Price Stabilization Measures and Their Impacts[**]

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Ⅰ、Introduction

　　Agricultural prices are important both economically and politically since they strongly influence the level of farm incomes, the welfare of consumers, and, in many countries, the amount of export earnings. Agricultural prices are much more volatile than are the prices of most nonfarm goods and services. The biological nature of agricultural production and inelastic demand are, of course, principal causes of price instability. There has been a long debate on the effects of price instability and the social benefits and costs of stabilization programs.

　　The debate on the desirability of commodity price stabilizations has been confused by the variety of different objectives which such schemes might pursue. The broad objective of all commodity measures is to improve the welfare of primary commodity producers, or more generally, the producing countries. Governments generally intervene in pricing farm products to achieve one or a combination of following objectievs:(1)to reduce price and income instability,(2)to improve the allocation of resources,(3) to increase self-sufficiency in food and fiber,(4)to raise the average level of prices and incomes,(5)to reduce the risks faced by consumers.

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There are two distinct demensions of agricultural prices to which public policies are generally geared:(1)stabilization of prices and(2)changing relative structure of prices. Measures adopted to influence the level and the stability of market prices for consumers different from country to country reflecting the different characteristics and conditions of markets. Prices stabilization involves inter and intra-year fluctuation in prices with or without any change in the level of prices.

State intervention in agricultural price formation is usually said to be designed to stabilize prices in achieving efficiency, but "stabilizing" is often a euphemism for raising" or-less frequently -" lowering". Since agricultural prices bear profound influence on equity, income distribution, consumption, production, and economic development. If prices are "stabilized" at a "peak" or a "trough" level, they are raised as well as stabilized, this has very different economic consequences. Broadly speaking, the effect of price policies has been to hold food prices up in the developed countries and to hold them down in the developing countries. In international negotiations, the aim of major exporters of primary products has been to both stabilize prices and raise them,

It may be difficut to classify a few neat categories as regards different country's price policies. To try to do so would be mis-represent a complex reality. In this paper, the measures for stabilizing farm products and their impacts on welfare, revenue are discussed, and Taiwan's price policy is also briefly introduced.

II、Price Stabilization Measures

Methods of attempting to achieve price stabilization may take a wide variety of forms.We may consider three principle classes of policy instruments. First, there are those which operate by altering the flow of product to the market. Buffer stock is an example. Second, prices received by producers and/or consumers can be stabilized by means of subsidies and taxes which can be tied to a buffer fund scheme. In this regard, some distinction needs to be made between subsidy poilcies and self

financing stabilization schemes. Third, there are schemes which directly affect the stability of producers' incomes, leaving unimpaired the operations of the market, at least in the short term. Deficiency payment schemes come under this category.

1. "Product Flow" Price Stabilization Schemes

Of these, buffer stock schemes are the most common for storable, nonperishable commodities. They are designed to store a portion of the commodity in years of large production and low prices and then releasing stocks in years of high prices. A buffer stock program that succeeds in reducing the amplituds of the price fluctuations (without government subsidies) does not necessarily reduce instability in producer revenue. Under some circumstances, a storage program may even increase instability on annual returns (Halcrow, 1977).

The important factor to assure that buffer stock schemes operate successfully is that the commodity be storable and an accurate forecast be available. Otherwise, it is difficult to decide when to acquire stock, how much to store, and when to liquidate. If excess stocks must be held for long periods before being sold, the storage costs might exceed the gains from high prices.

Import and export control measurements are used to stabilize domestic price and income in several countries. For example, the United States is currently using import quotas as a means of stabilizing beef price and increasing the income of cattle producers. Taiwan used to control the volume of pork in a countercyclical manner with its export policy in order to moderate the price increase during the peak of the cycle, but price fluctuations still exist. Moreover, the foreign market channel cannot be continuously relied upon.

