PPP + DSP$,

where

PSE means producers' subsidy equivalent;

PPP is the value of price protection to producers; and

DSP is the value of direct subsidy to producers.

To simplify further

(2) $PPP = VMP_h - VMP_w$,

where

VMP_h means the value of marketed production at the government buying prices; and

VMP_w means the value of marketed production at the world market prices.

Similarly

(3) $DSP = IS + BP$,

where

IS represents the amount of input subsidy paid to producers; and

BP represents the amount of bonuses paid to producers (e.g., bonuses paid for early delivery).

Consumers' subsidy equivalent, on the other hand, is the value of policy transfers to consumers. Consumers' subsidy equivalent (CSE) measures the explicit and implicit tax paid by consumers to finance agricultural producers. CSE can be estimated as follows:

(4) $CSE = PPC + DSC$.

However,

(5) $PPC = (P_h - P_w)Q_h$; and

(6) $DSC = (SC - WP)(Q_h - Q_i) + (LC_i - WP)Q_i + PM + DR$,

where

PPC = Value of price protection to consumers;

DSC = Value of direct subsidy to consumers;

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P_h = Government procurement price per ton;

P_w = World market price per ton (conversion to domestic currency unit using OER or SER);

WP = Wholesale price ($Z) of commodity per ton;

Q_h = Quantity of commodity (ton) sold locally;

Q_i = Quantity of commodity (ton) imported;

SC = Estimated GMB's cost per ton of selling a commodity;

LC_i = Landed cost per ton of importing a commodity;

PM = Amount ($Z) paid to millers or processors; and

DR = Drought relief payments (in the case of maize).

DISCUSSION OF RESULTS

ESTIMATES OF CROP PRICE PROTECTION

Tables 4-6 present the estimated magnitudes of price protection imbedded in the pricing policies affecting maize, wheat and sorghum production in the 1980s. When NPR or NNPR is positive, it means that domestic producers had been protected. If NPR or NNPR is negative, it means that domestic producers had been penalized. Thus, estimated rates of price protection indicate whether the pricing policy is "subsidizing" or "taxing" producers of the commodities under study.

MAIZE

In Table 4, estimated NPR and NNPR for maize production during the 1980s are presented. The results of the analysis for maize show that maize producers did not, generally speaking, receive price incentives in the 1980s. The maize pricing policy in the 1980s "taxed" the producers in 7 of the 10 years analyzed by 6-29 percent, using NPR as a "barometer". In the years when maize farmers were being "subsidized" (i.e., 1982, 1986, and 1987) the rates of subsidy (22-44 percent) were greater than the implicit taxation. The estimates of NNPR show that maize farmers in Zimbabwe were heavily taxed in 8 of the 10 years. The level of implicit maize producers' taxation ranged from 2 to 55 percent. The NNPR analysis indicates that maize farmers did not

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receive up to two-thirds of the world maize prices in 7 of the 10 years analyzed.

The maize pricing strategy used in the 1980s seemed not to be highly sensitive to the world market prices. The domestic price increases were influenced more by political imperatives than by economic considerations. The inept maize pricing policy in the 1980s was based on the erroneous feeling that large-scale commercial farmers, who traditionally were the major producers of maize, had been making supranormal profits from "generous" producer prices paid by the GMB.

To counter the insensitive maize pricing policy of the 1980s, the area planted to maize by large-scale, commercial farmers declined from 287 000 hectares in 1980/81 season to 132 000 hectares in 1986/87 growing season-- a more than 50 percent decline! While the area planted to maize and maize deliveries to the GMB by communal farmers reached a remarkably high level in the 1980s, the pricing policy of the time tended to hurt the peasant farmers more. For example in the 1988/89 season, communal farmers delivered more maize to the GMB than the large-scale, commercial farmers, even though the latter's average yield per hectare was, at least, three times the former. The large-scale, commercial farmers had changed their crop-mix patterns by allocating less and less resources to controlled crops whose pricing policy was considered to be less favourable. On the other hand, the less endowed communal area farmers, with little or no overhead costs, were less responsive to policy measures which implicitly taxed them. At the time when the communal area farmers continued to increase the area planted to maize, the large-scale, commercial farmers had considerably reduced maize hectarage but nearly doubled the area planted to soyabeans between 1984 and 1988 (Economic Review of the Agricultural Industry of Zimbabwe, 1989).

WHEAT

Table 5 presents the results of wheat pricing policy in the 1980s. In absolute sense, domestic wheat prices steadily and consistently increased in the 1980s. For example, wheat

producers received a domestic price per ton of Z$115 in 1980 which increased to Z$365 in 1989 (i.e., more than 200 percent increase). Using NPR as a measure of protection, wheat farmers were protected in the 1980s. With the exception of 1980 and 1989 when the NPR values were very low (2 percent and 1 percent, respectively), the farmers were subsidized by 12 to 58 percent above the price that would have prevailed had the government not intervened in the market place.

In contrast, when the general macroeconomic distortions were considered, the NNPR values suggest that wheat farmers were not protected enough. According to the NNPR estimates, the farmers were only subsidized in 2 of the 10 years evaluated (i.e., 1986 and 1987). This suggests that if more price incentive had been given to wheat farmers, more of the product could have been produced thereby reducing the amount of foreign currency expended on imports. The implicit tax rates on wheat producers ranged from one percent to 32 percent. The totality of the effects of government wheat pricing policy, therefore, suggests that farmers were not given adequate price incentive to produce more wheat. In the light of this, government pricing policy in the 1990s should provide adequate production incentives to justify the allocation of more resources to wheat production. The triangular trading of maize for wheat might have caused some sort of cross-subsidization between the two crops which could have masked the extent of wheat subsidization. On a comparative basis, however, the wheat pricing policy provided better producer incentives.

SORGHUM

Table 6 presents the results of the level of price protection resulting from sorghum pricing policy in the 1980s. Between 1980 and 1989, the nominal domestic and border prices of sorghum more than doubled. On a comparative basis, the border prices of maize were higher than sorghum's from 1983. Although the two crops exhibited a similar price movement in the world market, the domestic procurement prices of sorghum were brought to parity with maize beginning from 1984.

