

6. Empirical Model of Sugar Market

6.1 Introduction

This chapter develops the empirical political economy model of the sugar market in Indonesia. Firstly, a supply and demand model representing the sugar market is explored. Then, this market model is used to develop the whole model including the endogenous policy decisions. Thus, the empirical model in this chapter is a political economy model capturing both economic and political markets. The PPF framework developed in the previous chapter will be utilised as a basis to develop the whole political economy model.

6.2 Market Model

The market model is essential in the analysis of political economy. It serves two main functions. First, it provides an environment in which the optimum policy is constrained. Second, it provides an environment through which the welfare changes of interest groups influenced by the policy can be captured. In this vein, an empirical market model is developed to investigate the sugar market and then utilized to examine the political economy structure of the policy.

The specification of the model begins with the observation that government determines the price at which it will buy all domestic products. Provided that all producers participate in the government program, they would supply production to the government at the same level of price. By procuring all domestic products, the government also acts as the only stockholder and then distributes it exclusively to the

market. Thus, the essential components of the sugar market model are supply and demand.

6.3 Supply Function

Supply is represented by area response and yield equations of which production is an identity:

$$Q_s = A * Y \quad (6.1)$$

where Q_s is production

A is area planted

Y is yield

The area planted is arguably an appropriate representation for supply response. This is because producers have more control over their land rather than over their production. Reaction to market change, i.e. price, would be directly reflected in area planted, and not so much in production. While area planted is directly influenced by economic variables, yield is mainly determined by physical variables, such as input use. Based on these observations, the supply equations are proposed as:

$$A_t = f_1(A_{t-1}, Pp_{t-1}, Pr_{t-1}, Pf_{t-1}, Pb_{t-1}, TRI) \quad (6.2)$$

$$Y_t = f_2(Y_{t-1}, A_t, TREND) \quad (6.3)$$

where: A_t = total area harvested at year t

Pp_t = government announced sugar producer price at year t

Pr_t = government announced rice price at year t

Pf_t = fertiliser price at year t

TRI = dummy variable for production policy

Qd_t = total quantity demand at year t

Pc_t = sugar consumer price at year t

Pb_t = brown sugar price at year t

N_t = income

T = trend variable representing technological change

The specification introduces lag endogenous variable to represent the adjustment process.

Area

The area variable here is planted area. However, this planted area is also a proxy for harvested area. The general data do not differentiate between planted area and harvested area. While there is a possibility that these two areas are different, the differences in Indonesia sugarcane area may not be significant. Detailed statistics, recorded since 1983, show that the planted area is similar to the harvested area. Thus area data in this study refer to planted area, assuming that the planted area is equal to harvested area.

Yield and Production

Yield of sugarcane is quantity produced per area planted. Thus the value of yield is simply taken from aggregate quantity produced divided by the total area harvested.

The level of production is based on Bulog's record of its procurement. This is a correct proxy for production because all domestic product is procured by Bulog except for a small portion for farmers. This portion is about 2 per cent which goes back to farmers for home consumption. The Bulog production data have also been widely used for food studies. This is because they reflect the real amount which goes to the market. Thus, the data represents the exact quantity of market supply.

Sugar Producer Price

Sugar producer price is the price announced by the government. This price is fixed, and all domestically produced sugar goes to Bulog at this price level. In other words, all producers receive the same price. This announced price is the only market signal for producers to make decisions in planting sugarcane.

The sugar producer price is specified as a lagged variable. Although the sugar producer price is government price which is supposed to be announced before the planting season, the use of current price is difficult to justify. The frequently late announcement is the main reason that farmers use previous price in planting decisions.

Sugar price is actually announced for both farmers and millers and their shares are also announced in the same year. The share directly acts as an incentive. The government has slowly increased the share price for farmers as an incentive for them to plant sugar cane. Sugar in this study is sugar with a share incentive to reflect the right value which is received by the farmers.

Rice Price

It has been explained that sugarcane and rice are grown in the same irrigated area, making them competitors. Thus the price of rice may also effect the area planted to sugarcane.

There are two kinds of rice prices at the producer level namely, market producer price and government announced price. The market price is recorded both by the Bureau of Statistics and Bulog, while a government announced price is from the Ministry of Agriculture. Government prices for both sugarcane and rice are comparable in the sense that farmers can directly compare and consider these announced prices as a guarantee of the minimum price they will receive when they decide to plant either crop.

Fertiliser Price

The fertiliser price data refers to its market price. There are two possibilities with farmers making the planting decision using either government announced price or market price. Farmers can be involved in the government program of ISC and in return have access to a credit package for their input costs. It is suggested from this program that farmers may use government price as a guide.

However, the fact that fertilisers are readily available in the market, where most farmers get their input, also suggests that market price may act as a price guide for farmers. The government fertiliser price is aimed at retailers and the price itself is an allowable maximum retail price. This means, it is probable that farmers do not get the fertiliser price with such a maximum retail price. Thus the use of market price is justified here.

Price of Traditional Brown Sugar

The alternative product would be another explanatory variable, since planting sugarcane might not be only for 'white' sugar. Producers might sell their sugarcane to traditional millers to be processed for (traditional) brown sugar. This is the case

especially for East Java where more than 50 per cent of domestic sugar is produced. Thus, there is a possibility that the price of brown sugar would give another incentive to farmers for planting sugarcane.

Traditional brown sugar is an alternative product of which sugarcane is one of the sources. Here, farmers have choices in delivering their sugarcane, either for white sugar or traditional brown sugar.

The producer price of traditional brown sugar should be used in this study. However, the only data available for this product is consumer price. Thus, consumer price is used as proxy for producer price. The use of this price is justified on the grounds that the market for brown sugar is competitive.

Policy Variable ISCP

The introduction of ISCP has given farmers more choice in planting sugarcane. Farmers can shift between the crops that will give more profit. Hence, two important factors influence producers in planting decisions. They are the competitive crop and ISCP itself. The most common competitive crop for sugarcane is rice. Both crops are grown in the same area, i.e. irrigated field; therefore, the price of rice should enter in the area response equation as one of the explanatory variables. It is expected that rice price would have a negative sign, indicating it is a competitive crop.

The ISCP has been widely recognised as a main cause in area transfer from plantation to small farmers. The area that was previously rented by plantation has been gradually managed and controlled by its own farmers. Thus, allocation of area planted and its

production has gradually changed. This program is represented by a dummy variable, equal to zero for the period up to 1975 and one for the period starting in 1976.

6.4 Demand Function

Demand follows a conventional specification, where price, income and price of the alternative commodity are used to explain the quantity level of demand. General consumer theory suggests that these variables are relevant in analysis consumption behaviour. A partial adjustment effect is imposed by introducing a lag dependent variable for quantity consumption. This is to allow an adjustment process on domestic consumption.

The demand equation is proposed as:

$$Qd_t = f_3(Qd_{t-1}, Pc_t, Pb_t, N_t) \quad (6.4)$$

where: Qd_t = quantity demand at year t

Qd_{t-1} = quantity demand at year t-1

Pc_t = sugar consumer price at year t

Pb_t = traditional brown sugar price at year t

N_t = consumer income at year t

This demand equation assumes that Bulog buys all domestic supply at Pp , and satisfies domestic demand at Pc . It means Pp and Pc are regarded as the results of government purchase and release operations at particular price levels.

Quantity Demanded

The amount of quantity demand is based on the concept of disappearance or, the amount which is absorbed by the market. This is equivalent to the amount that Bulog

delivers to the market on a regular basis. Assuming that wholesalers act solely as distributors without holding stock, this delivery amount can be used as a proxy for consumer quantity demanded.

The record of demand maintained by Bulog is on a monthly basis. The yearly data, in this study, is calculated by summing the amount of 12 months distribution for the respective year.

Consumer Price

Both Bulog and the Bureau of Statistics have recorded consumer price data. These consumer data are a market retail price, the price that refers to Bulog's local guidance price. Similar to the distribution, these consumer price data are maintained on a monthly basis. The yearly data used in this study are found by averaging the monthly prices of the respective year.

Price of Traditional Brown Sugar

The price of traditional brown sugar is retail price, as has been explained, and used for supply equation. Brown sugar (traditional sugar) has been chosen as alternative commodity, but no *a priori sign* is expected. This kind of sugar could be a substitute product, largely in the rural area; but it might be a complement product, i.e. for spice purposes.

6.5 Specification of the Market Model

The variables have been identified and explained in the previous sections. The main objective of developing a market model is to reveal the market parameters, especially price elasticities. Based on this objective, the market model is specified in double log form, such that price elasticities are directly measurable.

Specifically, they are:

$$\text{Ln. } A_t = \beta_{10} + \text{Ln. } A_{t-1} + \beta_{11} \text{Ln. } Pp_{t-1} + \beta_{12} \text{Ln}Pr_{t-1} + \beta_{13} \text{Ln. } Pf_{t-1} + \beta_{14} \text{TRI} + e_{t1} \quad (6.5)$$

$$\text{Ln. } Y_t = \beta_{20} + \beta_{21} \text{Ln}Y_{t-1} + \beta_{22} f_t + \beta_{23} T + e_{t2} \quad (6.6)$$

$$\text{Ln}Qd_t = \beta_{30} + \beta_{31} \text{Ln}Qd_{t-1} + \beta_{32} \text{Ln. } Pc_t + \beta_{33} \text{Ln. } N_t + e_{t3} \quad (6.8)$$

6.6 Endogenous Policy Model

It has been mentioned that the empirical model consists of two main components, the economy market model and the political market model. The political market model is represented by functions which influence the policy process. Basically, this is the PPF as explored in Chapter 5. This means that the political market is inferred from endogenous policy outcomes where they represent the political-economic equilibrium.

Recall from Chapter 5, endogenous policies representing the equilibrium are:

$$P_c = \frac{\theta_g \eta}{\theta_g (1 + \eta) - \theta_c} (P_w + k_1) \quad (5.13)$$

$$P_p = \frac{\theta_g \varepsilon}{\theta_g (\varepsilon + 1) - \theta_p} (P_w + k_1 - k_2) \quad (5.14)$$

The weights θ are normalised and sum to one, such that the third equation is introduced as

$$\theta_c + \theta_p + \theta_g = 1 \quad 6.9$$

These three equations represent the government behaviour in the policy decision. In this model, the political parameters (θ_i) reveal the bargaining power between interest groups. Given the nature of the bargaining process in the model, the weights (θ_i) may be endogenous. However, this model assumes that the weights are treated as exogenous with their values assigned by government or policy maker. Assigning these preferences may not be independent. It has been shown in Chapter 5 that market parameters also determine the magnitude of political weights. It means, evaluating political weights may be undertaken through economic market. Thus, it is important to develop political economy model where its equilibrium reflects both political and economic markets.

6.7 Political Economy Model

The political economy model captures both the economic and political markets. This model is simply a unified model of both markets. Theoretically, the government or Bulog maximises the objective function subject to market constraints. In other words, unobserved political weights are revealed from the equilibrium condition where the maximised PPF is constrained by market structure. Thus, endogenous policy decisions which represent the optimum policy instruments have the same value in both markets, political and economic, and they represent equilibrium points.

It suggests that market and political models can be estimated together as a system thus developing a unified model consisting of both economic and political markets.

Rewritten from the previous results, the political economy model to be estimated consists of these following equations:

$$\text{Ln. } A_t = \beta_{10} + \text{Ln. } A_{t-1} + \beta_{11} \text{Ln. } Pp_{t-1} + \beta_{12} \text{Ln}Pr_{t-1} + \beta_{13} \text{Ln. } Pf_{t-1} + \beta_{14} TRI + e_{t1} \quad (6.5)$$

$$\text{Ln. } Y_t = \beta_{20} + \beta_{21} \text{Ln}Y_{t-1} + \beta_{22} f_t + \beta_{23} T + e_{t2} \quad (6.6)$$

$$\text{Ln}Qd_t = \beta_{30} + \beta_{31} \text{Ln}Qd_{t-1} + \beta_{32} \text{Ln. } Pc_t + \beta_{33} \text{Ln. } N_t + e_{t3} \quad (6.8)$$

$$Qs = A * Y$$

$$P_c = \frac{\theta_g \eta}{\theta_g (1 + \eta) - \theta_c} (P_w + k_1) \quad (5.13)$$

$$P_p = \frac{\theta_g \varepsilon}{\theta_g (\varepsilon + 1) - \theta_p} \cdot (P_w + k_1 - k_2) \quad (5.14)$$

$$\theta_c + \theta_p + \theta_g = 1 \quad (6.9)$$

where the first three equations represent the economic market, and the last three equations represent the political market. Given the specification of the model as a system, the aim is to estimate the political market parameters (θ_i) and the economic market parameters (β_{ij}).

It is important to note that the main concern in this study is the political weights, so that the main framework of the PPF should be viewed as the core model. Thus, the model estimation as a system may not be judged as the only method to reveal the political weights. This subject is addressed in the next chapter on the model estimation.