Another alternative which could be applied is the provision of financial incentives to producers to withhlod (sell) stock in periods of oversupply (high prices). Gardner (1979) , Wright and Williams (1988), Salant (1983), and Helmberger and Weaver (1977) all indicated that, private storage behavior substantially influences market price, government subsidies for the private storage of commodities for from one crop year to the next would stabilize the market price. What this amounts to is

a government "supply management" policy which needs considerable fiscal burden in terms of its responsibility for correct market forecasting.

Orderly marketing, especially for perishable produces, such as fruits, vegetables, and milk, is another measure to stabilize market price. Under the inelastic demand for commodity, concentrated production area, and existing closed substituted products, marketing order would stabilize the flow of commodities to market to avoid gluts and shortages within or for entire season. Also quality can maintained under such a legal instrument.

2. Price Adjustment Schemes

Under this class of policies, target stabilization prices or price bands are established and publicly announced. When actual market prices fall below target prices, producers receive a subsidy equal to the differences between actual prices and the target (or lower level of the band). When prices are above target a per unit tax is imposed on sales. Subsidies would be drawn from a buffer fund and taxes would replenish the fund. For self-financing schemes, the objective would be to set targets so that the expected size of the fund would be zero. This, of course, is a difficult task for any public agency operating with limited financial resources.

As mentioned above, under a buffer fund scheme price bands are established and publicly announced. In this sense, the scheme is to eliminate or narrow down cyclical extreme short-term fluctuation. But when price fluctuates within the band, the fund will not be operated. In other words, buffer fund scheme can be considered under two headings, long-term and short-term. Long-term stabilization is seen as smoothing out major movements commodity prices so that producers are better able to make long-term investment decisions because producers would like to see prices sufficiently guaranteed into the future. Short-term price stabilization operations are regarded as taking some of the "dips and bumps" out of the market within a year and providing seasonal price stability. For instance, this scheme would remove some of the uncertainty from planning the marketing program for the season. As argued before, producers and consumers incur costs and whether they

achieve economic gains from stabilization schemes depends on the particular nature of the supply and demand responses in the market. Empirical analysis can shed some light on the potential effects of buffer fund schemes.

The determination of stabilization price levels is critical. For instance, if a stabilization price band is fixed about the stabilization price and, as long as the market price falls within this band, no payments to or from the fund will be made. However, when the price exceeds the upper limit of the band, payments will be made to the fund. When the market price is less than the lower limit of the band, payments will be made from the fund. The realtionaship between the market price (PH_t), stabilization price (SP_t), effective price(EP_t), to or from the fund is illustrated in Figure 2-1. When the market price exceeds the upper limit of the stabilization price band, the effective price equals the upper price of the band. However, when the market price falls within the band, the effective price is equal to the market price. Finally, when market price is less than the lower limit of the stabilization price band, the effective price equals the lower limit of the band.