While sorghum farmers were thought to be favorably compen-

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sated in the political pricing circle (i.e., relatively better than maize farmers)(Herbst), the NPR and NNPR analysis did not support the contention. The NPR analysis shows that sorghum farmers were also taxed in six of the 10 years. The farmers were only subsidized in 1982 and 1986-1988. The NNPR analysis shows that only the pricing level in 1986 and 1987 could be tantamount to an implicit subsidy to sorghum farmers and that the farmers were just slightly better off than the maize farmers. Sorghum farmers, however, responded favorably to the "false" price stimulation by the government. The government's intention was to encourage and integrate the communal area farmers into the mainstream of the economy by providing market and price incentives. To some extent the aim was achieved. Production shifted from maize to a lower-cost crop, sorghum, which drastically increased its deliveries to the GMB. While there was no demand expansion for the increase in sorghum produced, the excess stock accelerated the Board's carrying costs and deficits (Wright and Takavarasha).

WELFARE DISTRIBUTION OF CROP PRICING POLICY EFFECTS (1980-89)

The finance minister of Zimbabwe, Dr. B. T. Chidzero, said in his 1988 budget speech: "The high level of public borrowing or reliance on borrowing, particularly if the funds are not directed to revenue and foreign exchange generating areas, is self-defeating in that it will mean that a greater proportion of development resources for subsequent years is pre-empted to debt service, at the expense of growth and employment or maintenance of critical social services and infrastructure" (Government of Zimbabwe, p.27). The minister anticipated higher budget deficits in 1988/89 than in the previous years because of the existing structure of budgetary expenditures, expanded government services and growing subsidy commitments.

In the 1984/85 financial year, the Government paid, through the Ministry of Agriculture, a total subsidy of Z$128 million for all agricultural products and another Z$22 million through the Ministry of Trade and Commerce. In that year, agricultural subsidies accounted for 47 percent of total government subsidies,

while food subsidies alone accounted for 20 percent of total government deficits. Of the Z$355 million allocated to the Ministry of Lands, Agriculture and Rural Resettlement in 1988/89, Z$185 million was earmarked for liquidating trading losses incurred by the government-controlled, agricultural marketing boards, while accumulated losses of Z$170 million of the Boards had to be carried over to 1989/90.

It is a matter of inconclusive verbal assertion in Zimbabwe that producers benefited more than the consumers from the huge subsidies incurred annually by the government. This section presents the distribution of welfare effects of the crop pricing policy in Zimbabwe during the 1980s. Annually and on a crop-by-crop basis, producers' subsidy equivalent (PSE) and consumers' subsidy equivalent (CSE) are computed in order to determine the main beneficiaries and distributions of the subsidies.

MAIZE

Figures 2 and 3 indicate the distributions of both implicit and explicit subsidy (tax) that both producers and consumers of maize received (paid) through the pricing regimes employed by the government in the 1980s. The analysis in Figure 2 shows that the total subsidies associated with maize pricing in the 1980s were essentially in favor of consumers. The estimates of total nominal maize subsidy to consumers ranged between Z$18 million and Z$117 million. The total (nominal) consumer subsidy averaged Z$71 million over the 10-year period analyzed. As shown in Figure 2, maize producers were marginally taxed in most of the years, except in three of the years when they received huge amount of subsidies. Over the 1980 decade, the total (nominal) subsidy to maize producers averaged Z$18 million. By interpretation, it can be said that consumers benefited approximately four times the maize producers' benefits.

Figure 3 gives a more critical look at the magnitudes of the implicit and explicit maize subsidies of the last decade. Figure 3 indicates that the magnitudes of subisidies in Figure 2 are exaggerated and that the taxes are undervalued. Total net nominal subsidy to maize consumers ranged from a low of Z$10

million to a high of Z$96 million, while the implicit consumer taxes ranged from Z$2 to Z$77million. The total net nominal consumer subsidy over the 10-year period averaged Z$17 million. In contrast, the total net nominal subsidy to maize producers ranged between Z$10 million and Z$37 million, while the tax ranged between Z$23 million and Z$181 million. The sum of the benefits and taxes to maize producers over the study period averaged -Z$46 million. In other words, maize producers were taxed more than they were subsidized in the 1980s. The conclusion is that the maize pricing policy in the 1980s heavily subsidized consumers and heavily penalized the producers. Given that the price structure for maize induced the communal area farmers to produce and to deliver more maize to the GMB, they were the ones who bore the brunt of the implicit taxes.

WHEAT

Figure 4 presents the graphic illustration of the distributions of total nominal subsidy for wheat producers and consumers. As illustrated in the figure, both producer and consumer estimates of total nominal subsidy for wheat imply that the wheat pricing policy in the 1980s was clear, consistent and without any ambiguity. The wheat pricing policy subsidized both producers and consumers throughout the decade. The levels of subsidy to consumers were, however, much more substantial. The total nominal subsidy to consumers averaged Z$23 million over the period of the study. While the total nominal subsidy to producers was positive throughout the decade, the values continually trailed behind the corresponding values for consumers. The total nominal subsidy for producers averaged approximately Z$11 million. Stated differently, the average total nominal subsidy to producers was roughly half of the amount that accrued to consumers.

Figure 5 shows that in real terms, the wheat pricing policy in the 1980s actually taxed producers in 7 of the 10 years and more heavily so in 1989. The tax level was as minimal as Z$500,000 in 1982 and reached a peak of Z$43 million in 1989. While consumers were also taxed, their level of subsidization

compensated for the tax loss. For example, the sum of the total net nominal producer subsidy (tax) averaged -Z$5 million per year while the corresponding average value for consumers was approximately Z$4 million. The implication of the wheat pricing policy in the 1980s was that, while the consumers were effectively subsidized, producers were not given enough incentives to compensate for other macroeconomic distortions as to ensure self-sufficiency in production.

SORGHUM

The relative distributions of subsidies to both sorghum consumers and producers are illustrated in Figure 6. The subsidy element imbedded in sorghum pricing policy in the 1980s was much more beneficial to consumers than to producers. As shown in Figure 6, sorghum consumers were subsidized in 9 years and quite marginally taxed in one year. The consumer subsidies were greater in the second half of the decade. In contrast, the producers were subsidized in 5 years and taxed in 5 years. More implicit taxes were imposed on producers in the first half of the decade. However, the subsidy level was marginally greater than the tax burden. In relative terms, the consumer subsidies were four times greater than the producer subsidies. The total nominal subsidy to consumers averaged Z$3.3 million, while the average for producers was about Z$800,000.