6.8 Data and Data Sources

One limitation in the model building is data availability. Based on this limitation, the model uses annual time series data covering the period 1969-1995. The collection of sufficient time series observations for estimation of the sugar market is difficult in terms of consistency because of frequent policy changes prior to 1981. The changing of marketing institutions also means that the same information might be kept in different sources. The only comprehensive data are those recorded since 1972 by Bulog, one year after Bulog became involved in marketing. However, the concern with domestic consumption and marketing started in the mid-1960s, making marketing data tractable as far as 1968/1969. These are the reasons for using time series data covering 1969-1995.

Basically, there are three main data sources for this study, namely, Bulog, the Ministry of Agriculture and the Bureau of Statistics. Time series data for the major domestic market have been collected from Bulog. This body has been a main source of information considering that it has control of the domestic market. The data have been accumulated since the end of 1960s when sugar came to be a main concern in the Indonesian economy. However, the maintenance of detailed monthly records started in 1972 when the role of Bulog in controlling the sugar market became

effective. As the main body which controls the market, Bulog also maintains data for domestic production. In short, Bulog has come to be the main source of data in this study, while additional data have been collected from the two other institutions.

The Ministry of Agriculture is the source of data on production. Data on area to be used in the supply equation are only available from MOA. It records general sugarcane data since 1968 but detailed and systematic records only started in 1983.

The Bureau of Statistics is supposed to be the main source of data. However, due to the fact that most data have been available from their related sources, such as Bulog and Ministry of Agriculture, data from BOS are treated as additional. Data of income, price index and traditional brown sugar are exclusively from BOS.

Since the data used here are time series covering 27 years, there are some problems in measurement over the sample period. The only consistent data are market data (quantity demand and supply and their prices) from Bulog which are recorded on a monthly basis covering all regions in Indonesia. Price of traditional sugar is one example of inconsistent data. All regions in Indonesia are covered for the period starting 1981, but only some regions prior to 1981. For this reason, the data from the same regions are used by excluding some regions known to experience inflating price, such as Irian Jaya.

There are no missing observations over the sample period in terms of lack of available data for some periods. Since there are several sources of data, the unavailability or inconsistency in one source has been remedied from other sources. This is the case for

sugar production and its stock of which the responsible institution has frequently changed. This problem is solved by finding the main source of data from Bulog and then cross-checking has been done from other sources.

6.9 Summary

The empirical political economy model of Indonesia sugar market has been developed in this chapter. The main concern in the model building is to estimate the political weights. However, this chapter has made an effort to unify market and political models in a system. Efforts to develop the two markets into a system have been motivated that both markets work at the same time.

Appendix A.6 Definition of Variables and Data Sources

- A : Harvested area of sugarcane. Measured in acre. Ministry of Agriculture
- Y : Yield. It is calculated from quantity produced divided by area harvested.
Ministry of Agriculture and Bulog.
- Qs : Sugar production. Measured in tonnes. Bulog.
- Pp : Sugar Producer price. Measured in Rp./kg. Bulog.
- Pr : Rice producer price. Measured in Rp./kg. Bulog.
- Pf : Fertilizer Price. Measured in Rp./kg. Ministry of Agriculture
- Pb : Traditional brown sugar price (retail price). Measured in Rp./kg. Bureau of
Statistics.
- N : Total Income. Measured in 000 000 Rp./year. Bureau of Statistics.
- Pc : Sugar consumer price. Measured in Rp./kg. The original data come in
monthly basis for each region. Bulog.
- Qd : Sugar quantity demand. Measured in tonnes. The original data are in monthly
basis. Bulog.

7. Estimates of the Models and Their Results

7.1 Introduction

Following the empirical model developed in Chapter 6, this chapter aims to estimate the specified model. Some estimation methods are discussed and the relevant ones are employed to estimate the corresponding model. The chapter begins by discussing the relevant issues, mainly the proposed methods for the corresponding model. This is followed by sections devoted to the estimations to be implemented. Then, numerical results of the estimates are presented.

7.2 Estimation Method

The model to be estimated is the political economy one explored in the last section of Chapter 6. This means an estimation method for the whole model as a system is needed.

Previous studies on the PPF have mainly tried to reveal the political weights. Such an objective may allow the estimation of the PPF by calculating the endogenous policy instruments after investigating the market parameters, although the market parameters may not need to be estimated as they could be available from the previous studies on the particular commodity market.

This study has made an effort to examine the process as a system. Though an effort has been made to treat the model as a system, it is important to stress that the main

objective of this study is to reveal political weights in the Indonesian sugar market. Thus, other methods may be employed to achieve such an objective, including the conventional method of estimating the political weights partially, treating each market separately.

Before proceeding to estimate the model as a system, a separate estimate each of the individual equations is made. The estimation of the individual equation may provide two important things. It is useful for gaining insight into the individual equation, and, econometrically, the estimated parameters may be used as starting values for non-linear estimation of the system.

Based on the above considerations, the estimation method will follow two steps. First, the market model is estimated, then the political model will be estimated given the market parameters. Having the estimated values from individual equations, the whole model will be estimated as a system.

7.3 Market Model Estimation

The market model in this section refers to equations (6.1, 6.5, 6.6, and 6.7). The estimation of the model might be accomplished by treating each single equation separately or treating them as a system. This depends on the nature in simultaneity of the equations. Therefore, the equations should be examined; first for each single equation separately and then for the whole system.

The first test for a single equation is to detect its autocorrelation. Autocorrelation problems can be expected in economic analysis using time series data. In addition,

the equations use lagged dependent variables as one explanatory variable. Presumably therefore the serial correlation is likely to exist. Although estimates from the conventional ordinary least square (OLS) method and forecasts from those estimates are still unbiased and consistent with error terms serially correlated, these may no longer show minimum variance among all linear unbiased estimators.

Tests of Durbin-h (Dh) for the dynamic model are employed to detect autocorrelation errors in each single equation. This test has been chosen, to replace the D-W test, as an appropriate one because the lagged dependent variables are present in the equations.

The equations in the sugar market model could be treated as a system. They relate to each other not because they interact, but because the errors in these equations are contemporaneously correlated. The common argument of this correlation is from the fact that all these equations explain the relationship in one commodity market that might be influenced by other similar factors. These omitted factors could have affected the observed outcomes for the explained variables. They might have similar effects on each equation, and their effects would be captured in the covariance of error terms. Consequently, it is natural to assume that the equation errors of one equation may be related to the others, leading to the possibility of cross-equation error correlation.

Given that error correlation between the equations may exist, it is preferable to employ a statistical model that accommodates the covariance specification. Zellner (1962) suggests Seemingly Unrelated Regression (SUR) estimation to improve

efficiency. This method estimates a set of seemingly unrelated regressions jointly as one system instead of estimating each equation separately. In this study, the Breush-Pagan LM test statistic for the diagonal covariance matrix is employed to investigate the existence of contemporaneous correlation of error terms across equations.

7.4 Results of Specification Tests

The existence of contemporaneous correlation indicates that the equations must be treated and estimated as a system, otherwise applying least squares to each equation separately is inefficient. The test is:

$$H_0 : \sigma_{ij} = 0$$

$$H_1 : \text{otherwise}$$

As the theory suggests, when the contemporaneous correlation exists, the SUR estimate gives more efficient estimation. While it is argued that the system might be economically related in that the same factors would influence the model, there is no proof econometrically. The calculated χ^2 statistics of the Breush-Pagan LM test give 7.6771 with a degree of freedom of 6. Thus the LM test accepted the null hypothesis of the diagonal covariance matrix suggesting that the cross elements of the residual matrix are not correlated.

The results of the contemporaneous correlation test suggest that the estimation of the equations separately is appropriate. Hence, examination of each single equation is

needed prior to the estimation, especially for the existence of autocorrelation as suggested above.

The *D-h* statistic is appropriate for testing AR(1) error for other equations which include the lagged dependent variable in the set of explanatory variables. Using a 5 per cent confidence level, the evidence of autocorrelation is only found in *Yield* equation where the value of *D-h* statistic is 2.2729. This problem is corrected for first-order autocorrelation and then the equation is re-estimated. After correction, no evidence is found for the higher autocorrelation.

7.5 Result of Estimation

Given that no error correlations exist, an estimate using a system of equations (SUR) will give no significant efficiency improvement. This means that the OLS estimate for the single equation separately is appropriate and it has been used in this study. However, SUR estimate could be compared to the OLS estimate, and these results are provided in the appendix of this chapter.

Because of the evidence of autocorrelation in the *Yield* equation this equation has been entered into the system after transforming the original equation using the Cochrane-Orcutt iterative procedure. Assuming the AR(1) of which the error follows:

$$e_t = e_{t-1}\rho - \varepsilon_t$$

where ρ is the coefficient of autocorrelation. the transformed equation is:

$$LnY_t^* = \beta_{20}^* + \beta_{21}^* Ln.Y_{t-1}^* + \beta_{22}^* Ln.A_t^* + \beta_{23}^* Ln.TREND_t^* + \varepsilon_t^*$$

where: $LnY_t^* = LnY_t - \hat{\rho}. LnY_{t-1}$

$$\beta_{20}^* = \beta_{20}(1 - \hat{\rho})$$

$$\text{Ln}Y_{t-1}^* = \text{Ln}Y_{t-1} - \hat{\rho} \cdot \text{Ln}Y_{t-2}$$

$$\text{Ln}A_t^* = \text{Ln}A_t - \hat{\rho} \cdot \text{Ln}A_{t-1}$$

$$\text{LnTREND}_t^* = \text{LnTREND}_t - \hat{\rho} \cdot \text{LnTREND}_{t-1}$$

$$\varepsilon_t^* = e_t - \rho \cdot e_{t-1}$$

The result of the SUR estimate, along with the OLS, is provided in the appendix of this chapter.

This section will discuss the estimation results of the model for each equation. Along with the estimated coefficient, it also provides standard errors and t values. Adjusted R^2 and $D-h$ are given in each equation. The report will be repeated in Table A.7.1 in the appendix by comparing them with the SUR estimate.

7.6 Supply Model Estimates

The estimation provides significant evidence that producers respond to the real price received in the previous year as they decide the area to be planted for sugarcane. The price faced by producers in the previous year is found to have a positive impact on domestic production, as expected.

It is interesting that producers significantly respond to the government rice price. An investigation has been done by including either market price or government price of rice. No evidence of a significant coefficient has been found that producers respond to market price. On the other hand, government price gives a significant coefficient with the sign as expected. This finding is surprising despite the fact that the government

rice price has been used as one guide to determine sugar price (Koestono and Basuki 1988). However, sugar producers, who only receive government producer price, might compare this government sugar price to the government rice price in deciding their production.

Table 7.1: Estimated Result for Area Equation

$$\ln A_t = \beta_{10} + \beta_{11} \ln A_{t-1} + \beta_{12} \ln P_{t-1} + \beta_{13} \ln Pr_{t-1} + \beta_{14} \ln Pf_{t-1} + \beta_{15} \ln Pb_{t-1} + \beta_{16} TRI + e_{t1}$$

Independent Variables	Estimated Coefficient	Standard Error	t-value
<i>Constant</i>	9.5534	3.928	2.992
<i>Ln At-1</i>	0.4958	0.1420	3.491
<i>Ln Ppt-1</i>	0.2721	0.1356	2.006
<i>Ln Prt-1</i>	-0.4253	0.2125	-2.001
<i>Ln Pft-1</i>	-0.7314	0.2485	-2.943
<i>Ln Pbt-1</i>	0.17158	0.1025	1.674
<i>TRI</i>	0.2742	0.2742	3.891
R2 = 0.9744	D-h = -0.82539		

Note: *) **) ***) are significant at 1%, 5%, and 10% respectively
 ns is not significant

The price of brown sugar might provide another alternative incentive to producers in deciding their area for sugarcane. However, there is not enough evidence to support this supposition, since it is statistically insignificant. There is a bias from omitting the variable for brown sugar. Omitting this variable from the equation has reduced the coefficient of determination, and increased its standard error, hence, reducing the significance of other explanatory variables. Given that brown sugar is theoretically justified to be an alternative product, and would influence the production, the variable has been left in the equation.

The effect of the introduction of the Smallholder program, as shown by TRI variable, is found to be strongly significant in explaining the extension of the total sugarcane area.

Table 7.2: Estimated Result for Yield Equation

$Ln.Y_t^* = \beta_{20}^* + \beta_{21}^* LnY_{t-1}^* + \beta_{22}^* LnA_t^* + \beta_{23}^* LnT_t^* + \varepsilon_t^*$			
Independent Variables	Estimated Coefficient	Standard Error	t-value
<i>Constant</i>	19.580	2.928	7.012
<i>Ln Yt</i>	0.0392	0.1781	-0.2202
<i>Ln At</i>	-0.9284	0.2085	-4.454
<i>Ln T</i>	0.3874	0.1208	3.208
R2 = 0.6991	D-h= -0.02439		

Note: *) **) ***) are significant at 1%, 5%, and 10% respectively
ns is not significant

It is important to note that the value of D-h statistic for the Yield equation is the one after making correction for first-order autocorrelation. This value indicates a better result without any higher autocorrelation.

From the Yield equation, it is interesting to have the coefficient of area negative, indicating that the area expansion has been followed by decreasing the yield of sugar.