Algebraically

$PAY_t(+) = SP_t(1-B)-PH_t$, for $PH_t < SP_t(1-B)$

$PAY_t(-) = SP_t(1+B)-PH_t$, for $PH_t < SP_t(1+B)$

$PAY_t = 0$, for $SP_t(1-B) \leqq PH_t \leqq SP_t(1+B)$

and $EP_t = PH_t \pm PAY_t$

where PAY_t = payment to (-) or from (+) fund

EP_t = effective price

B = coefficient defining half of the width of the stabilization band as a proportion of SP_t.
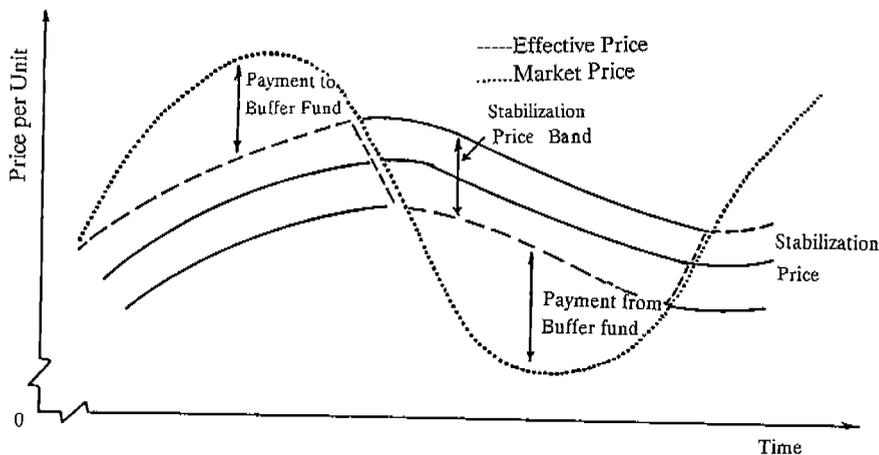
Figure 2-1 Relationship between Market Price, Stabilization Price, Effective Price and Payments of Fund

According to the above brief analysis, we can summarize the following hints:

(1) Price variability due to systematic change in the exogenous variables, for instance, technological change and weather condition, is not the traget of price stabilization schemes because they play an important role in providing the needed incentives or disincentives to producers to adjust their production activities so as to ensure efficient allocation of resources.

(2) Under uncertainty conditions, buffer fund schemes guarantee the producers' price via levies and subsidies, but let the consumers face the free market price. The benefits to various groups in society would depend crucially on the level the guaranteed price is set, but most research suggests that such a scheme could be a pareto improvement over the free and unstable market if producers be considered collectively. The long-run effects of those schemes should be an increase in industry output which would benefit consumers, and the efficiency of resources used would be improved. The degree of improvement can only be obtained empirically.

There are two types of schemes used by New Zealand and Australia, i. e.,

point-of-sale and payment-to-producer. In the former scheme, if producers' price falls below some stabilization level, payments are made from the buffer fund to the owner of the livestock, either when the animals are sold for slaughter or when they are acutally slaughtered. If market prices exceed the stabilization level, a levy is deducted from the proceeds of the sale of animals for slaughter based on a unit price. The latter scheme is designed such that payments to producers are based on production of animals rater than on actual sales. The aim of payment-to-producer schemes is twofold: first, to enable producers to receive a payment from the stabilization fund independent from their short-term marketing decisions, and second, to provide an administrative mechanism which would enable government to provide direct assistance to the industry.

Buffer fund schemes have been used in Australia and New Zealand for several years. Such schemes may turn out to support rather than stabilize prices if the funds accumulated in high-priced years are exhausted and returned to producers and prices remain low. Furthermore, serious equity problems may arise when a long lag exists between the time funds are accumulated and the time they are dispersed. If farms change hands, those who were taxed initially lose at the expense of those who acquired farms at a later date and become eligible for payments from the fund. This scheme offers no advantages to buyers since supplies are not stabilized.

3. Deficiency Payment

In the U.K. and Canada, stabilization policies for beef (and other livestocks) are based on the principle of deficiency payments. The government is responsible for making up the difference between market clearing prices and those prices guaranteed to farmers. Storage, handling, and disposal problems are eliminated. Consumers benefit from increased supplies of commodities and lower market prices, but some families pay more in taxes. In contrast to supply-control programs, payments make the cost of supporting agriculture a visible item in the government's budget. If the money to finance deficiency payments is raised through a progressive

income tax, low-income groups benefit at the expense of upper income families. One of the obvious advantages of shifting away from support methods which keep market prices high to a method involving deficiency payments is avoiding the loss of markets. This is particularly important for those products faced with close substitutes as well as those which must compete with imports or exports from other suppliers.