Figure 7 shows that even though sorghum producer prices were brought to parity with maize producer prices, the sorghum pricing scheme in 1980s favoured consumers more than producers. The total net nominal producer subsidy indicates that sorghum farmers were, in fact, taxed in eight years during the decade. This result essentially shows that the pricing scheme did not entail producer subsidy in a real sense. As a matter of comparison, the level of subsidy that accrued to maize farmers were greater than for sorghum farmers. Similarly, sorghum farmers did not bear as much tax burden as maize farmers. Thus, this analysis does not give much credence to Herbst's claim that the sorghum pricing scheme was a compensatory mechanism by the Cabinet to reward sorghum farmers. The improvement in sorghum pricing was rather

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a subtle awareness of the damage done by the inadvertent pricing
of the past which had forced communal area farmers to emphasize
maize cultivation in a dry, less suitable, agroeconomic
environment. The result of this analysis shows that sorghum
farmers did not enjoy a preferential treatment as far as the
level of price protection or total subsidy is concerned.

SUMMARY, POLICY IMPLICATIONS AND CONCLUSIONS

The crop pricing policies adopted in the 1980s affected each
of the crops analyzed differently. On a comparative basis, the
wheat pricing policy was the most consistent and favorable of
the three crops analyzed. This was followed by sorghum and
lastly maize. In absolute terms, maize was the most subsidized
and taxed of the three crops. Over the 1980 decade, consu-mers
received more subsidies than producers either in absolute or real
terms. The average consumer benefits from maize more than
tripled those received by farmers. Consumer subsidies relative
to producers' were more than double for wheat and quadruple for
sorghum in the 1980s.

Compared to many African countries, producer price protec-
tion in Zimbabwe is moderate, although the policy environment did
not provide adequate incentive for agricultural production. The
policy environment caused the commercial farmers to switch from
production of politically sensitive food crops to cash crops.
To the extent that the price structure for maize induced the
communal area farmers to deliver more maize to the GMB, the maize
pricing policy eventually taxed the ones it intended to protect.
While the wheat consumers were effectively subsidized, the
producers were not given adequate price incentives to expand
production when evaluated in the context of the overall macro-
economic distortions. Contrary to expectations, sorghum farmers
did not enjoy a preferential price protection or subsidy level.

From consumer perspective, the food pricing policy in the
1980s provided cheap food for the people at an unsustainable
level for the Treasury, causing inefficiency and inequities. The
cheap food policy had been argued to have favored the urban
consumers at the expense of rural consumers. The policy makers

might have been taking refuge under the assumption that the people in the country-side have no food problems. Many studies have documented that food insecurity and malnutrition in the rural areas are serious (Sipula et al., Lele). A recent study by Jayne and Chisvo blamed food insecurity in the rural areas of Zimbabwe on the unidirectional and centralized grain marketing system plus the attendant regulations. Their survey results indicate that consumers in remote rural areas might be paying 30 percent higher prices for maize meal than in an unregulated marketing system. This observation then questions the credibility of the pricing and marketing system on equity grounds. Lele pointed out, however, that in light of the low purchasing power of the remote rural house-holds, not even an efficient market could solve their consumption needs. The increasing rural-urban migration in recent years has been hypothesized to be a result of the unequal access to food given the realities of decreasing land productivity, overgrazed pastures, persistent drought and similar problems in the rural areas. The crowding effect of this migration has worsened unemployment and crime rates and has overstretched the infrastructural facilities or services in urban centers.

Some changes have been taking place in Zimbabwe since 1990, at least to restructure the economy. The adoption of the IMF and World Bank economic structural adjustment program is supposed to represent a step forward to reducing distortions in government policies through market liberalization. This program involves price reforms both internally and externally and in factor and product markets. A few measures have been taken to correct the exchange rate misalignment shown in this study to have caused some problems in the efficiency and effectiveness of the pricing policy of the eighties. The premiums assigned to black-market transactions in foreign exchange because of the overvalued official exchange rates clearly indicate the intensity of price protection in the country. A competitive exchange rate is expected to enhance producer incentives for export crops.

Market liberalization also requires producers to be competitive by devising cost-reducing methods without compromising

quality. To achieve this objective, the government will have to do away with product price administration and therefore usher in a competitive price setting mechanism. This will mean higher prices for producers even though input prices will also go up. On the consumer side, cheap food prices will no longer be the order of the day. Each one will therefore be required to pay the economic value of the food purchased. In other words, food prices will go up because the new policy dispensation is to reduce government intervention, to reduce expenditure and to balance the budget.

The challenge for agricultural policy in the 1990s will be not to create a new set of distortions while removing existing ones. For the burden of adjustment not to overwhelm the less endowed, impoverished households, a targeted form of food subsidy will have to be provided by the government. In the government blue-print for the reforms, it was stated that "agricultural support prices will remain, but it is intended to rationalize the pricing policies with a view to reducing the burden of budgetary subsidies" (GOZ, p 14). While it is reasonable to give a minimum support to producers, recognizing that many of them are susceptible to the vagaries of nature, it is equally important to remember the poor households who lack the purchasing power. Otherwise, this category of people will suffer the pangs of hunger. The policy adjustment needs to wear a "human face" by incorporating a targeted subsidy so as to save hundreds of children and women from inevitable agonies of hunger.

Unemployment is a crucial problem in Zimbabwe. A positive step during the adjustment years to lessen this problem will be to generate off-farm employment in the rural areas by developing infrastructure, such as roads, water, electricity, etc. This recommendation might be difficult to reconcile with the goal of cutting expenditures and balancing the budget. But extensions of such facilities have multiplier effects that will stimulate the development of the informal sector leading to easier access, petty trading, agroprocessing, service activities and resource diversification. Creation of job training opportunities, provision of small-scale credits, funding of research, provision

of market information, and a considerable reduction of commodity and transport regulations and controls will have a synergistic effect on lessening the pains of adjustment. Savings from the removal of panseasonal and panterritorial subsidies and a guarded decontrol of commodity prices will go a long way to make 1990 policies an improvement over the 1980s'.

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TABLE 1.

ANNUAL DEFICITS FOR SELECTED AGRICULTURAL MARKETING BOARDS, ZIMBABWE, 1981-1990.

FISCAL YEAR	GRAIN MARKETING BOARD	COTTON MARKETING BOARD	COLD STORAGE COMMISSION	DAIRY MARKETING BOARD
	............Z$ MILLION............			
1981/2	30.7	(0.9)	33.3	18.4
1982/3	58.4	12.4	45.8	35.6
1983/4	28.0	8.1	45.3	38.6
1984/5	31.5	(56.8)	48.1	46.3
1985/6	52.1	14.3	33.4	55.6
1986/7	57.3	52.0	28.9	49.3
1987/8	66.1	35.4	37.2	51.3
1988/9	77.9	24.7	18.2	52.2
1989/0	59.2	15.2	32.5	59.8

a/ Value in parenthesis indicates a surplus for that year.