Given that the quantity supply function is represented as an identity of $Q_t = A_t * Y_t$, the price elasticity of quantity supply should be resolved from the two equations of Area and Yield.

$$Q_t(P) = A_t(P) * Y_t(P)$$

$$\ln Q_t(P) = \ln A_t(P) + \ln Y_t(P)$$

$$\frac{f_{Q,P}}{f_{P,Q}} = \frac{f_{A,P}}{f_{P,A}} + \frac{f_{Y,P}}{f_{P,Y}}$$

The yield equation in this study is explained solely by the physical variables. Assuming that the price elasticity of yield is zero, it can be concluded that price elasticity of quantity supply is equal to the one from area equation.

7.7 Demand Model Estimates

The consumption result seems to follow theoretical predictions. The two most important explanatory variables, income and price, significantly influence quantity demanded with expected signs. Results of the consumer demand estimation show the expected signs for all explanatory variables that are implied by the theory of demand: the negative own price and positive effect of income on demand. They are significantly different from zero within one per cent significance level.

The income elasticity of demand might be very high. However, the fact that sugar in Indonesia is a staple food means this value could be acceptable. Comparing the result to previous studies would give an idea of the closeness of this value to the correct one (see section 7).

Following demand theory, it has been shown that demand for traditional brown sugar could be related to demand for white sugar. It is a popular sweetener in most rural areas. Some studies (Soetrisno 1984, SDGI 1993) have also mentioned the important role of brown sugar as both an alternative sweetener and as spice. An investigation

has been done in this study to include the price of brown sugar as an explanatory variable. However, the estimate shows insignificant relation in the demand specification and has been dropped from the equation.

Table 7.3: Estimated Result for Demand Equation

$$\ln Qd_t = \beta_{30} + \beta_{31} \ln Qd_{t-1} + \beta_{32} \ln Pc_t + \beta_{33} \ln N_t + e_{t3}$$

Independent Variables	Estimated Coefficient	Standard Error	t-value
<i>Constant</i>	-1.2625	0.7223	-1.748
<i>Ln Qdt-1</i>	0.3148	0.1223	2.574
<i>Ln Pct</i>	-0.3042	0.0566	-5.374
<i>Ln Nt</i>	0.55275	0.994	5.559
R2 = 0.9903	D-h = -0.65732		

Note: *) **) ***) are significant at 1%, 5%, and 10% respectively

ns is not significant

Another variable which might be included in the explanatory variable is TRI, the dummy variable similar to one in the area response. It could also be in the demand equation, considering that following ISCP some proportion of sugar goes back to farmers for home consumption. However, it does not significantly affect aggregate demand, and has also been dropped from the equation.

7.8 Market Model Results

The estimates of the model are mainly aimed at obtaining the elasticity values. The models in this study have been specified as autoregressive by entering the lagged dependent variable to allow for adjustment processes. Noting that the adjustment value is embodied in the coefficients on the lagged dependent variables, the long-run elasticities can be calculated from the short-run ones. The long run elasticities are

calculated by dividing the short run value by adjustment value. This is $\frac{-\beta_{ij}}{1-\lambda_{ij}}$;

where β_{ij} is the short run elasticity, and λ is coefficient of lagged variable. The elasticities of supply and demand are depicted in Table 7.4.

7.9 Comparisons with Previous Studies

Comparing previous studies on supply and demand will provide more understanding on the subject. The closeness of the methods used and the results may also indicate the true values in the real world. Here, the results are compared and problems encountered in this estimation are discussed.

Previous studies on sugar in Indonesia are rare. Two important works which are widely cited are Sumodiningrat (1977) and Soetrisno (1984). These two studies are relevant here since they focus on similar objectives in terms of estimating supply and demand elasticities. Thus, it is worth comparing these results with the present study.

Table 7.4: Elasticity Results for Period 1969-1995

	Short Run	Long Run
Supply		
Sugar Price	0.2721	0.5397
Demand		
Own Price	-0.3042	-0.444
Income	0.5527	0.8067

In estimating the supply side equation, both Sumodiningrat and Soetrisno differentiate between farmer and mill area response. These two studies discuss the difficulty both have in finding significant estimates of area response, and finding the estimates that follow the theory. Sumodiningrat shows that farmers' area response with respect to sugar price is only significant at the 20 per cent level. He also finds that estate mills' area response is contrary to the theory of supply in the sense that area harvested responds negatively to sugar price.

Table 7.5: Previous Estimates of Supply Elasticity

	Period	Explanatory Variable	Short Run	Long Run
Sumodiningrat (1977)				
- Farmers	1960-1974	Sugar Price (lag price)	0.6144	1.46
- Estate Mills	1960-1974	Sugar Price (lag price)	-0.4289	-
Soetrisno (1984)				
- Farmers	1960-1981	Sugar-brown sugar price ratio (current price)	0.249	1.245

Soetrisno has a similar experience when estimating the area supply response. He finds that farmers react only to the current sugar-brown sugar price ratio. No lag prices have a significant effect on area harvested. He also estimates estate mills' area response, but finds that it negatively responds to sugar price. However, these estimates are insignificant, so that he does not proceed with further analysis; and uses farmers' area response as a standard for elasticity of supply.

Sumodiningrat interprets his results as showing that the estate mills' response to price changes reflects the farmers' willingness to lease their lands in response to variation in expected price. The estimates, however, are contrary to ordinary *a priori* reasoning. He explains the negative sign as being due to the competition for sugar land between estate mills and farmers. When prices are high, the farmers try to keep as much area as possible for themselves. This leads to the observed negative relation between price and areas harvested for estate (Sumodiningrat 1977). The similar institutional argument has been used by Soetrisno to explain the insignificant results of estate mills' area response estimates. He argues that as government agents the estate mills might not respond to market signals but that they are subject to Ministry of Agriculture's arrangements.

Another study by Rosegrant et al. (1987) also encounters unsatisfactory results when estimating sugar area responses. They suspect that these unexpected results are due largely to institutional influences on the response, such as non-price production incentives in support of sugar production.

Previous estimates of demand have produced better results than those for supply. Sumodiningrat investigates sugar demand by estimating consumption response to sugar price change. Some other variables are also used as additional explanatory variables. They are income, rice price and a proxy of preference. He finds that except for sugar price, no other variables significantly affect sugar consumption. However, he believes that the value of the income elasticity number is right on the grounds that this variable improves the coefficient of determination.

Table 7.6: Previous Estimates of Demand Elasticity

		Price Elasticity	Income Elasticity
Sumodiningrat (1977)	1960-1974	-0.6783 *	0.3394
Soetrisno (1984)	1967-1981	-0.45	0.916

* Sumodiningrat uses lower number (-0.34460) from an alternative equation for his analysis despite the lower significance of the estimate.

Soetrisno does not estimate sugar demand in his study, but he uses the demand elasticity from his other study using the same data.

While the elasticity of supply could be subject to further investigation, it is interesting to compare the elasticity of demand of these previous studies to the one obtained in this study. The results of Soetrisno, especially, are comparable to this study. He also finds that the income elasticity is quite high.

It is important to note that, in estimating the demand and supply response, the data and variables used by both Sumodiningrat and Soetrisno are different from those used in this study. Data used by Sumodiningrat suffer from discontinued time series as a result of changing policy during the period of study. He gathered data from several different sources, making adjustments prior to the estimation. Unlike Sumodiningrat, Soetrisno used data from Sugar Research Institute (BP3G), believed to be more consistent and reliable despite the fact that this source was formerly tied to the government estate mills body and devoted its research exclusively to the government estate mills.

There are other differences in variables used. Sumodingrat used sugar wholesale price for estimating area response, and retail price for consumption. On the other hand, Soetrisno used producer price for his estate mills supply response, but the sugar-brown sugar price ratio (and sugar-food price ratio) for farmers area supply response. Thus, his attempt to differentiate between estate mills and farmers responses has suffered from inconsistency in the variables used.

7.10 Estimation of Political Weights

The main objective of this part of the study is to obtain the value of political weights. Since the political weights (θ_i) are unobservable, the values of these are obtained from the objective function suggested by the theory. Empirically, the PPF model is estimated in two main steps. The economic equations are estimated first to obtain market parameters during the period of the study. In the second step, the market parameters are used to estimate the political weights embodied in the PPF model

The endogenous policy decisions in (5.13) and (5.14) and (6.6) represent the computational formula for the political weights. These three equations, in principle, can be used to solve three unknowns θ_i . Using market parameters of $\eta = -0.3042$ and $\varepsilon = 0.2721$ from Table 7.4, the numerical results of political weights can be resolved for the period 1969-1995.

The numerical results of the political weights are depicted in Table A.7.2 in the Appendix of this chapter. These have been plotted to make a chart as shown in Figure 7.1. This method of estimating political weights does not mean that their value

depend on the policy variables. However, this is the method to reveal the value of political weights given the existing market structure. The economic meaning of this method will be further discussed in Chapter 9.

Since the numerical results are estimated as residuals, their values are changing over time following the level of intervention. Statistics tests on the results show that there is a significant difference between the weights assigned to the government, producers and consumers. The value at the means reveal that the government ranking of preferences is the government, producers and then consumers.

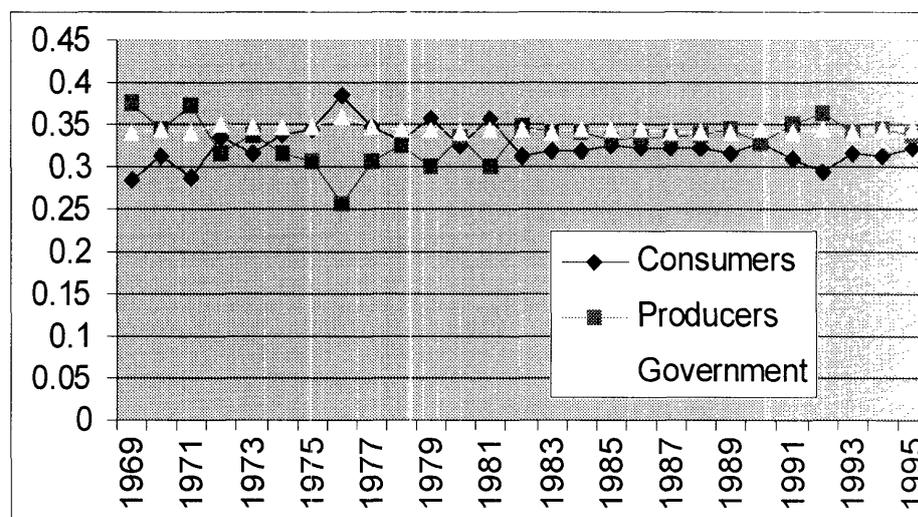


Figure 7.1: Distribution of Political Weights

7.11 Evaluation and Implication of the Estimation Procedure

The previous chapters show that the structure of the political economic system consists of two main components: (i) the economic structural equations; and (ii) the endogenous policy decisions. The economic structural equations are the government constraint in formulating the policy instruments. Given the environment in which the policy instruments are set up, the whole model should be estimated as a system.

The whole model consists of three behavioural equations and four identities. Substituting the identities (5.13, 5.14, and 5.15) into the behavioural equations results in highly non-linear equations to be estimated. The estimation for the whole model as a system has been undertaken in this study. However, it has produced unsatisfactory results. While the estimation of the whole model as a system has been theoretically justified, there is no empirical evidence for the Indonesian sugar market supporting this justification. Given the fact that the system has not produced acceptable parameter values, the parameters from the estimates of the individual equation are used in this study.

The estimated political weights have been produced as residuals, utilising endogenous policy decisions. Since the data being used are time series, the estimated results for political weights are changing over time during the period of the study. While there have been similar methods and results used in the previous studies (Ohmke and Yao 1990, von Cramon-Taubadel 1992) the results may raise some questions. For example, von Cramon-Taubadel (1992) has questioned the stability of the political weights. However, other studies (e.g. Ohmke and Yao 1990) defend the result of

changing political weights on the grounds that the government preferences have changed over time.

The estimated political weights in Table 7.4 indicate that the Indonesian government shows a trend toward favouring farmers over consumers. This finding supports the assertion that the Indonesian government is making an effort to raise the sugar procurement price as way measure of supporting farmers.

It is interesting to note from the results that the weight for government is relatively stable over the period compared to the weights for both producers and consumers.

7.12 Summary

The estimation of the model has produced economic market parameters and political market parameters. Efforts to estimate the whole model as a system have produced unsatisfactory results. An alternative method is used to estimate political weight parameters where the political weights are treated as residual. These estimated results will be further examined in the next chapter, and will be used for analysis of policy in the sugar market in Indonesia.