Deficiency payment schemes used in different countries have different effects that relate to the characteristics of the markets. Annual movement in beef production became more violent after the introduction of the scheme in 1954 compared to the preceding 15 years in the United Kingdom as the cyclical growth pattern of cattle numbers continued because of large fluctuations in market prices for beef. But, the total net farm income has maintained an upward trend since 1954, and the cost of supporting beef and milk prices has followed a downward trend (Martin, 1974). In contrast, the deficiency payment used in the Canadian pork sector showed that the scheme has resulted in increased prices received for farmers and reduced price and supply fluctuations (Martin and MacLaren,1976). Moreover, the magnitude of the net benefit from the scheme was larger than the tax costs, and most of the economic benefits accrued to producers.

4. Appraisal

For a given government expenditure, subsidized private storage is the most effective way to stabilize market price. For a given deadweight loss, a program of direct payments is the most efficient stabilizer of the effective farm price; this program does not stabilize market. According to the study of U.S. soybean market (Glauber, Helmberger and Miranda, 1989), four program, including deficieny payment, buffer stock scheme, buffer fund scheme and subsidy for private storage of commodities tend to destabilize quasi-rent. Program that involve an initial field up of stock increase producer and hunt consumers. The details are discussed in following section.

Ⅲ、The Impacts of Price Stabilization Measures

(Ⅰ)The Welfare Impact of Price Stabilization

There has been a long debate on the effects of price instability and the social benefits and costs of stabilization programs. Waugh (1944) argued that a consumer with perfect knowledge of future prices, a downward sloping linear demand curve and zero discount on future income would be better off with fluctuating prices than with prices fixed at their arithmetic mean. Waugh used conventional consumer surplus to assess welfare gains, and assumed prices as exogenous. In the debate which followed (Oi, 1961 and Waugh, 1966) the point was made that the impact of price stabilization on consumer welfare depends on the level at which prices are stabilized or on the characteristics of any price band adopted. Waugh's other basic assumptions, especially that of perfect knowledge of future prices, were not questioned and neither was his theory substantially altered. Some seventeen years later Oi (1961) showed that under assumptions similar to those used by Waugh, the firm in a perfectly competitive market with an upward solping supply curve would realize greater profits with fluctuation prices than with prices fixed at their expected value. Tisdell (1963) has since extended this theory to cover a firm producing any number of commodities. Considering the assumption of perfect knowledge of future prices, the Waugh-Oi results are not entirely unexpected, since producer and consumers can capitalize on the value of information of future fluctuation prices. In this regard, Tisdell's (1978) result is interesting for it shows that producers facing exogenous prices will gain from price stabilization if they know only the distribution of future prices, not their exact values.

In a closed economy, the conclusions of Waugh and Oi cannot occur simultaneously. This was shown by Massell (1969) who integrated their ideas into a signle market model framework. Using conventional consumer and producer surplus concepts and a market model characterized by linear supply and demand curves with additive disturbances and instantaneous supply response, he proved the

following propositions:(1)for society as a whole, welfare gains from price stabiliza-
tion are always positive if gainers compensate the losers;(2)consumers gain (lose)
from stabilization if the source of price variability is predominately random fluctua-
tions in demand (supply);(3)producers gain (lose) from stabilization if the source of
disturbance is mainly in the supply (demand) function. Samuelson (1972) also rec-
ognized the infeasibility of the Waugh-Oi results occurring simultaneously in a
closed economy. Adopting a static general equilibrium model and using correctly
measured utility areas rather than misleading comsumer and producer surplus areas,
 he also concluded that for consumers and producers taken together, "price stability
is, other things equal being, in itself, a definite virtue". His main point was that so-
ciety cannot be made better off by manufacturing instability.

    During this decade, a burgeoning literature on the theoretical distrubution of
welfare gains and losses from market stabilization policies has fanned out from
Massell's path-breaking article. The overall thrust, for the most part, has been
stepwise relaxations of his basic assumptions. This literature can be conveniently
discussed under two major categories:(i) price variability models, which we will call
the "traditional" approach and (ii) price uncertainty models which take account of
possible risk averse behavior by producers.