SOURCE: Agricultural Marketing Authority.

TABLE 2

ESTIMATED EXPORT LOSSES INCURRED BY THE GRAIN
MARKETING BOARD ON SELECTED CROPS, ZIMBABWE, 1980-1989.

YEAR	MAIZE	WHEAT	SORGHUM
	------------Z$ MILLION------------		
1980	(3.43)	10.99	-
1981	(1.96)	31.38	-
1982	6.98	-	-
1983	29.92	-	0.01
1984	13.35	-	1.48
1985	-	-	-
1986	21.71	-	0.71
1987	54.40	-	0.35
1988	11.51	-	0.45
1989	(16.84)	-	0.03

NOTE: Values in parentheses represent surpluses and
      (-) means there was no export.

TABLE 3

ESTIMATES OF SHADOW EXCHANGE RATE (SER) DERIVED FROM THE OFFICIAL
EXCHANGE RATE (OER) AND BLACK MARKET EXCHANGE RATE (BMER) FOR THE
ZIMBABWEAN DOLLAR, 1980-89.

YEAR	OER (1)	BMER (2)	(BMER-OER) (3)	FEP (4)	SER (5)
	Z$/US$				--Z$/US$--
1980	0.65	1.06	0.41	0.39	0.90
1981	0.69	1.19	0.50	0.42	0.98
1982	0.76	1.20	0.44	0.37	1.04
1983	1.01	2.38	1.37	0.58	1.60
1984	1.25	2.86	1.61	0.56	1.95
1985	1.61	2.38	0.77	0.32	2.13
1986	1.67	2.22	0.55	0.25	2.09
1987	1.67	2.63	0.96	0.37	2.29
1988	1.79	3.03	1.24	0.41	2.52
1989	2.12	4.00	1.88	0.47	3.12

(1) Monthly official exchange rates (OER) were averaged over the
     calendar year and expressed in domestic currency per US$.
     Sources: Central Statistical Office, Quarterly Digest of
     Statistics, various issues; and IMF, International Finan-
     cial Statistics, various issues.

(2) Monthly black market exchange rates (BMER) were averaged
     over the calender year and expressed in Z$/US$. Source:
     Philip P. Cowitt (Ed.), World Currency Yearbook. Publi-
     shed by International Currency Analysis, Inc. Brooklyn:
     New York, various years.

(3) The absolute difference between BMER and OER.

(4) Foreign Exchange Premium (FEP) is calculated as follows:
     [(BMER - OER)/BMER] or [1 - (BMER/OER)].

(5) Shadow Exchange Rate (SER) is calculated as follows:
     [OER (1 + FEP)]. SER is used in converting border prices of
     tradable commodities expressed in foreign currency to its
     opportunity cost in domestic currency.

TABLE 4

ESTIMATES OF BORDER PRICES, NOMINAL PROTECTION RATES (NPR) AND NET
NOMINAL PROTECTION RATES (NNPR) FOR MAIZE PRODUCED IN ZIMBABWE,
1980-1989.

Year	Domestic Procurement Price	World Market Price	Border Price (OER)	Border Price (SER)	Nominal Protection Rate	Net Nominal Protection Rate
	(Z$/mt)	(US$/mt)	(Z$/mt)	(Z$/mt)	(%)	(%)
1980	60.50	126	81.90	113.40	-26	-47
1981	85.00	131	90.39	128.38	- 6	-34
1982	120.00	110	83.60	114.40	44	5
1983	120.00	136	137.36	217.60	-13	-45
1984	120.00	136	170.00	265.20	-29	-55
1985	140.00	112	180.32	238.56	-22	-41
1986	180.00	88	146.96	183.92	22	- 2
1987	180.00	76	126.92	174.04	42	3
1988	180.00	107	191.53	269.64	- 6	-33
1989	195.00	111	235.32	346.32	-17	-44

1/ Domestic procurement price is the Grain Marketing Board (GMB)
   buying price for grade A maize.

2/ The world market price for maize used is for USA no.2 yellow,
   fob Gulf. The conversion rate used is 1 mt. = 39.368 bu.
   maize. Source: FAO Production Yearbook, various issues.

3/ Border price (OER) is obtained by converting US$/mt to Z$,
   using the official exchange rate (OER), while border price
   (SER) is converted by using shadow exchange rate (SER).

4/ Nominal Protection Rate (NPR) is defined as [(P /P) - 1]100,
   where P is converted to the local currency using OER. Net
   Nominal Protection Rate (NNPR) is defined as NPR except that
   P is converted to the local currency by using SER. NPR and
   NNPR are not adjusted for transport, storage and administra-
   tive costs because of the panterritorial and panseasonal
   pricing.

TABLE 5

ESTIMATES OF BORDER PRICES, NOMINAL PROTECTION RATES (NPR) AND NET NOMINAL PROTECTION RATES (NNPR) FOR WHEAT PRODUCED IN ZIMBABWE, 1980-1989.

Year	Domestic Procure- ment Price (Z$/mt)	World Market Price (US$/mt)	Border Price (OER) (Z$/mt)	Border Price (SER) (Z$/mt)	Nominal Protec- tion Rate (%)	Net Nominal Protection Rate (%)
1980	115.00	173	112.45	155.70	2	-26
1981	135.00	175	120.75	171.50	12	-21
1982	165.00	161	122.36	167.44	35	- 1
1983	190.00	158	159.58	252.80	19	-25
1984	220.00	153	191.25	298.35	15	-26
1985	250.00	138	222.18	293.94	13	-15
1986	285.00	115	192.05	240.35	48	19
1987	300.00	114	190.38	261.06	58	15
1988	330.00	146	261.34	367.92	26	-10
1989	365.00	171	362.52	533.52	1	-32

1/ Domestic procurement price is the Grain Marketing Board (GMB) buying price for grade A wheat.

2/ The world market price used for wheat is for USA hard winter, no.2 ordinary protein, fob Gulf. The conversion rate used is 1 mt. = 36.744 bu. wheat. Source: FAO Production Yearbook, various issues.

3/ Border price (OER) is obtained by converting US$/mt to Z$, using the official exchange rate (OER), while border price (SER) is converted by using shadow exchange rate (SER).

4/ Nominal Protection Rate (NPR) is defined as $[(P/P) - 1]100$, where P is converted to the local currency using OER. Net Nominal Protection Rate (NNPR) is defined as NPR except that P is converted to the local currency by using SER. NPR and NNPR are not adjusted for transport, storage and administrative costs because of the panterritorial and panseasonal pricing .