Appendix A.7 Estimate results from OLS and SUR

Table A.7.1: Results from OLS and SUR Estimates

Coefficient	Independent Variables	SUR	OLS
Dependent	Variable: A_t		
β_{10}	Constant	9.5490 (2.9204) *	9.5534 (3.1928) *
β_{11}	$\ln A_{t-1}$	0.47938 (0.1302) *	0.49583 (0.14201) *
β_{12}	$\ln Pp_{t-1}$	0.28694 (0.1239) **	0.27211 (0.13561) ***
β_{13}	$\ln Pr_{t-1}$	-0.38622 (0.19370)*	- 0.42526 (0.21252) ***
β_{14}	$\ln Pf_{t-1}$	-0.7234 (0.22637)*	- 0.73139 (0.24855) *
β_{15}	$\ln Pb_{t-1}$	0.15066 (0.09343) ^{ns}	0.17158 (0.10250) ^{ns}
β_{16}	TRI	0.27928 (0.06455)*	0.27421 (0.07048) *
Dependent	Variable: $Yield_t$		
β_{20}	Constant	17.572 (2.6078)*	19.580 (2.7923) *
β_{21}	$\ln Yield_{t-1}$	-0.14755 (0.14922) ^{ns}	-0.03922 (0.1781) ^{ns}
β_{22}	$\ln A_t$	-0.76092 (0.20161)*	-0.9284 (0.2085) *
β_{23}	TREND	0.26804 (0.11684)**	0.38745 (0.1208) *
Dependent	Variable: Qd_t		
β_{30}	Constant	-1.4411 (0.68877) **	-1.2625 (0.72231) ***
β_{31}	$\ln Qd_{t-1}$	0.3407 (0.11481) *	0.31485 (0.12233) **
β_{32}	$\ln Pc_t$	-0.28502 (0.05284) *	-0.30422 (0.05661) *
β_{33}	$\ln N_t$	0.53792 (0.09305) *	0.55275 (0.09943) *
Dependent	Variable: SR_t		
β_{40}	Constant	26.033 (4.3522) *	26.958 (4.6623) *
β_{41}	$\ln S_{t-1}$	-1.0650 (0.16691) *	-1.1024 (0.17937) *
β_{42}	$\ln Pw_t$	-0.78847 (0.36743) **	- 0.82184 (0.39273) **
β_{43}	$\ln IR_t$	-0.15807 (0.07776)***	-0.19282 (0.0831) **
β_{44}	DS	1.2227 (0.22411) *	1.3609 (0.24172) *

Number in brackets is error

*) **) (***) are 1%, 5%, and 10% significant level respectively.

^{ns)} is non significant

Table A.7.2: Estimated Result of Political Weights

	Consumers	Producers	Government
1969	0.284066	0.374604	0.341331
1970	0.311957	0.343231	0.344812
1971	0.288222	0.370961	0.340817
1972	0.335417	0.315398	0.349186
1973	0.316226	0.33747	0.346304
1974	0.336399	0.316795	0.346806
1975	0.344919	0.30738	0.347702
1976	0.384778	0.256326	0.358896
1977	0.347768	0.306318	0.345914
1978	0.331185	0.326544	0.342271
1979	0.355173	0.301544	0.343283
1980	0.323824	0.334581	0.341595
1981	0.357492	0.300082	0.342427
1982	0.312139	0.345658	0.342203
1983	0.318752	0.339069	0.34218
1984	0.318162	0.339492	0.342346
1985	0.326464	0.330522	0.343014
1986	0.321163	0.335756	0.34308
1987	0.322791	0.335254	0.341954
1988	0.321772	0.336216	0.342011
1989	0.315668	0.343603	0.340729
1990	0.327268	0.328211	0.344521
1991	0.309308	0.348823	0.341869
1992	0.294137	0.363566	0.342298
1993	0.316558	0.342144	0.341298
1994	0.313225	0.343548	0.343227
1995	0.320614	0.336301	0.343085

8. Policy Efficiency in the Sugar Market

8.1 Introduction

This chapter explains policy efficiency as a further interpretation of PPF. Since efficiency is at the equilibrium level, this describes the equilibrium where demand is equal to supply. The Surplus Transformation Curve (STC) which represents the supply side, is explained in section two, and its mathematical models are derived for the case of intervention using producer price, consumer price, and producer and consumer price together. The efficiency meaning of the STC is discussed in section four by introducing the PPF.

8.2 Role of Surplus Transformation Curve

It has been previously explained that policy intervention is judged as a means of redistributing welfare among interest groups. In the case of the sugar market in Indonesia, this intervention has been justified to let the market work so that welfare is transferred to middlemen for doing marketing jobs. The middlemen in this case are the government and licensed traders.

The STC is developed as a measure of policy efficiency in the form of deadweight losses per unit of wealth transferred. Thus STC represents a transfer relationship between the groups.

$$T = T(CS, PS, G) \quad (8.1)$$

This relationship demonstrates the possibility of the policymaker redistributing welfare between interest groups through the policy intervention. Using this relationship, the efficiency of intervention can be quantified. This efficiency is measured as the least deadweight loss per unit of wealth transferred or the marginal rate of transformation. Here, the STC of the Indonesian sugar market is developed.

8.3 Distribution Policy Using Producer and Consumer Prices

8.3.1 The Case of Producer Price

Having modelled the sugar market, the STC is developed here based on the given functional form so that the numerical value can be directly calculated. Implementing producer price, the government is assumed to set producer price below world price, while consumer price is assumed to be the same level as world price. By doing so, government revenue is:

$$G = (P_w - P_p - k_2).Q_p \quad (8.2)$$

and producer surplus is:

$$\begin{aligned} PS &= \int_0^{P_p} S(P).dP \\ &= \frac{1}{\varepsilon + 1} \cdot A \cdot P_p^{\varepsilon+1} \end{aligned} \quad (8.3)$$

where ε is elasticity of supply, and A is other shifting variables in supply model.

In explaining the incidence of wealth transfers, the STC is developed representing transfers from producers to government.

Solving for Pp of equation (8.3) yields

$$Pp = \frac{-(1 + \varepsilon)}{A} PS \sqrt{\frac{1}{\varepsilon + 1}} \quad (8.4)$$

Substituting (8.4) into (8.2) reveals the STC of producer and the government in the form:

$$G = A \cdot Pw - \frac{-(1 + \varepsilon)}{A} PS \sqrt{\frac{1}{\varepsilon + 1}} - k_2 \sqrt{\frac{-(1 + \varepsilon)}{A}} PS \sqrt{\frac{\varepsilon}{\varepsilon + 1}}. \quad (8.6)$$

Using the existing model of sugar market, the STC is depicted in Figure 8.1

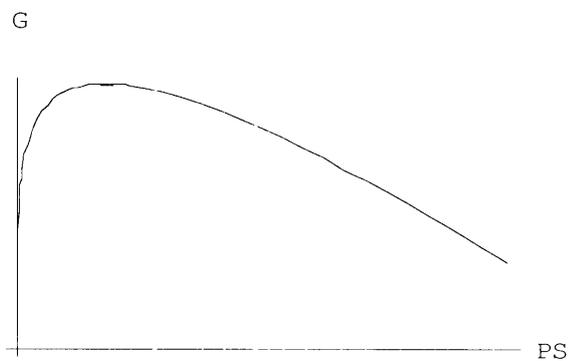


Figure 8.1: STC between Producer and the Government

8.3.2 The Case of Consumer Price

Implementing consumer price, the government is assumed to set consumer price higher than world price, while maintaining producer price at the same level as world price. By doing so, the government revenue is

$$G = (P_c - P_w - k_1 - k_2)Q_c \quad (8.7)$$

and the consumer surplus is:

$$\begin{aligned} CS &= \int_{P_c}^{\alpha} D(P).dP \\ &= \frac{1}{1+\eta} \cdot B \cdot \alpha^{1+\eta} - \frac{1}{1+\eta} B \cdot P_c^{1+\eta} \end{aligned} \quad (8.8)$$

where η is elasticity of demand.

B is other shifting variables in the demand equation.

α is an arbitrary number such that at α , $Q_\alpha - > 0$

Solving equation (8.8) for P_c yields

$$P_c = \left[\alpha^{1+\eta} - \frac{1+\eta}{B} CS \right]^{\frac{1}{1+\eta}} \quad (8.9)$$

Substituting (8.9) into (8.7) obtains the STC for consumers and government.

$$G = \left[\alpha^{1+\eta} - \frac{1+\eta}{B} CS \right]^{\frac{1}{1+\eta}} - P_w - k_1 - k_2 \left[\alpha^{1+\eta} - \frac{1+\eta}{B} CS \right]^{\frac{\eta}{1+\eta}} \quad (8.10)$$

This is graphically depicted in Figure 8.2.

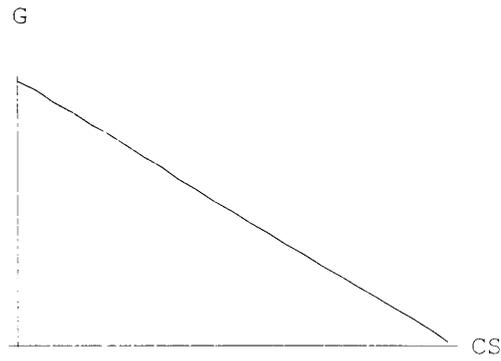


Figure 8.2: STC between Consumers and the Government

8.3.3 Bulog Uses both Producer Price and Consumer Price

In the same way as single policy P_c or P_p , for the case of intervention using P_c and P_p , the STC can also be revealed.

Referring to the welfare measures in Chapter 5, each interest group has the following welfare:

$$\begin{aligned}
 PS &= \int_0^{P_p} S(P).dP \\
 &= \frac{-1}{1+\epsilon} \sqrt{A} P_p^{1+\epsilon} \quad (8.11)
 \end{aligned}$$

$$\begin{aligned}
 CS &= \int_{P_c}^{\alpha} D(P).dP \\
 &= \frac{-1}{1+\eta} \sqrt{B} \alpha^{1+\eta} - \frac{-1}{1+\eta} \sqrt{B} P_c^{1+\eta} \quad (8.12)
 \end{aligned}$$

Government revenue is:

$$G = (D(P_c) - S(P_p))(P_c - P_w - k_1) + S(P_p)(P_c - P_p - k_2) \quad (8.13)$$

Solving for P_p and P_c for equations (8.11) and (8.12) respectively

$$Pp = \frac{-1+\varepsilon}{A} PS \sqrt{\frac{1}{1+\varepsilon}} \quad (8.14)$$

$$Pc = \overline{\alpha}^{1+\eta} - \frac{1+\eta}{B} \sqrt{CS} \sqrt{\frac{1}{1+\eta}} \quad (8.15)$$

Substituting (8.14) and (8.15) into (8.13) to have the STC for the government, producers and consumers all together:

$$G = \overline{B} \cdot \overline{\alpha}^{1+\eta} - \frac{1+\eta}{B} CS \sqrt{\frac{\eta}{1+\eta}} \sqrt{\frac{1}{1+\eta}} - \overline{A} \cdot \frac{-1+\varepsilon}{A} PS \sqrt{\frac{\varepsilon}{1+\varepsilon}} \sqrt{\frac{1}{1+\varepsilon}} \sqrt{\overline{\alpha}^{1+\eta} - \frac{1+\eta}{B} CS \sqrt{\frac{1}{1+\eta}}} - Pw - k_1 \sqrt{\frac{1}{1+\eta}}$$

$$+ \overline{A} \cdot \frac{-1+\varepsilon}{A} PS \sqrt{\frac{\varepsilon}{1+\varepsilon}} \sqrt{\overline{\alpha}^{1+\eta} - \frac{1+\eta}{B} CS \sqrt{\frac{1}{1+\eta}}} - \frac{1+\eta}{B} CS \sqrt{\frac{1}{1+\eta}} - \frac{-1+\varepsilon}{A} PS \sqrt{\frac{1}{1+\varepsilon}} - k_2 \sqrt{\frac{1}{1+\varepsilon}} \quad (8.16)$$

Based on the existing sugar market model explained in Chapter 6 and its estimation, the STC for the government intervention using Pc and Pp is depicted in Figure 8.3.

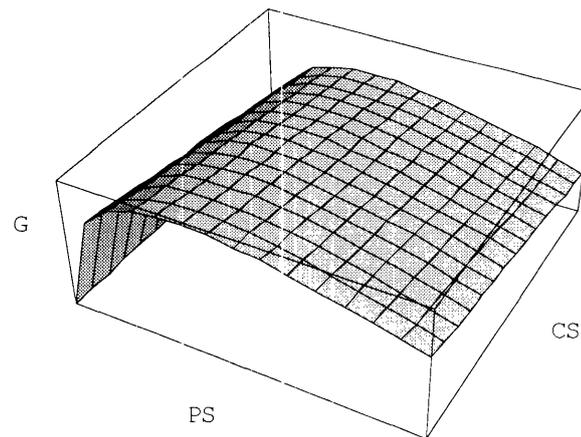


Figure 8.3: STC Generated by P_c and P_p

The STC as depicted by Figure 8.3 shows that there is welfare trade-off between interest groups. Here, movement to the G axis means that the government will gain, and consumers and producers lose, as a result of setting producer price and consumer price. The concavity of the STC is evidence of the existence of deadweight losses in the market due to the policy intervention. These losses cause the quantity transferred from the loser less than the quantity gained by the winner. Here the concavity of the STC is driven by the feasible means of surplus transfer (or the efficient policy instrument).

The efficiency level is determined by the minimum deadweight losses per wealth transfer. Mathematically, it is determined by the slope of the STC. The political economy meaning of this efficiency is the point where maximised PPF is constrained by the STC representing market structure. The subject that will be discussed in the next section.