1. The Traditional Stabilization Literature

    With few exceptions, the studies in this category have been extensions of the
Massell study. It has generally been assumed that prices can be stabilized by gov-
ernments via buffer stocks, that the social discount rate is zero, and that the crite-
rion function is the maximization of consumers' economic surplus stabilitation is
seem to benefit society if the economic surplus is positive, the argument here being
that there would be a Pareto improvement if, theoretically, gainers compensated
the losers.

    Turnovsky (1974, 1976) made two important extensions of the Massell model.
First, he relaxed the unrealistic assumption that producers respond fully and in-
stantaneously to current prices and showed htat where producers make decisions on

output levels, ex ante, on the basis of rational expectations, Massell's basic conclusions remained unaltered. If the assumption of adaptive expectations is adopted, the distribution of gains from stabilization shifts more in favor of producers, though in certain cases, it becomes crucially dependent on the autoregressive properties of the random disturbances and the slopes of the supply and demand curves. Turnovsky (1976) also relaxed Massell's linearity and stochastic additivity assumptions and noted some fundamentally different conclusions. In a nonlinear closed market system, the source of random variation becomes irrelevant, and the distribution of welfare gains and overall gains from stabilization (which remain positive) depend instead on the shapes of the supply and demand functions. Gains to producers are more likely to be positive where supply, relative to demand, is inelastic. However, this conclusion can be reversed if the market functions are strongly non-linear.

Another important extension of Massell's study was made by Butlin (1976) who analyzed the welfare gains from price stabilization in a two-commodity market system. He distinguished between specialist (beef) products and joint product groups, which can readily substitute between products (beef and wheat). His main conclusion was that while total gains form stabilization are always positive, it is not possible to determine stabilization gains or losses to joint product firms, so numerous are the interaction terms. Specialist producers may gain if the source of instability is the variable supply of the product. Extending this approach, Turnovsky (1976) showed that the desirability of price stability for a consumer decreases with the magnitudes of the price and income elasticities, increases with the coefficient of relative risk aversion, and also depends on the budget share of commodity in question. Turnovsky concluded that for plausible parameters, one would expect consumers to prefer price instability as in the Waugh study.

2. Price Stabilization under Price Uncertainty and Risk Aversion

Sandmo (1973) Leland (1972) and others have shown that where risk averse producers attempt to maximize expedted utility of profits under output price un-

certainty, their behavior is characterized by that output level where marginal cost is strictly less than expected price. That is, ceteris paribus, they produce less than they would if prices were known with certainty.

Batra and Ullah (1974) and several others habe extended this approach to show that a producer's derived demand for inputs and output supply would be less under random input prices than under prices for factors known with certainty. In general, these studies show that the degree of conservative behavior is related to the degree of risk aversion and, of course, the degree of risk involved.

These findings lead to the proposition that uncertainty results in a misallocation of resources and the argument that reducing uncertainty will improve the efficiency of resource allocation and hence improve social welfare. Blandford and Currie (1975) use this line of reasoning to present what they regard as a strong prima facie case in favor of price stabilization schemes via government intervention. The situation they analyze is essentially a buffer fund scheme where prices to producers, consisting of free market prices plus or minus variable levies (subsidies) , are guaranteed at a particular level, but consumers continue to face unstable market prices. Their argument is based on the notion of a firm having a "certainty equivalent" price defined as that certain price which would leave the firm just as well of ex ante as under price uncertainty. They show rigorously that for a risk averse firm, the certainty equivalent price is strictly greater than the firm's "shadow price". The latter is defined for the risk averse firm as that price received with certainty which would result in the same output assuming uncertainty. Using these concepts in a partial equilibrium framework, they show that the effects of the scheme on each group, producers, consumers and taxpayers, depends crucially on the level of the guaranteed price such that all three groups are better off or indifferent.