TABLE 6

ESTIMATES OF BORDER PRICES, NOMINAL PROTECTION RATES (NPR) AND NET NOMINAL PROTECTION RATES (NNPR) FOR SORGHUM PRODUCED IN ZIMBABWE, 1980-1989.

Year	Domestic Procure- ment Price	World Market Price	Border Price (OER)	Border Price (SER)	Nominal Protec- tion Rate	Net Nominal Protection Rate
	(Z$/mt)	(US$/mt)	(Z$/mt)	(Z$/mt)	(%)	(%)
1980	75.66	164	106.60	147.60	-29	-49
1981	105.00	160	110.40	156.80	- 5	-33
1982	115.00	136	103.36	141.44	11	-19
1983	115.00	129	130.29	206.40	-12	-44
1984	120.00	119	148.75	232.05	-19	-52
1985	140.00	103	165.83	219.39	-16	-36
1986	180.00	83	138.61	173.47	30	4
1987	180.00	73	121.91	167.17	48	8
1988	180.00	99	177.21	249.48	2	-28
1989	195.00	107	226.84	333.84	-14	-42

1/ Domestic procurement price is the Grain Marketing Board (GMB) buying price for grade A sorghum.

2/ The world market price used for sorghum is for USA milo no.2, fob Gulf. The conversion rate used is 1 mt. = 22.046 cwt (100 lb.). Source: FAO Production Yearbook, various issues.

3/ Border price (OER) is obtained by converting US$/mt to Z$, using the official exchange rate (OER), while border price (SER) is converted by using shadow exchange rate (SER).

4/ Nominal Protection Rate (NPR) is defined as $[(P/P) - 1]100$, where P is converted to the local currency using OER. Net Nominal Protection Rate (NNPR) is defined as NPR except that P is converted to the local currency by using SER. NPR and NNPR are not adjusted for transport, storage and administrative costs because of the panterritorial and panseasonal pricing.
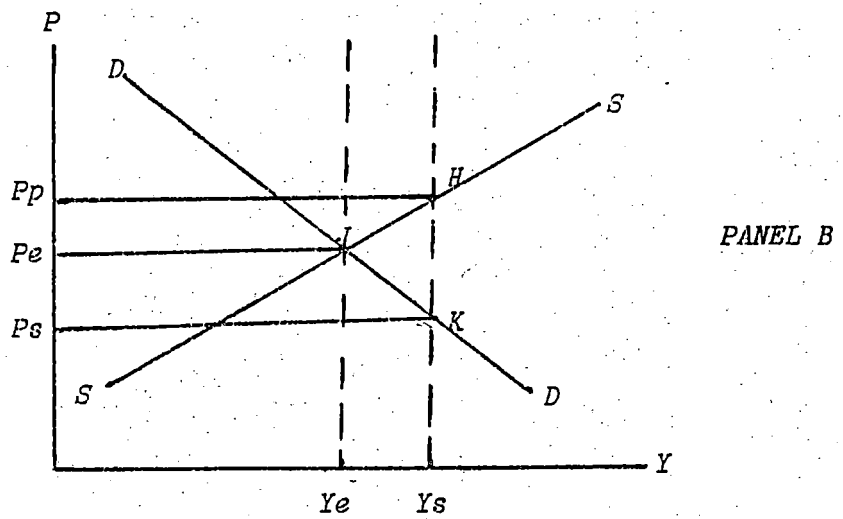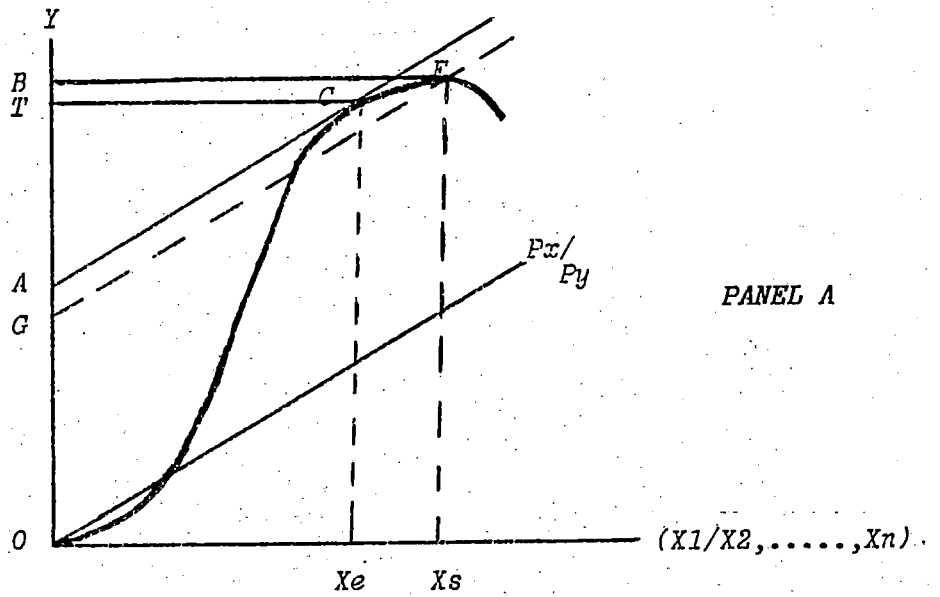
FIGURE 1   A MICROECONOMIC ANALYSIS OF PRICE
            DISTORTIONS IN ZIMBABWES CROP SECTOR