8.4 Political Economy of Wealth Distribution

The STC only shows the transfer between interest groups due to policy intervention. It does not reveal the reason behind that transfer. In this case, an objective function is required to explain the motivation of such policy. Positively, this is the governing function used by the policymaker to derive the optimum intervention. This study has shown that the governing function is in the form of a PPF as explained in Chapter 5. The weights embodied in the PPF provide an explanation of the government preference when it is implementing a particular policy.

Recall from the previous chapter, the governing function for three interest groups, consumers, producers and government on the PPF is as follows:

$$J = \theta_c CS + \theta_p PS + \theta_g G \quad (8.17)$$

The ideal optimum policy is reached when $\theta_c = \theta_p = \theta_g$, such that there are no deadweight losses in the market. This optimum point is graphically depicted as the point in Figure 8.3 which has a slope of -1.

However, intervention with the government preference may require $\theta_c \neq \theta_p \neq \theta_g$, by which the government is willing to transfer the wealth between interest groups. Thus, preferences in the policymaker objective function have driven the market to be on the optimal point, at which there is co-existence between efficiency and deadweight losses. Should preferences change, the level of the policy instrument will also change.

At the equilibrium level of intervention, the marginal rate of transformation $\frac{dG}{dPS}$ of the STC is equal to the slope of the PPF. This is the marginal rate at which the government is prepared to redistribute welfare between the interest groups.

In this study, the marginal rates of transformation are:

$$\frac{dG}{dPS} = \frac{dG / dPp}{dPS / dPp} \quad (8.18)$$

for the case of intervention on Pp ; and:

$$\frac{dG}{dCS} = \frac{dG / dPc}{dCS / dPc} \quad (8.19)$$

for the case of intervention on Pc .

Producer Price

$$\begin{aligned} \frac{dG}{dPp} &= \frac{d\left(\left(BPc^\eta - APp^\varepsilon\right)\left(Pc - Pw - k_1\right) + \left(APp^\varepsilon\left(Pc - Pp - k_2\right)\right)\right)}{dPp} \\ &= \left(-A\varepsilon Pp^{\varepsilon-1}\right)\left(Pc - Pw - k_1\right) + \left(A\varepsilon Pp^{\varepsilon-1}\left(Pc - Pp - k_2\right)\right) - APp^\varepsilon \\ &= A\varepsilon Pp^{\varepsilon-1}\left(Pw - Pp + k_1 - k_2\right) - APp^\varepsilon \end{aligned} \quad (8.20)$$

$$\begin{aligned} \frac{dPS}{dPp} &= \frac{d\left(\left(\frac{1}{1+\varepsilon}\right)APp^{1+\varepsilon}\right)}{dPp} \\ &= APp^\varepsilon \end{aligned} \quad (8.21)$$

The slope of STC for given Pp

$$\begin{aligned}\frac{dG}{dPS} &= \frac{(A\varepsilon Pp^{\varepsilon-1}(Pw - Pp + k_1 - k_2) - APp^{\varepsilon})}{A.Pp^{\varepsilon}} \\ &= \varepsilon.Pp^{-1}(Pw - Pp + k_1 - k_2) - 1\end{aligned}\quad (8.22)$$

Consumer Price

$$\begin{aligned}\frac{dG}{dPc} &= \frac{d\left(\left(B.Pc^{\eta} - A.Pp^{\varepsilon}\right)(Pc - Pw - k_1) + A.Pp^{\varepsilon}(Pc - Pp - k_2)\right)}{dPc} \\ &= \left(\eta B P c^{\eta-1}(Pc - Pw - k_1) + (B P c^{\eta} - A P p^{\varepsilon})\right) + A P p^{\varepsilon} \\ &= \left((1 + \eta) B . P c^{\eta}\right) - \left(\eta B P c^{\eta-1}(Pw + k_1)\right)\end{aligned}\quad (8.23)$$

$$\begin{aligned}\frac{dCS}{dPc} &= \frac{d\left(\frac{1}{1+\eta} B . \alpha^{1+\eta} - \frac{1}{1+\eta} B . P c^{1+\eta}\right)}{dPc} \\ &= \left(-B P c^{\eta}\right)\end{aligned}\quad (8.24)$$

The slope of STC for given Pc

$$\begin{aligned}\frac{dG}{dCS} &= \frac{\left((1 + \eta) B P c^{\eta}\right) - \left(\eta B . P c^{\eta-1}(Pw + k_1)\right)}{-B . P c^{\eta}} \\ &= -1 - \eta(1 - P_c^{-1}(P_w + k_1))\end{aligned}\quad (8.25)$$

The slopes of the STC are expressed in terms of market parameters. This means that these parameters will determine the efficient level of the policy. In other words, it constrains the use of policy instruments.

The decreasing supply elasticity in equation (8.22) will make the value of that equation close to -1 . In the same manner, decreasing the demand elasticity in equation (8.25) will make the value of that equation close to -1 . These effects mean that the marginal deadweight loss per unit of wealth transferred is reduced. In other words, the social cost of transfer to the government is reduced by less elastic supply or demand.

The slope equations (8.22 and 8.25) also show that the condition of no intervention will not create deadweight losses. By ignoring distribution costs, and given a competitive market, $P_c = P_p = P_w$, the slope of the STC will be -1 .

Given that at equilibrium the slope of the STC is equal to the slope of the PPF, equating (8.22) with the PPF slope of $\left(-\frac{\theta_c}{\theta_i}\right)$ from producer price intervention will result in the optimum point as previously shown in equation (5.14). The same is the case of consumer price, where equating 8.25 and $\left(-\frac{\theta_c}{\theta_i}\right)$ will result in the equilibrium as shown by equation (5.13). While the marginal point in the STC is shown in terms of distribution, the marginal point in PPF is shown in terms of the weight ratio, the government preference. For given political weights (assigned by the policymaker), the optimal level of intervention is shown as equations (5.13) and (5.14), and the marginal redistribution is as shown by equations (8.22) and (8.25).

Referring to the market parameter results, $\eta = -0.3041$ and $\varepsilon = 0.2721$, the slope can be estimated numerically. The results are depicted in Table A.8.1. They are also compared to the ones from the PPF. These show that at equilibrium the derivation from the supply side (STC) is comparable to derivations from the demand side (PPF). Both provide the same values. The fact that at equilibrium the slope of the STC is equal to the slope of PPF it implies that the optimum points can be revealed from either side. Moreover, this empirical result is evidence that the PPF could actually be represented by any function that is tangent to the STC. Given that the market model is right, the political economy parameters can be revealed from this market model. Here the PPF has provided an explanation that government preferences toward interest groups are different. This difference has resulted in an optimal policy in which wealth is transferred, by intervention, to that preferred group at the level explained by the STC. It is clear that the meaning of the political economy of wealth redistribution can only be evaluated with the existence of PPF. This also explains the importance of the efficiency assumption in the PPF. Once the efficiency assumption is dropped, the policy equilibrium cannot be analytically identified.

8.5 Total Redistribution from the Policy

Even though it is efficient, the government policy intervention still results in deadweight losses. These deadweight losses have been one measure to compare the efficiency between policy instruments.

The existence of deadweight losses is not only a measure of policy efficiency, but is also an indication of the social cost of such intervention. Gardner (1987b) states that

the existence of deadweight losses from commodity market intervention implies that the loser should be able to pay the gainers a bribe that exceeds their surplus gains, while the losers are better off paying the bribe than enduring the intervention.

The coexistence between efficiency and deadweight losses suggests that it is useful to investigate the total welfare transfer between the groups. Moreover, the fact that there are some policy alternatives available, which could create different transfers, the calculation of total redistribution is important. It reveals how much one group has lost and the other has gained from policy.

To investigate the total redistribution, it is necessary to calculate finite change in surpluses transferred. Comparing the surpluses at a competitive level and the ones after intervention, the total gains/losses from the policy intervention can be found. Similar to STC analysis, the calculation of total redistribution is based on the functional form of supply and demand developed in Chapter 6.

Producer Surplus change:

$$\Delta PS = \int_{P_p}^{P_w} S(P).dP = \frac{1}{1+\epsilon} A.(P_w^{1+\epsilon} - P_p^{1+\epsilon})$$

Consumer Surplus change:

$$\Delta CS = \int_{P_w}^{P_c} D(P).dP = \frac{1}{1+\eta} B(P_c^{1+\eta} - P_w^{1+\eta})$$

Government revenue change:

$$G = (D(Pc) - S(Pp))(Pc - Pw - k_1) + S(Pp)(Pc - Pp - k_2)$$

$$= (B.Pc^n - A.Pp^\epsilon)(Pc - Pw - k_1) + A.Pp^\epsilon(Pc - Pp - k_2)$$

and the deadweight loss is:

$$DW = \Delta PS + \Delta CS + G$$

where the notations are as previously defined. Using the estimated market parameters from before, the monetary value can be calculated. This value of the transferred welfare for each year is presented in Table A.8.2 in the Appendix of this Chapter.

The government revenue consists of transfers from both consumers and producers. Given that the policymaker puts lower weight on consumers than on producers, the transfer from consumers is larger than from producers.

Under existing policy, the government revenue transferred due to the policy is, on average, Rp. 401.3268 billion per year at a cost to producers and consumers. Such transfer involves a social cost of Rp.189.4892 billion in the form of deadweight losses. Considering the monetary value distributed away from consumers and producers, the trade-off $\left(\frac{\Delta G}{\Delta PS + \Delta CS}\right)$ is 0.6793. It is necessary to note that this trade-off is not the efficiency measure reflected by the marginal redistribution at equilibrium. The

marginal redistribution itself can be examined in a similar manner to that explained in the previous sections.

The analysis of policy efficiency shows that the existing policy is quite efficient, indicated by the values, on average, of 0.96 and 0.94 for producer price and consumer price respectively. However, this does not mean the social cost is only a small portion of the welfare transferred. The calculation of total redistribution provides evidence that almost half of the wealth transferred is wasted.

8.6 Efficiency for Several Policy Options

It has been previously discussed that the government is the only authority which can deliver the policy reform by re-assigning different political weights. This reform might also be done using an alternative policy instrument. Thus, policymakers actually are facing several alternative policies from which they can choose the most efficient mode of transfer.

Given that Bulog acts as single authority in the sugar market, it might employ one of the alternative policy instruments available. One promising instrument to be employed in the sugar market is import control. Though Bulog has a monopoly over imports, it claims that imports are only treated as residuals, to fill the gap due to lack of domestic production. To confirm this claim, the import control measure is compared to the both producer price and consumer price in term of its efficiency. Using the existing market parameters, the results are depicted in Table 8.1.

Comparing import control policy to either producer price or consumer price shows that import control is less efficient (Table 8.1). Thus, import control is less preferable than either producer price or consumer price. If Bulog employs import policy as a means of controlling the domestic market, it will create more deadweight losses. On the basis of social cost, it is reasonable for Bulog to claim that it treats imports as residual.

Table 8.1: Efficiency for Several Different Policies ¹⁾

<i>PPF: 0.32061 CS + 0.3363 PS + 0.3431 G</i>				
Market Parameters		Marginal Rate of Transformation due to:		
η	ϵ	Producer Price	Consumer Price	Import Control
-0.3042	0.2721	-0.98022	-0.9345	-0.8856

8.7 Summary

This chapter has explained the policy efficiency using STC and PPF. A PPF in this study has been interpreted as a function to derive the policy intervention to be at equilibrium level. At the same time, this equilibrium reveals that optimality or efficiency level in the economic market is the same as in the political market. The existence of deadweight losses in this context should be interpreted as policy costs.

This chapter also shows that based on the existing market parameters, it shows the different policy instruments create their own equilibrium. More specifically,

¹⁾ Solution for producer price and consumer price follow those explained in the previous sections. Solution for import control is in the Appendix of this Chapter.

employing producer price or consumer price is less costly than employing import control.

Appendix A.8.1 Results of Intervention Points on STC and PPF

Table A.8.1: Slope of the Intervention Points

	Demand Side (STC)		Supply Side (PPF)	
	DG/dPS	DG/dCS	dG/dPS	dG/dCS
1969	-1.0907	-0.83635	-1.09748	-0.83223
1970	-0.99764	-0.90328	-0.99541	-0.90472
1971	-1.08219	-0.84975	-1.08845	-0.84568
1972	-0.91391	-0.95379	-0.90324	-0.96057
1973	-0.97874	-0.91048	-0.97449	-0.91315
1974	-0.92292	-0.96356	-0.91346	-0.96999
1975	-0.89614	-0.98371	-0.88403	-0.992
1976	-0.74218	-1.05477	-0.71421	-1.07212
1977	-0.89729	-0.99686	-0.88553	-1.00536
1978	-0.9594	-0.96355	-0.95405	-0.96761
1979	-0.89052	-1.02515	-0.87841	-1.03464
1980	-0.98251	-0.94567	-0.97947	-0.94798
1981	-0.88855	-1.03419	-0.87634	-1.04399
1982	-1.0106	-0.91178	-1.0101	-0.91215
1983	-0.99305	-0.92997	-0.99091	-0.93153
1984	-0.99376	-0.92783	-0.99166	-0.92936
1985	-0.9682	-0.94837	-0.96358	-0.95175
1986	-0.98199	-0.93373	-0.97865	-0.93612
1987	-0.98342	-0.94171	-0.98041	-0.94396
1988	-0.98585	-0.93875	-0.98306	-0.94082
1989	-1.00884	-0.92614	-1.00843	-0.92645
1990	-0.95844	-0.94587	-0.95266	-0.94992
1991	-1.01992	-0.90506	-1.02034	-0.90476
1992	-1.05837	-0.86168	-1.06213	-0.8593
1993	-1.00348	-0.92676	-1.00248	-0.92751
1994	-1.0024	-0.91158	-1.00094	-0.91259
1995	-0.98343	-0.93222	-0.98023	-0.9345

Statistical test using t-statistics shows that there is no difference between slope at demand side and at supply side.