Another approach has been taken by Hazell and Scandizzo (1975) who used a mean-variance programming model to study the benefits of price stabilization where production is assumed to be risky. Assuming multiplicative disturbances in the supply function they showed that under perfect competition, market equilibria

will be Pareto suboptimal. They argued that there exists an optimal distortion price whick will improve social welfare, and concluded that "the protential welfare gains to be had from optimal intervention policies are surprisingly large, in fact, for greater than might be anticipated".

3.An Appraisal

The literature on price stabilization theory has developed rapidly over the past decade, with most efforts directed along "traditional" lines. The message out of the traditional literature is basically similar to the conclusions originally reached by Massell. Price stabilization benefits those groups whose economic activity is the main source of price variability and overall, stability is to be preferred, provided compensation from gainers to losers is paid. Thus, producers in aggregate stand to gain most from a stabilization scheme, if it is assumed that price variation stems primarily from supply fluctuation. In other words, whether producers gain or lose depends on the source of price fluctuation, and whether compensation is paid. Identification of the source of fluctuation is an important step.

Concerning market uncertainty and risk, most of the literature claims that reducing uncertainty will improve the efficiency of resource allocation and hence improve social welfare. In the agricultural sector, production cycles persist mainly because of the nature of the industry and because producers form basically naive price expectations (Markov chain process) which can change rapidly. Thus, the consequences of forecast errors are a cyclical buildup and depletion of capital stocks which is inefficient and socially undesirable. In general, a stabilization policy on the agricultural sector would increase the social welfare, if the source of instability is from the supply side, and increase allocation efficiency in social resources. Therefore, stabilization policy is desirable.

Newbery and Stiglitz (1981) used the general theory of partial (or incomplete) price-stabilization to show how the shape of the demand schedule and the source and specification of risk influence the size and distributional welfare gains. Their model allows one to distinguish between the short run and long run impact

of stabilization, and to examine the importance of risk aversion and individual supply elasticity on the distribution of gains and losses from partial stabilization.

Hinchy and Fisher (1988) extended Newbery and Stiglitz approach to demonstrate the effects of both demand and supply instability using the buffer stock scheme for Australian wool as case. It has shown that both producers and processors are likely to gain from price stabilization. Through stochastic simulation of market model, Miranda and Helmberger (1988) demonstrates that buffer stock scheme can raise US market price in the short run, some can reduce market price in the long run. Although price band programs can substantially stabilize price, they can also destabilize producer revenue. Widening the price band by raising the release prices lowers price variability in the case of nonexplosive policies. Narrow price bands are more difficult to defend because they are more susceptible to stockouts.

(II) Price Stabilization and Revenue Stabilization

Under the following assumptions for the specification on the market model used in the analysis:

(a) linear and negatively sloped demand curve, linear and positively sloped supply curve;

(b) instantaneous reaction of supply and demand to price changes;

(c) parallel shifts of demand and supply curves over the two periods (additive stochastic disturbances); and

(d) price stabilization at the mean of the prices that would have prevailed in the absence of market price stabilization.

Brook, Grilli, and Waelbroeck (1977) found, in general, whether or not price stabilization entails revenue stabilization depends on: (1) the source of the price change, via demand or supply shifts; and (2)the price elasticities of the demand and supply schedules of the product whose market prices are stabilized.

Specifically, it can be shown that if the market for a commodity is characterized by demand instability, price stabilization will--over two periods of time--also

bring about revenue stabilization, provided that demand is price-inelastic over the relevant range. On the contrary, if demand is price-elastic over the relevant range, price stabilization will destabilize revenue. Both of these results hold regardless of the value of the price elasticity of supply.

Under the same conditions, it can be shown that if the market for a product is characterized by supply instability, price stabilization would destabilize revenue if demand is price elastic over the relevant range. This result holds regardless of the value of the price elasticity of supply. If, on the contrary, both demand and supply are price inelastic over the relevant range, price stabilization can bring about revenue stabilization as well.