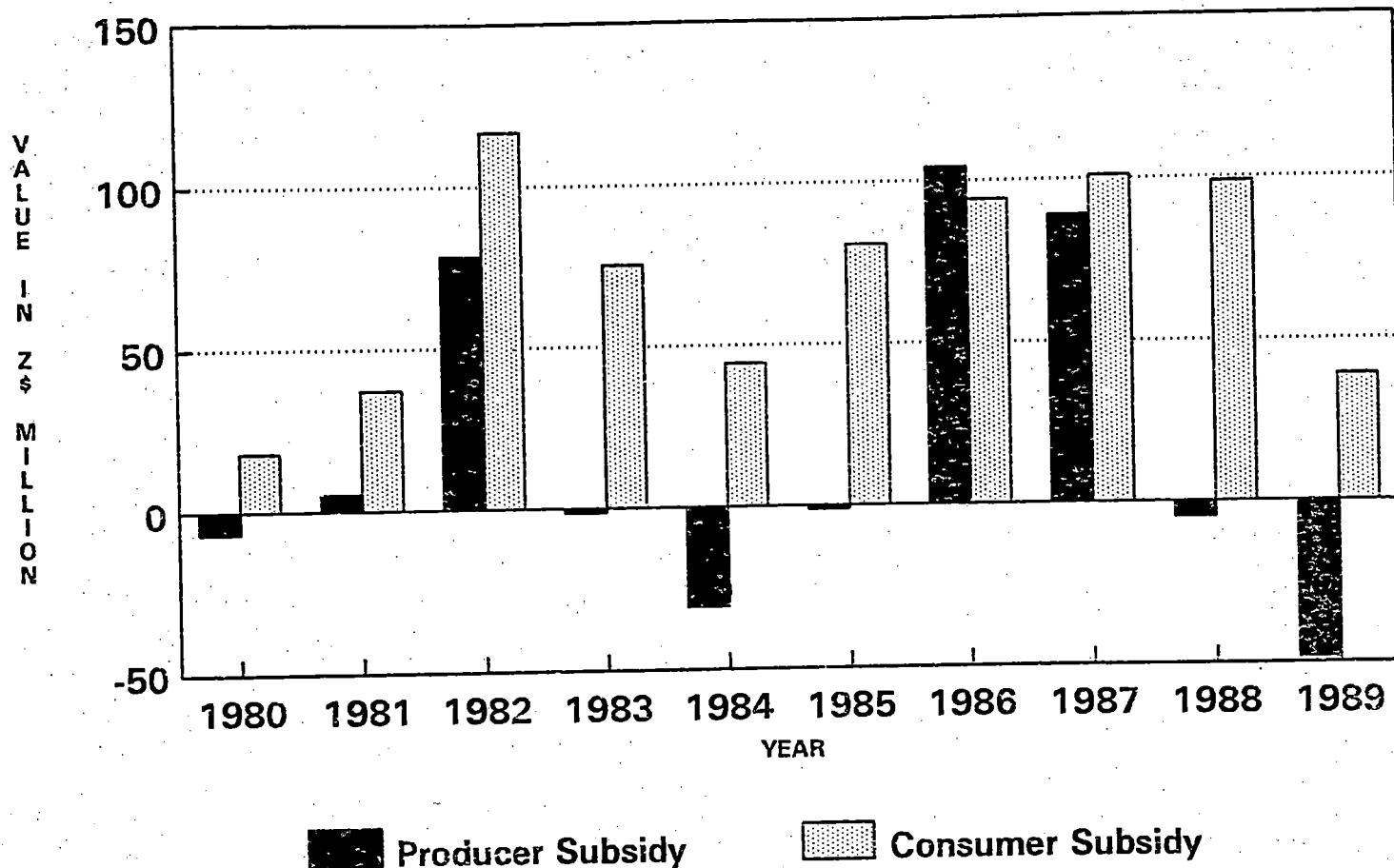FIGURE 3. NET NOMINAL SUBSIDY FOR
MAIZE IN ZIMBABWE (1980-1989)

FIGURE 2. NOMINAL SUBSIDY FOR
MAIZE IN ZIMBABWE (1980-1989)

Producer Subsidy   Consumer Subsidy

FIGURE 2. NOMINAL SUBSIDY FOR
MAIZE IN ZIMBABWE (1980-1989)