Appendix A.8.2 the Total Value of Welfare Transferred

Table A.8.2: Surpluses transferred (billion rupiah)

	Producer Surplus	Consumer Surplus	Government Revenue	Deadweight Losses
1970	87.6183	-517.156	296.685	-132.852
1971	-4.1829	-306.92	246.307	-94.7965
1972	161.187	-604.253	262.721	-180.345
1973	-277.645	-224.469	374.561	-127.553
1974	-75.1666	-403.567	353.35	-125.384
1975	-157.448	-177.907	232.317	-103.038
1976	-248.256	-119.247	252.226	-152.277
1977	-470.343	127.868	183.292	-159.183
1978	-219.706	-81.5329	183.988	-117.251
1979	-112.792	-222.83	217.088	-118.535
1980	-222.073	15.6904	69.2535	-137.129
1981	-53.9497	-342.357	263.903	-132.404
1982	-328.107	67.2376	73.6068	-187.262
1983	-15.0224	-665.292	480.881	-199.433
1984	-54.4783	-517.678	397.699	-174.457
1985	-61.7626	-558.023	431.603	-188.182
1986	-143.472	-447.538	400.955	-190.055
1987	-126.206	-551.768	471.428	-206.546
1988	-114.975	-519.28	428.159	-206.096
1989	-92.6288	-564.716	447.573	-209.772
1990	-16.403	-736.841	509.017	-244.227
1991	-249.838	-621.169	607.491	-263.516
1992	18.2769	-1017.46	705.358	-293.823
1993	177.962	-1700.97	1094.86	-428.151
1994	39.5021	-864.571	625.634	-278.439
1995	57.7187	-1079.84	824.541	-313.013

Appendix A.8.3 Solution of Marginal Rate of Transformation for Import Control

The functional form of demand and supply, and definition of notations are the same as those in section 8.3.

$$PS = \int_0^{P_d} S(P).dP$$

$$A \frac{1}{1+\varepsilon} P_d^{1+\varepsilon}$$

$$CS = \int_{P_d}^{\alpha} D(P).dP$$

$$B \frac{1}{1+\eta} (\alpha^{1+\eta} - P_d^{1+\eta})$$

$$G = (P_d - P_w - k)(D(P) - S(P))$$

$$(P_d - P_w - k)(B.P_d^\eta - A.P_d^\varepsilon)$$

$$\frac{fG}{fP_d} = \frac{f((P_d - P_w - k)(B.P_d^\eta - A.P_d^\varepsilon))}{fP_d}$$

$$= (B.P_d^\eta - A.P_d^\varepsilon) + (P_d - P_w - k)(B.\eta.P_d^{\eta-1} - A.\varepsilon.P_d^{\varepsilon-1})$$

$$\frac{f(PS + CS)}{fP_d} = \frac{f\left(A \cdot \frac{1}{\varepsilon+1} P_d^{1+\varepsilon} + B \cdot \frac{1}{1+\eta} (\alpha^{1+\eta} - P_d^{1+\eta})\right)}{fP_d}$$

$$= A \cdot P_d^\varepsilon - B \cdot P_d^\eta$$

$$\frac{fG}{f(PS + CS)} = \frac{(B \cdot P_d^\eta - A \cdot P_d^\varepsilon) + (P_d - P_w - k)(B \cdot \eta \cdot P_d^{\eta-1} - A \cdot \varepsilon \cdot P_d^{\varepsilon-1})}{(A \cdot P_d^\varepsilon - B \cdot P_d^\eta)}$$

$$= -1 + \frac{(P_d - P_w - k)(B \cdot \eta \cdot P_d^{\eta-1} - A \cdot \varepsilon \cdot P_d^{\varepsilon-1})}{(A \cdot P_d^\varepsilon - B \cdot P_d^\eta)}$$

$\frac{fG}{f(PS+CS)}$ measures the efficiency level of the import control policy.

9. Interpretation of PPF in the Indonesian Sugar Market

9.1 Introduction

This chapter discusses the empirical results of PPF estimation, especially the meaning of political weights. The empirical results are shown to be consistent with the framework developed in Chapters 5 and 6, then their meaning is interpreted in terms of the theory. Some shortcomings are discussed and the possible remedies presented.

9.2 Meaning of PPF in the Sugar Market

Political weights have been revealed from the PPF developed in Chapter 5.

According to this model, policymakers assign the weights to different interest groups considering their well-being as influenced by the policy. The government needs support, so the policymaker sets policy favouring the most influential groups. This behaviour is formally equivalent to maximising preferences described by a PPF.

It is important to recall that political weights in this study are assumed to be exogenously determined and, at the same time, the political influence determines the level of policy employed. Policymakers weight each group with its own preferences. The reason that the policymakers give different weight to producers and consumers is not given by the PPF structure. This may be because of interest group pressure activities (e.g. Becker 1983, Gardner 1987a): because of interaction among politicians

and voters (de Gorter and Tsur 1991) or because of other political process and agendas.

Comparing the weights among the interest groups, the relative importance of consumers falls over the period of study. The evidence shows that, on average, consumers have the lowest weight reflecting that they are the weakest group. The PPF weights show that on average $\theta_g > \theta_p > \theta_c$, which indicates that there is transfer from consumers to producers, and from producers to government. There is a net transfer from producers and consumers to the government. From the government's point of view, the government taxes consumers more than it does producers.

Considering the quantitative results of the PPF estimate, it is important to investigate the policy from early in the period. From the beginning the Indonesian government has given special focus to producers. The reason for this may not be simply a motivation to support the smallholder farmers who are economically weak and politically fragmented. It has come from the fact that producers, especially the mills, have dominated the sugar industry. In the colonial era, producers were private mills, mostly owned by the Dutch, which rented land from indigenous farmers. The industry structure caused the colonial government to give more incentives to the mills. Inevitably, industry success became a main source of income for the government.

The existence of the industry in the form of state mills is an important component in explaining why producers continue to receive support from the government. The focus on regulating industry shortly after independence until the mid 1970s had also been directed to providing a regulatory environment where support to the producers

could be sustained. Two major groups on the producers' side, the mills and farmers, have been advantaged by this sustained support. Though farmers are not a strong and effective group for lobbying, this is not the case for the state mills. The state mills have been able to exert considerable political pressure largely because of the importance of the industry to the government. From the mills' side, a coalition in the form of solid and strong organisation has been inherited from the colonial era. For example, NIVAS represented mills' interest in gaining economic profit. Though its existence has vanished, its influence has not. The grouping of some estate mills in the form of the PNP is similar to the form of NIVAS. The PNP represents estate mills' interests in doing trade as well as lobbying the government.

NIVAS, which is often viewed as the marketing board, similar to the parastatal body in recent times, was actually a private marketing body. Thus, Bulog as a government marketing board is somewhat different to NIVAS. PNP and its joint marketing board in the early period of the policy were much more similar to NIVAS. Though initiated by the government, the focus of the agenda has been on the interests of the mills as producers. Indeed, the government has strong reasons for the industry, and the mills, to be sustained. The mills inevitably act as the engine of the industry, the only party responsible for processing sugar. The destruction of the mills in the early period of independence was a disastrous strategy, though it was politically acceptable in the revolutionary times. As a consequence the only significant relevant policy at the time was the rehabilitation of the mills for Indonesia to regain the status of a sugar-producing country. This illustrates the importance of producers from the government view.

While the strong support of producers has been maintained until recent times, the reasons for this may not have been the same throughout the period. The focus on production regulation with special emphasis on increasing production in the early period of the policy was an attempt to obtain a national economic gain by regaining exporter status and fulfilling the objective of satisfying rising domestic consumption. While these are solely economic reasons, this was not the case for the policy reform of 1975. The ISCP of 1975 was mainly to restructure the industry. The reform was introduced in the spirit of supporting farmers to achieve the status of true producers. It is from those who previously only rented out their lands to mills becoming the party who cultivated sugarcane. This is clear that although the reform was initiated by the finding that the industry was not efficient, thus providing an economic reason, there was a political agenda in that reform. Politically, the government was moving away from the mills to the farmers. However, the government has not totally abandoned the mills as an important component of the industry. Support is given to both farmers and mills in the form of the producers' price guarantee, modifying the previous policy which treated the mills as the main producers. Facing the balance between consumers' and producers' interests, the 1975 reform can be interpreted as a move to give more weight to producers. In this case, consumers have been disadvantaged by policy, while producers, in this case farmers, are lent more support.

With the objective of achieving balance between interest groups in policy decision making, the policymaker has enacted a policy which advantages producers and the government itself at a cost to consumers. It has been previously predicted that consumers as a fragmented group would receive less support than other interest

groups. In the case of sugar, the reason why the policymakers assign low weights to the consumer may not only be because it is a large and fragmented group and thus politically weak. The fact that sugar occupies only a small amount of consumer expenditure could be one consideration in assigning weight. In other words, the high price of sugar may not be as harmful to consumers as that of rice. Thus, the importance of sugar in consumers' expenditure drives the consumers' tolerance of high prices and reduced in the consumer surplus.

The results of the estimated PPF show that the political weights change over time, a result that may be questionable. However, a change in the ratio of weights $(\theta_p/\theta_c, \theta_c/\theta_p)$ has been interpreted to mean that policy preferences have changed over time. To be more specific, the government preference toward consumers and producers has changed throughout the period. Considering that the government has employed the same policy instrument throughout, this preference change is an indication that the government needs to review its intervention level from time to time. Apart from reviewing its intervention level, the government has also launched some policy reforms in the form of changed institutional arrangements. It is expected that the preferences between groups are consistent with such reforms.

The weight assigned to the government is more or less stable throughout the period compared to the weights for producers and consumers. Considering the political weights are exogenous, this may reflect the stability of the government over the sample period. This may also suggest that the PPF is a stable representation of the government decision making process. While Indonesia had arguably a strong government, it is also evident that the government had initiated every aspect of the

policy from the beginning of the industry in the independence era. Starting with nationalisation of private mills shortly after independence, the government launched several policies to improve industry performance. Facing two other interest groups, every policy was more or less supportive of one group at the expense of the other, while maintaining government in a safe position.

The government action balancing interest groups while at the same time having its own interest in the market can be an important illustration of the role of government. We may not be able to classify the government's position as being as extreme as altruistic or predatory. It will be clearer later in the discussion that in the case of the sugar market in Indonesia, the government has been between these two extreme roles. To some extent, the PPF framework only indicates the required balancing influence on the decision-making process. The role of the government in that decision making process may need to be explained separately. Here in this study the government has been one of the interest groups in PPF. This reflects the Indonesian government interest that, in addition to the objective of supporting producers and protecting consumers, it also has its own agenda, explained by Amang (1994) as gaining revenue from the policy.

These findings of weights are in line with the standard results of the theory of competition among interest groups:

- Interest groups of producers are small compared to consumers. The finding, that producers' political influence is higher than consumers' is in accordance with Olson's (1965) hypothesis that small interest groups are more effective in obtaining political favours than large groups.

- The government, together with private traders, has stronger political pressure than others because they have stronger influence-channels. The result that has been shown by Becker (1983).

9.3 Stability of Preferences

A question arises about the changing value of the PPF weights such as occurs in this study. It was previously expected that the policymakers' preferences would be stable which means the values are unchanged over time. Given that the market parameters are the same, and the policy instrument implemented is not changing, the preference, represented by political weights, must be stable.

Most previous studies on the PPF assume the linear specification of the market equations, implying that market parameters are changing over time. Thus, given the PPF is estimated as a residual, the weights will also be changing over time, following a change in market parameters.

It must be noted, however, that the government preferences may not remain the same all the time. The policy instrument implemented may be the same. However the level of intervention can be different over time. The subject of this study may be a very good example. Sugar policy in Indonesia has used price as an intervention instrument over time. Since the instrument level is modified annually, politically it should be interpreted that the government needs to review the levels of transfer from time to time, which has been done by modifying the instrument setting and, presumably reviewing the weights at the same time. This shows that the government is willing to continuously evaluate the acceptance level of transfers between the groups. However,

there are some cases when the government has substantially modified the policy. For example, the introduction of the ISCP as mentioned before. In this study, the changing weights, as an indication of policy review, are reflected by the PPF, while the policy change, which also influences wealth transfer, is best described by the STC. Though both of them determine the level of transfer, in terms of policy reform, the meaning can be different.