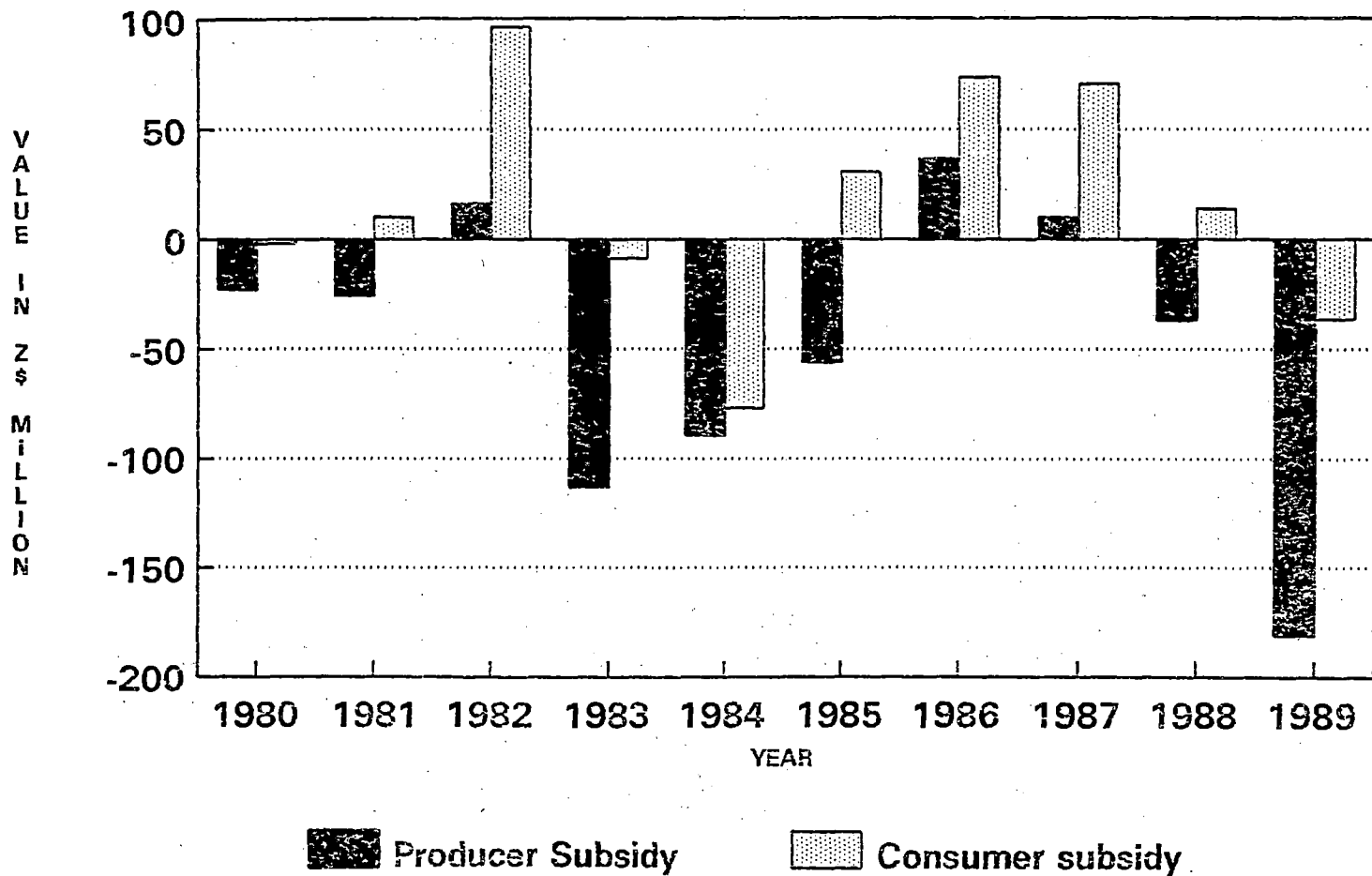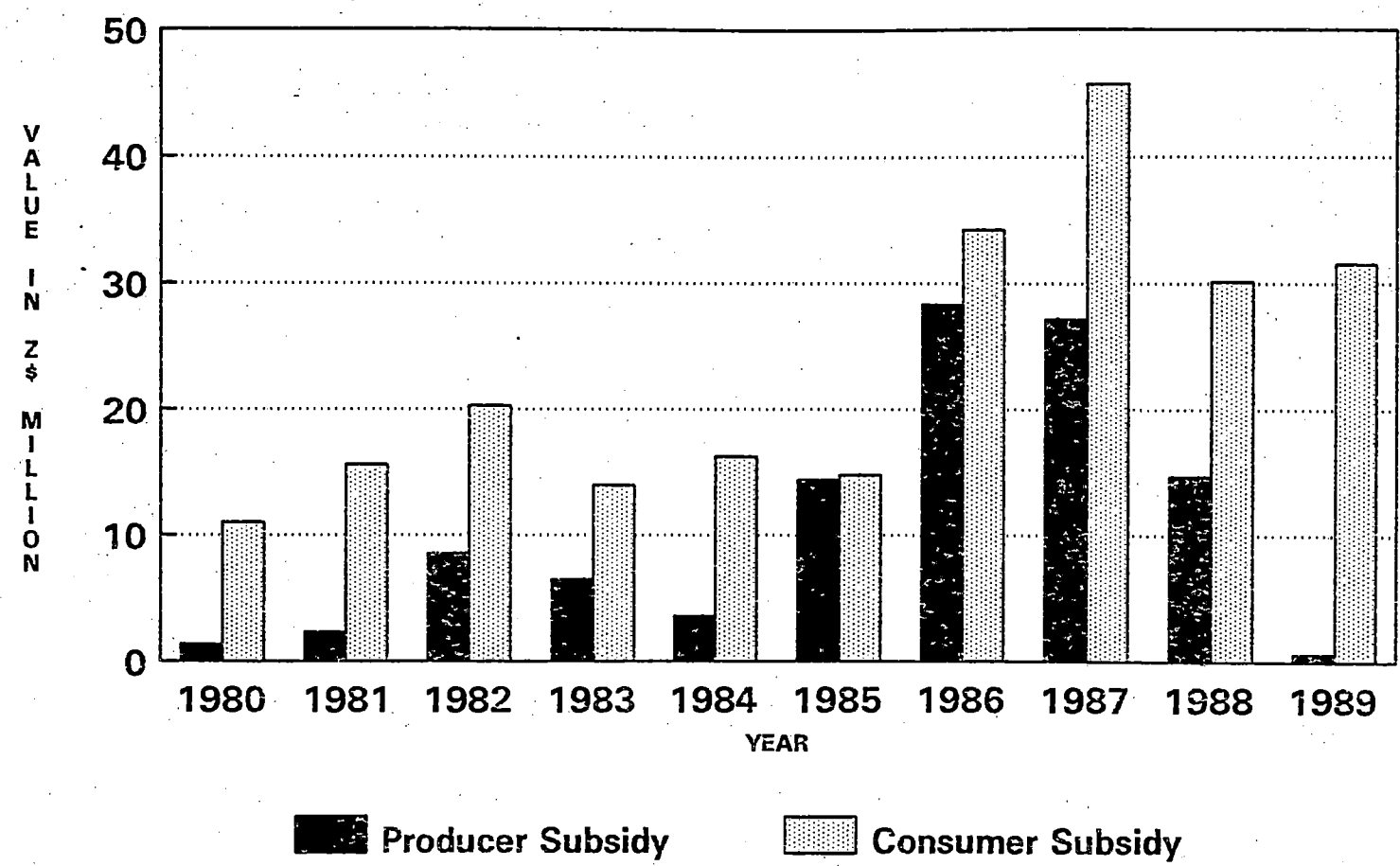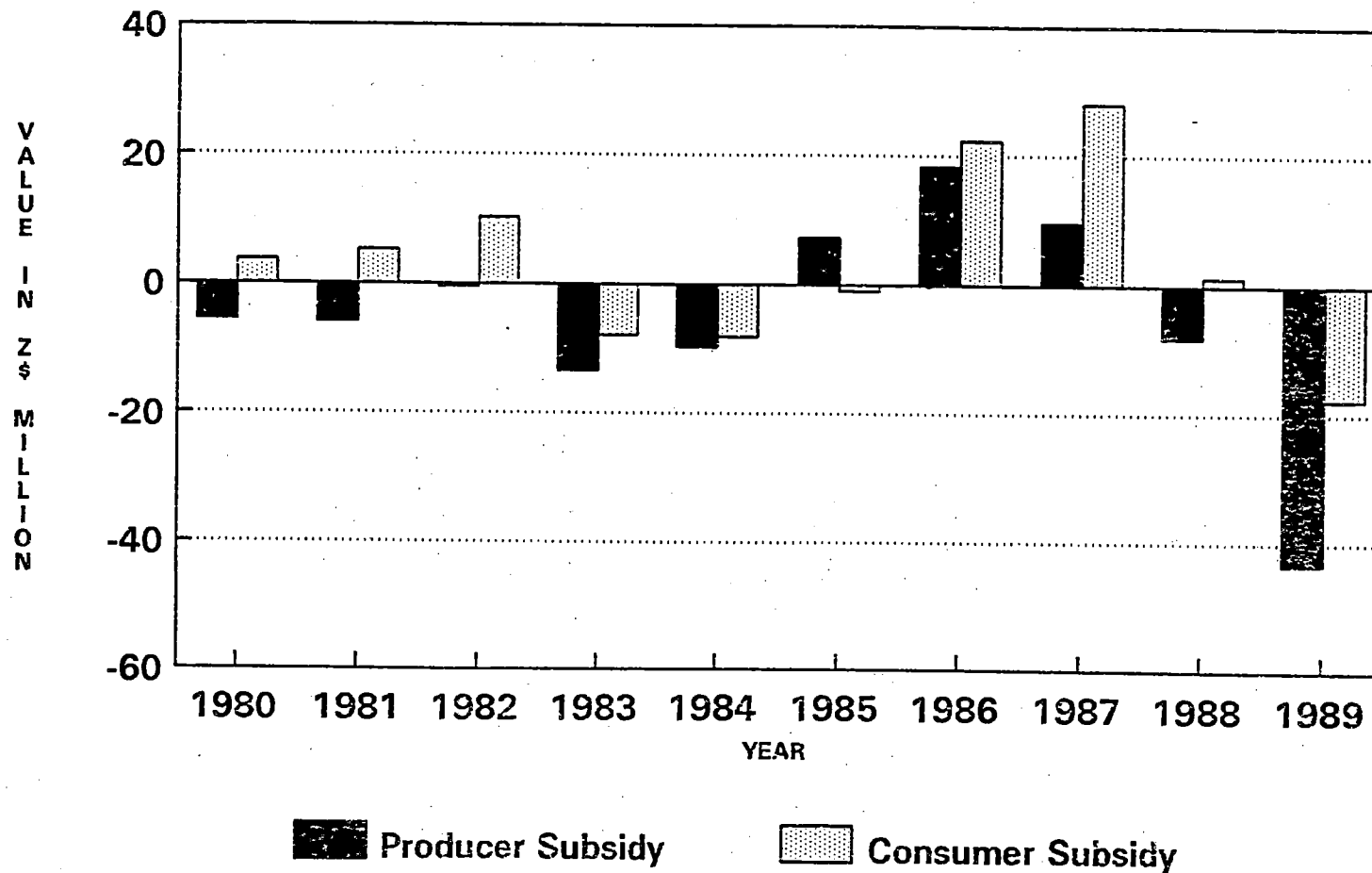# FIGURE 3. NET NOMINAL SUBSIDY FOR
MAIZE IN ZIMBABWE (1980-1989)

FIGURE 5. NET NOMINAL SUBSIDY FOR

FIGURE 4. NOMINAL SUBSIDY FOR
WHEAT IN ZIMBABWE (1980-1989)

Producer Subsidy   Consumer Subsidy

FIGURE 6. NOMINAL SUBSIDY FOR
SORGHUM IN ZIMBABWE (1980-1989)
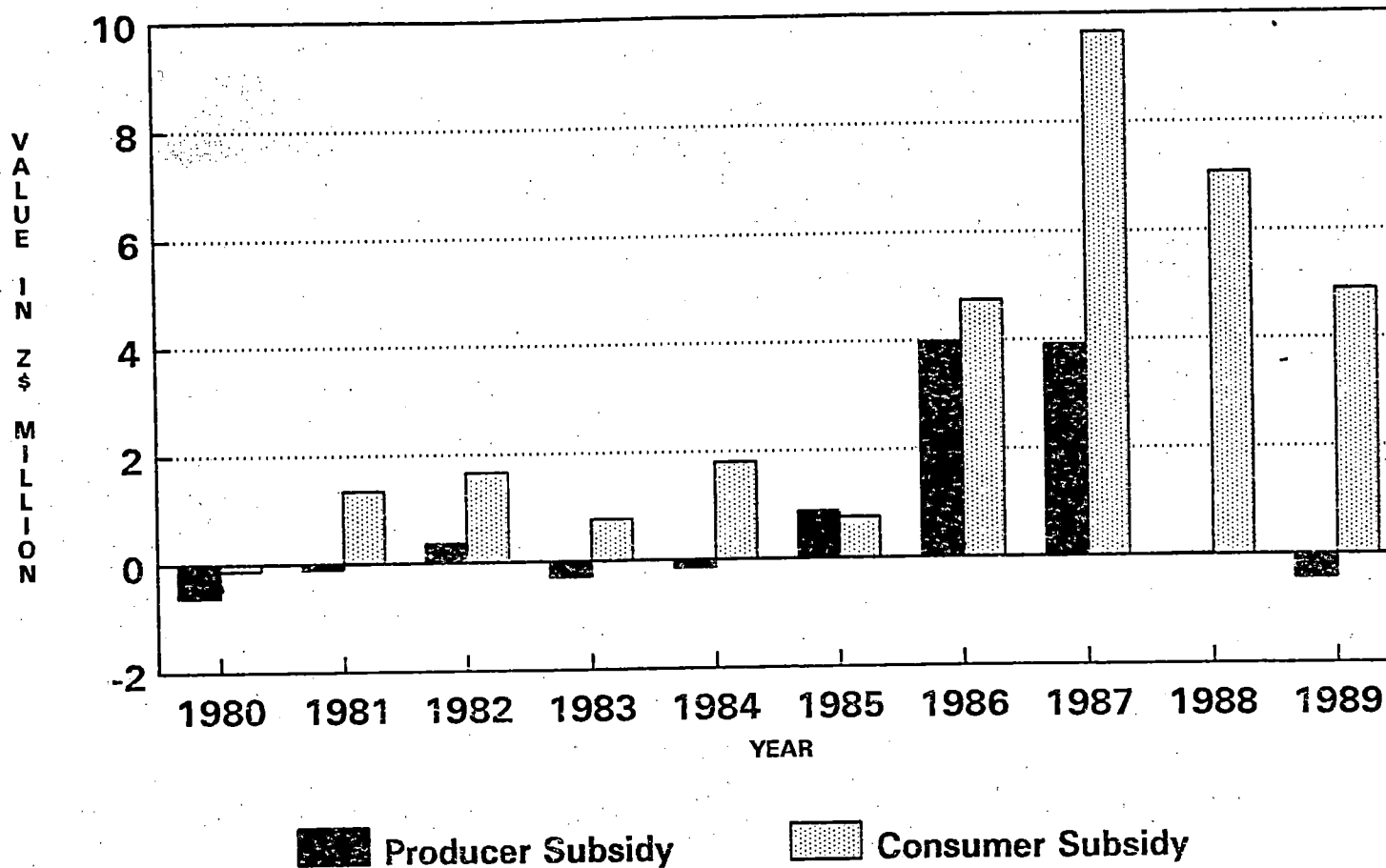

Producer Subsidy   Consumer Subsidy

FIGURE 7. TOTAL NET NOMINAL SUBSIDY FOR SORGHUM IN ZIMBABWE (1980-1989)

Producer Subsidy   Consumer Subsidy