The review of policy related to the assigned weights, as mentioned in the previous section, shows how the government has been balancing producers and consumers with the consequence that supporting one group will result in a cost to others. The change can even be quite substantial as in the case of the introduction of the Intensified Smallholder Cane policy in 1975. This significantly improved producers' wealth.

The case of the early 1990s when there was no change in producer price suggests that the government considered the level of revenue to producers was at an acceptable level. However, it does not mean that there was no change in the producer weight. The fact that the political weights assigned to the producer were changing during this period must be interpreted carefully. However, the changing weight might be an indication of uncertainty about the PPF. The policymakers can know the direction of transfer but they may not be sure that the welfare changes they generate will have the desired political results. Since how welfare changes are translated into interest group activity by the political process is beyond the scope of the PPF framework, this phenomenon might be ignored. It is also important to note that the way the policymakers assign weights depends on the importance of other interest groups. This means the value of the weight for each group is only relative. The fact that

consumers' price is fluctuating during the same period implies that the relative value of the weight assigned to consumers is changing which also means relative values assigned to producers is changing.

9.4 Effects of Market Structure

The model has shown that the estimated political weights are actually the equilibrium point where the political market (PPF) meets the economic market (STC). Thus, the weights might be estimated from either side. While the economic market is determined by the instrument employed, the political market is mostly determined by assigned weights given the prevailing market parameters. The government intervenes in the commodity market by employing a particular policy instrument, thus creating a specific market structure. The question arises about how the policymaker sets the policy given the existing market parameters and their changes.

Referring to Chapter 8, Tables 9.1 and 9.2 show that if the political weights remain the same, changing market parameters will not change the efficiency of the policy. The change in market parameters will determine the concavity of the STC, hence affecting the total surplus transfer between the interest groups. However, in the sense that change in the demand side will be responded to by the policymakers, the same preference will force the equilibrium back to the previous level. In other words, the same existing policy and preferences will not provide any change in efficiency. In that case, the policymakers would only modify the (optimum) level of policy instruments.

Table 9.1: Effect of Market Parameters on Efficiency

PPF: $J = 0.32061 CS + 0.3363 PS + 0.3431 G$			
η	ϵ	Marginal Rate of Transformation Due to	
		Producer Price	Consumer Price
-0.3042	0.25	-0.98022	-0.9345
-0.3042	0.2721	-0.98022	-0.9345
-0.3042	0.3	-0.98022	-0.9345
-0.27	0.2721	-0.98022	-0.9345
-0.3042	0.2721	-0.98022	-0.9345
-0.33	0.2721	-0.98022	-0.9345

However, different use of political weights will change the policy efficiency. Here, the new weights have created a new equilibrium. This is further confirmation that sustainable policy reform will only occur when political weights are changed. Although policy reform is only meaningful if there is a willingness to change the political weights, this reform might also be made by regulating the policy, employing different policy instruments, as shown in Chapter 8.

Table 9.2: Effect of Different Political Weights on Efficiency

η	ϵ	Marginal Rate of Transformation Due to:	
		Producer Price	Consumer Price
PPF: $0.34 CS + 0.3 PS + 0.36 G$			
-0.3042	0.2721	-0.8333	-0.9667
PPF: $0.315 CS + 0.34 PS + 0.345 G$			
0.3042	0.2721	0.9855	0.91304

9.5 PPF and the Meaning of Policy Reform

Theoretically, the PPF is tied directly to the meaning of policy reform. Since the PPF is a simplification of the more complex structure of the political system, the meaning of policy reform must reflect the changing of political weights on interest groups in the PPF (Rausser and Foster, 1990). The reform implies that there is a change in the PPF in the form that policymakers assign different values or preferences to interest groups. Theoretically, it is the change in political economic equilibrium reflecting the efficiency level of the policy. If the preference remains the same, so does the efficiency level of the policy.

It might be argued that reform could occur if the total redistribution between the groups is changed, the level of which is affected by the market parameters. Thus, it will be interpreted as STC changes. However, the reform involves political willingness. It is not only a matter of distribution of welfare but involves the way welfare is distributed.

Figure 9.1 illustrates how different elasticities of supply affect the shape of STC as previously shown in Figure 8.1. This shows that different elasticities will create different transfers between the groups. However, given the policymaker does not change its preferences, the PPF will drive the market to the same equilibrium point. Thus, the total redistribution may change and the efficiency still remains the same. This has been numerically shown in the previous section.

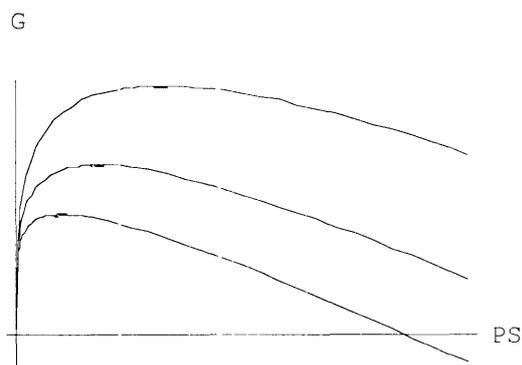


Figure 9.1: Effect of Different Elasticities on STCs

However, market parameters also reflect the power of both consumers and producers as explained in Chapter 5. Given that the policymakers assign the weight based on their understanding of power of interest groups, it is expected that the weights will follow the change in market parameters. This means the parameters will influence the level of policy outcome. In this study the market parameters have been estimated to be the same during the period of study. Thus the change in political weights must be found from other factors. In other words, there may be other factors, apart from market parameters, which drive policymakers to change the policy instrument and its level.

While it is theoretically assumed that the policymakers will choose the least cost mode of transfer, the chosen alternative instruments must be ones that reduce social costs of redistribution. However, there is no guarantee that the available alternative policies will always be more efficient. In other words, there is a possibility that the policymakers still employ the less efficient policy. Magee, Brock and Young. (1989) and McLaren (1992) show that there is a problem of instrument obfuscation. If

consumers lack the incentive to be informed on a particular issue, which means they are ignorant, then policymakers might hide their losses when a redistribution policy is implemented which benefits producers. Though this can be interpreted as political gain, it is also a political loss because it allows less wealth to be transferred so that there is less political support from the gainers. This problem shows that the policy instrument selection should also be considered in explaining the policy reform process. Thus it provides an example where market parameters are not the only determinant in the policy setting.

Two important sugar policy changes can serve as clear examples of the changing weights, a phenomenon that may be related to the policy reform. The first change was in 1971 when the government assigned Bulog control over the sugar market. The second reform was in 1975 when the government introduced the Intensified Smallholder Cane Program (ISCP) as has been discussed.

The 1971 reform occurred following long disruptions in sugar marketing. This reform was expected to be mostly in favour of consumers by providing them with a more affordable price. The reform was extended in 1981 with a further objective of stabilising consumer price. These reforms were in fact launched through institutional arrangements.

The ISCP is believed to have been the most substantial and influential reform in the sugar industry in Indonesia. Unlike the first reform, this 1975 reform was aimed at the producer side by giving farmers more choice in producing their own sugarcane. This

has been viewed as a significant gain for farmers over other interest groups in the sugar industry.

The reform of 1975 was officially initiated by an economic reason, i.e. inefficiency in the industry. But it actually had a political agenda, to support smallholder farmers. The inefficiency argument was an old issue stemming from the beginning of the industry. The old mills inherited from the colonial era were judged to be too expensive to be maintained, a fact that had been highlighted several times. Some special programs or policies at that time in the form of 'mill rehabilitation' or 'accelerated industry' were evidence of the existence of the economic problem in the mills. It was only because the government had no choice except to extend the life of old mills while planning to establish new ones, that the state mills were still operated until recent times. The industry continuation also provides further evidence of the strong influence of an interest group behind the sugar industry, a group of state mills. However, that influence had been dismantled or at least significantly reduced by the 1975 reform of the ISCP. Despite the fact that the smallholder farmers are actually not a strong group, they have gained from the policy decision. Assuming that farmers are only a weak group, this decision shows that the role of the Indonesian government, as the only authority, is quite important in driving policy.

However, although farmers may be a weak and fragmented group, they do have some influence on the policy process. At the beginning of the 1970s the pressure for reform intensified as the national production of sugar was getting lower. By that time, farmers were becoming increasingly hostile to a policy that was seen as being disadvantageous to them. Several events occurred during that period which showed

that reform was possible. The clearest example is that the farmers frequently provided their less fertile lands to the mills (Mubyarto 1977, Soetrisno 1984) which contributed to decreasing sugar production.

These reforms illustrate that the stability of the PPF over time does not mean that weights assigned to interest groups are unchanged. They also show that the reform can be achieved by assigning different weights without any change in policy instrument, and in a situation where the market parameters are unchanging.

Though the weights in this study are assumed to be exogenous, since the policymakers are the only authority to determine the form of the policy and its level, the above reforms provide evidence that, to some extent, conflicting interests between the groups are behind the particular policy to be launched. This phenomenon seems difficult to ignore. Though the lobbying between the groups does not occur directly in the political arena, the influence is still an important consideration in launching a particular policy. Indeed, it can be argued that the policy process is driven by conflict of interest which is then regulated by the political process. While, in the short run, the political process is the main determinant, economic forces can play a critical role in the long run. Thus, to better understand the reform, it is necessary to identify the institutional arrangements and interest groups involved in the policy process as well as understanding the role that each group plays.

Although no attempts are made in the present study to describe in detail how economic interests are organised and public officials (politicians and government

agencies) are influenced, the role of conflict of interest appears to be important, calling for a detailed analysis of the policy process.

9.6 Role of the Government

The government has an interest in the sugar industry, but at the same time provides support to other weak groups, showing that it may have two different motives. The PPF framework may only explain part of the motives. That the government has its own interest in the industry, and is taxing the market in its policy decisions, can be assumed from the public choice paradigms which show that government as a public body is failing to do its job. On the other hand, the policymakers may function as purely rational actors embodying notions of altruism. The possibility is that the government is positioning itself between an altruistic government and a predatory one, and examination of these two roles in relation to the sugar market can provide important insights into the sugar industry. That is, whether the government legislation of the sugar policy is for the good of the nation or for the good of special interests.

This examination of the role of the government leads to the investigation of government constituents. Returning to the prominent players on the government side, it is quite evident that there appear to be both public choice and rational actors at work. The structure of the producer price and consumer price, which include tax and management fees, is evidence of self-interest at work. This is represented by the Ministry of Finance, which announces the policy settings and acts as government treasurer, and Bulog, which controls the market and charging of fees. For the public good the government has introduced assistance to the industry in the form of research and development funds. The latter policy is inevitably aimed at improving the well-

being of the industry, and indirectly of the nation as a whole. However, at the same time, this assistance to the industry is likely to hurt other parties. Since all the marketing costs and industry assistance is included in the price structure, it is most likely that the only party to bear the industry cost is the consumers.

The description of the policy process may only highlight the limitation of the PPF in providing an explanation of the policy. More specifically, the dependencies between several different parties in the process mean that the estimation of the PPF is difficult to interpret. Since there is no explanation of the source of the policy outcome, understanding the interaction between several interest parties may be beyond the interpretation using the PPF. Instead, this study has viewed government, and in this case Bulog, as a single authority in driving policy.

For the case of Indonesia, it is likely that government acted as an unchallenged single authority during the period of study. It can be traced from the policy record where all the reforms have been initiated by the government. It is worthwhile to illustrate the recent development in Indonesia political economy where, among others, demand for sugar market deregulation is heavier following the currency crisis. It might be less convincing to relate the currency crisis to structural reform in the real sector. However, as widely argued, the proximate cause of the currency crisis was a sudden loss of confidence in the rupiah on the part of investors (McLeod 1997), and even loss of confidence in government itself (Soesastro and Basri 1998). Thus, as argued later by Soesastro and Basri (1998), structural reform need to be addressed because only then can confidence be restored. This illustrate how the role and power of the government in driving the policy.

9.7 Summary

This chapter has interpreted the meaning of the weights revealed from the Indonesian sugar market. At the same time, the direction of the changing weights has also been discussed. Though the PPF provides an explanation of the policy reform in the form of changing equilibrium, it needs some additional framework to explain the dynamics of conflicting interests between the groups.

10. Summary, Conclusion, and Policy Implications

10.1 Introduction

This chapter aims to summarise the study and to derive conclusions from the analysis undertaken. It also presents policy implications which are derived from the theory and its empirical results. A general review of the study is presented first, followed by description of the features of the modeling process applied in this study. The general contribution of the study is derived from the results in the light of the review of previous studies. This is used to make some points about policy implications. Potential areas for further research are considered based on the examination of the limitations of this study. Finally, concluding remarks are presented in the last section.

10.2 Summary and Conclusions from the Study

10.2.1 General Features of the Modelling Process

The research problem in the study was introduced in Chapter 1. More explanation of the setting of Indonesian sugar policy was presented in Chapters 2 and 3. The characteristics and constituents of some interest groups involved in the sugar industry provide the political and economic background of sugar policy which was reviewed in Chapter 3. The review of policy and its settings provides a basis from which a theoretical framework is developed. The discussion of the background suggested that the government's role dominated the sugar market over the years; and it is likely that there was self-interest in that involvement. From this perspective the previous studies

were reviewed to provide a basis for the development of a framework for policy in the sugar market.

The objective of developing a political economy framework for Indonesia's sugar market was achieved in Chapter 5 and 6. The model used the PPF framework to represent decision making in the sugar policy. To the extent that the PPF is a representation of the political market, the PPF framework was merged with the economic market in Chapter 6 to have a political economic model as a system.

10.2.2 Empirical Application of the Study

With the empirical application the specific objectives were to explain the origin of the Indonesian sugar policy and to investigate how the power of various interest groups influences policy outcomes. To achieve these objectives, the PPF was implemented and interpreted using economic data covering the period of 1969-1995. The results were investigated in terms of demand side (PPF) as well as supply side (STC). This was to confirm that the equilibrium policy outcome is optimal both politically and economically.

Since the framework assumes that the policy is efficient, and thus it is optimal, the objective was to find the level of efficiency. The analysis indicates that the efficiency was quite high; on average it was 0.9 during the period of study. This confirms that the sugar policy was implemented for redistribution purposes between interest groups and that redistribution incurred deadweight losses. More specifically, based on the finding that wealth is transferred to the government, the sugar policy was aimed at redistributing the revenue to government.

Based on the three interest groups –consumers, producers, and government- involved in the sugar industry, it was revealed that policymakers placed the highest weight on the government, followed by producers and then consumers. Thus, the policy goals to support producers and to protect consumers were overshadowed by self-interested government getting revenue from the policy. In other words, the policy goal was to achieve the politically optimum level of prices for producers and consumers, and at the same time to take revenue from that price setting. While the self-sufficiency measure has been a long term agenda, it is reasonable to find, from that policy setting, why the policymakers made efforts to transfer the cost of price policy to consumers in the form of a high consumer price.

Implicit in the objective of explaining the origin of the policy is also a measure to trace whether the existing policy is most efficient compared to other alternative policies available. Assuming that the policymakers always try to seek the most efficient instrument in redistributing income, it is confirmed from the study that producer price and consumer price are more efficient compared to import controls, the most promising alternative policy.

The objective of investigating the power of interest groups is to further explain the causes of policy. To the extent that political weight is exogenous this objective cannot be fully achieved. Implicit in the PPF framework is that the policy is designed by considering the power of interest groups. Hence the policy outcome is the result of bargaining between interest groups, or more specifically, between policymaker and

interest groups. However, power considerations in this study only means that the policymakers assign weights based on expected power of respective groups.

10.2.3 Relevance of the Study

An important note should be placed on the relevance of this study to the Indonesian sugar market. The study has been carried out using economic data covering the period of 1969-1995, during which the government in power was relatively stable. It was in that period that Bulog grew and its role came to be considered important. This study applies to this period.

However, recent developments in the Indonesian economy and politics may warrant considerable thought on the role of Bulog and especially on government policy in the sugar market. As explained in Chapter 1, since the currency crisis some structural adjustments in the real sector of the economy have been underway. Under pressure from external sources, Indonesia may have to open its markets for some protected commodities and to eliminate monopoly policy for some of these commodities, including sugar.

The power of Bulog has been significantly reduced. Its control on the sugar market has continuously been reduced. Starting in February 1998 Bulog has relaxed its import controls, giving other producers limited power to import raw sugar. Within months, it announced the opening of the domestic market by cancelling the procurement of sugar from the farmers. This new arrangement allows farmers to sell their sugar on the free market at more competitive prices. Finally, this was followed by the announcement that Bulog will totally abandon its import monopoly.

A further move has also been made on the institutional arrangements. In June 1998, the President instructed the Minister of Trade and Industry to supervise the Bulog operation. This instruction has reduced the power of Bulog which was previously a non-ministerial institution directly under the President; now it is supervised at the ministerial level. At the end of August 1988, the post of Head of Bulog has been given to the Minister of Trade and Industry, arousing speculation that Bulog will be merged with that Ministry. One thing is clear: following structural adjustment, institutional re-arrangement is also underway. The direction of the reform is still unpredictable and it is beyond the scope of the present study. The important development relevant to this study is that, contrary to the evidence during the period of study, the government is moving to a less interventionist policy in the sugar market. This will be a fruitful area for further studies, as will be explained in the following section.

10.3 Policy Implications

The important policy implication derived from the study is that the Indonesian sugar policy is biased away from one group (consumers) leading to a wealth transfer in favour of other groups. To the extent that the government considers several interest groups involved in the sugar market, some policy implications can be suggested:

A reasonable price support policy in favour of producers is expected to be enforced until a shift in the cost to the consumers begins to compel sugar policymakers to perceive the increasing political effort of both groups to influence sugar policy.

The objective of self-sufficiency set by the government seems to be overshadowed by government self-interest in the sugar market. If self-sufficiency could be achieved by increasing domestic production, incentives have been dampened by assigning producers less weight than the government itself. Eliminating dependency on domestic production may be a better solution suggested by this study, thus following trend self-sufficiency. In order to follow a trend self-sufficiency measure, the government may consider importing a reasonable amount of sugar to alleviate the rising cost burden to the consumer but at the same time not impairing price incentives for farmers. These sugar imports could provide additional controls over domestic production, while at the same time, accommodating political pressure from both producers and consumers.

Indeed, opening to the international market was an important issue at the beginning of the 1990s. First, it follows the spirit of the free trade agreement; and second, it is suggested in the face of lower world prices. However, if the Indonesian sugar economy has to be liberalised towards free trade, it should be accompanied by a politically acceptable policy to reduce political complaints from producers.

10.4 General Contribution

Two main things have characterised the sugar industry for a long time; they are the existence of government involvement and inefficiency in the industry. The issue between the objective of supporting producers and protecting consumers has also been the subject of long discussion. While inefficiency, along with its remedies, has been addressed in economic terms, efforts have not been made to answer why the government has such a great involvement in the industry. This study has made an effort to interpret and explain the sugar industry problems in different way, offering a

political view on the policy outcome. Thus, empirically it is a new approach to study of the sugar market in Indonesia.

On the theoretical side, there have been many studies about the political economy of agricultural policy, ones which use the PPF approach. However, this study has followed some different approaches to the solution of the PPF. Firstly, efforts have been made to solve the equilibrium in the political market and economic market at the same time. Though this did not give satisfactory results, this effort should be continued with further research. The interpretation that the policymakers supply policies in response to demand from interest groups means that the equilibrium must be reached at the same time in both markets. However, it warrants considerable thought on the interpretation of political weights and the use of data. As has been noted before, PPF is a simplification of a more complex political structure. In turn, the structure (the form of PPF), is influenced by political variables, for which the data is unobservable. Thus, as argued by von Cramon-Taubadel (1997), if the political structure is not constant over time, it is not reasonable to treat time series data as a series of observations on one function. Thus, the change in political weights over time may reflect the dynamic nature of the policy process where the policy outcome reflects the needs of policymakers to modify the level of policy instrument over time as political and economic circumstance change.

The other contribution concerns how the PPF result is interpreted. Government policy in this study can be classified as self-willed, the term used by Bhagwati (1989). While the Clearing House government has interpreted the STC without considering the existence of the PPF, the self-willed government requires the

existence of the PPF to interpret the policy outcome. On understanding that the objective of the studies is to find the optimal policy outcome, there is no difference between both approaches as they will come to the same point. However, to extend the objective, the meaning of policy reform must be tied to the political weight assigned to each interest group. In other words, the existence of the PPF is an essential requirement on that matter and this study has emphasised that policy reform must be based on the political market, not the economic market. Though not the first of its kind, given previous studies (Gardner 1983, 1987b; Rausser 1982), but this study has stressed, and made a formal approach on the role of the PPF in explaining policy reform.

10.5 Limitations of the Study

There are problems inherent in the PPF framework, so that the results should be interpreted with caution.

The PPF framework is a static concept, reflecting how policy is designed. The policy process itself is difficult to interpret as a static concept, since it is actually a dynamic phenomenon and comprises various complementary and conflicting legislative components. The dynamic nature also means that past policy outcomes and experiences are important ingredients for existing policy. Some of these elements have prevented fundamental reforms of the Indonesian sugar policy.

On the PPF application, this study classifies interest groups in a highly aggregated manner, as consumers, producers, and government. This grouping is made on the basis of the historical background of policy where government has been concerned with two interest groups, consumers and producers, over the years. The other two

interest groups, the millers and the traders, have been aggregated into their respective groups. While the millers are part of the producers, the traders are on the government side. This is in line with how the government considers interest groups in its policy decision making. However, this classification may be too general, and prevent the study from revealing more conflicting interests within the policy decision making.

10.6 Areas for Further Research

There are three important matters which have not been fully explored. They are: the endogenous nature of the political weights, the dynamic behaviour of the policy process, and the stochastic nature of the political weights.

Inclusion of the power of interest groups in the policy process means that the policy is an outcome of a lobbying or bargaining process between interest groups. In the PPF, the analogy has been made in which policies are supplied by the political system in response to demands from economic interests. However it does not tell anything about the process underlying supply or how the policy has been made. Political data are still difficult to find for Indonesia, and understanding the political process is heavily dependent on observed economic data.

In regard to the above problem, it is important to consider the level of political competition at which data are observable. It is reasonable to assume that increasing political competition will reduce the autonomy of government in the decision making process thus limiting government in assigning political weights. A recent political development in Indonesia could be one example where the power of Bulog has been reduced in the situation of greater demand for political openness. This is a potential area for further research.

To some extent, the PPF is a static framework with the simplicity of an optimisation problem. It eliminates the underlying complex political process. The dynamics of agricultural policy adjustments are dependent upon the conditions during the political bargaining process. This is related to the problem of endogenous political weights. While the PPF reveals how the power of interest groups influences the policy outcome, this framework could be advanced to capture the dynamics of the political process. A possible candidate in this approach is game theory. The PPF game model has interpreted the political weights as the results of a bargaining process. This study was pioneered by Zusman (1976) but has received little attention to date.

Studies on political weights are mainly deterministic and the stochastic nature of the weights has been swept aside. The work by von Cramon-Taubadel (1992), which tries to identify sources of instability in political-economic equilibria, has indicated that estimated political weights may have a stochastic nature. While instability can be identified from both demand and supply sides, these may also become the main sources of uncertainty in the PPF. The political source of uncertainty is related to the assumed political weights. If the policymakers are not sure about these weights then, they also do not know exactly the level of wealth transfer is that maximises their objective function.

The other source of uncertainty is on economic one. As shown in Chapter 8, political weights can be derived from market structure and represented by the Surplus Transformation Curve. The slope estimates of the STC are conditional on the estimates of market parameters. Because this study assumes that endogenous policy decisions are influenced by political weights as well as market parameters, there is a

possibility that the policymakers will use other market parameters, different from ones resulting from the model in this study. Thus there is a possibility that the estimated political weights are different from the actual ones.

Though the potential areas to be identified are mostly theoretical, there is room for an interesting empirical study, especially for Indonesia. As mentioned before, the recent political and economic developments in Indonesia have resulted in some heated discussion. One topic has been the nature of political weights which relate to the more open political competition. Another interesting area is the role of government in the sugar market. Following the new development, there are some concerns on the status of Bulog in controlling basic commodities, including sugar. The capacity of Bulog to procure domestic sugar only from the mills has given rise to two conflicting issues. On the one hand, the decision not to procure farmers' sugar would allow farmers to sell their sugar on the free market with more competitive prices thus transferring more wealth to the producers. On the other hand, there is the possibility that consumers' price will rise beyond Bulog's control, thus creating more burden for consumers. Indeed, sugar prices have risen significantly in recent times.

Identification of self-interest in government which burdens consumers raises questions about when the market has been more open in recent times. Letting the market work without much government intervention has resulted in rising prices and a heavier burden on consumers. Whether this is only a disequilibrium before the market returns to normal, and thus solely a market phenomenon, or whether it is an indication that there was altruism in the previous government intervention which dampens the price to affordable levels is an empirical question. Given the extreme exchange rate movements recently, it is difficult to make inferences in this area.

10.7 Concluding Remarks

The study has attempted to investigate the nature of the sugar industry from a political economy perspective. Knowledge about political structure, apart from the market structure, is necessary in this investigation. The PPF framework provides a basis from which conflicting interests can be traced, and the political structure can be highlighted. However, some limitations have made the study concentrate only on the power or influence of interest groups in the policy decision making and trace the origin from the sugar policy records.

It is important to note that the investigation of the policy process, and political structure, provides insights into the nature of sugar policy. Observation from the record of sugar policy serves to highlight the conclusion that some other approaches may be needed to capture the dynamic nature of the policy process. It also implies that the PPF needs to be further developed to capture such processes.

In conclusion, the usefulness of the PPF framework in studying sugar policy has been illustrated here. Such analysis has provided an alternative, and more complete, perspective on policy decision making. Two main aspects must be highlighted here; first the meaning of efficiency in the political economy approach; and second the policy choice criterion related to the policy reforms.

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