(III) Price Stabilization and Export Earnings of Producing Countries

In deciding whether or not buffer stock operations benefit producing (exporting) countries, one important question to be answered regards the impact of price stabilization on total export earnings of producers. Any a priori answer to this question is quite difficult. While the shape of the demand and supply curves, as well as the price elasticities of these curves, will obviously have a bearing on the answer, it is not immediately clear that the source of the price instability (demand or supply shifts) is the key.

Brook, Grilli, and Waelbroeck also used two-state analysis within the framework of the simplified market model which they examine the relationship between price and revenue stabilization, some a priori conclusions about the relationship between the source of the price instability and the effects of a buffer stock scheme on the export earnings of the producing countries can be derived.

Under the assumptions made, it can be shown that over two periods of time: (1)price stabilization would decrease the total earnings of the commodity exporting countries, if demand shifts are the cause of the price change; and(2) price stabilization would increase the total earnings of the commodity exporting countries, if supply shifts are the cause of the price change. These general conclusions hold as long as the demand and supply curves are well behaved. While price elasticities deter-

mine the size of the difference between stabilized and unstabilized export revenue, the validity of the general conclusions stated above does not depend on specific elasticity values.

The important point that their analysis brings out is that whenever developing countries are net exporters of a certain commodity, price stabilization via buffer stocks in a supply shift market would increase their total export revenues. Conversely, in a demand shift market, developing countries as net importers of a primary commodity would gain in terms of lower import expenditure from price stabilization via buffer stocks. Therefore, if the objective of commodity price stabilization is to benefit developing countries, the determination of the source of price instability becomes an important factor in the choice of the commodities whose prices can be effectively stabilized through the market action of buffer stocks.

(VI) The Impact of Price Stabilization: Empirical Analysis

Brook, Grilli and Waelbroeck examined 17 primary commodities traded by deveoping countries over the 1954-1973 period to study the impact of price stabilization. Their analysis on the income effect of price stabilization suggests that in cocoa, coffee, wool and jute, developing countries as a group would gain in terms of greater export revenue and in wheat they would gain in terms of lower import expenditure. In these commodities both the income and the pure welfare impact of price stability are positive to developing countries. In two other commodities--cotton and sugar--where the income effect would also be positive to developing countries as exporters and the pure welfare effect would be equally positive, the direction of the income effectes statistically inconclusive and falls outside the probabilistic range of acceptance. In maize, rice, rubber, lead, copper, zinc, and bauxite, the income effect would be negative to developing countries, while the pure welfare effect would be positive. In all other commodities--tea, tin and sisal--the income effects of price stabilization are statistically uncertain. The results of their analysis are summarized in Table 3-1.

Table 3-1 Pure Welfare and Income Effect of Price
Stabilization for Developing Countries

Commodity	(1) Developing Countries Trade Position	(2) Sign of Regreassion Coefficient	Income Effect	Pure Welfare Effect	Total Effect
Wheat	NM	+	Positive	Positive	Positive
Maize	NX	+	Negative	Positive	Uncertain
Rice	NM	−	Negative	Positive	Uncertain
Sugar	NX	−(1)	Uncertain	Positive	Uncertain
Coffee	NX	−	Positive	Positive	Positive
Coca	NX	−	Positive	Positive	Positive
Tea	NX	+**	Uncertain	Positive	Uncertain
Cotton	NX	−(1)	Uncertain	Positive	Uncertain
Jute	NX	−	Positive	Positive −	Positive
Wool	NX	−	Positive	Positive	Positive
Sisal	NX	+**	Uncertain	Positive	Uncertain
Rubber	NX	+	Negative	Positive	Uncertain
Copper	NX	+	Negative	Positive	Uncertain
Lead	NX	+	Negative	Positive	Uncertain
Zinc	NX	+	Negative	Positive	Uncertain
Tin	NX	+(1)	Uncertain	Positive	Uncertain
Bauxite	NX	+	Negative	Positive	Uncertain

Note: NM = Developing countries as a group are net importers of the commodity.

NX = Developing countries as a group are net exporters of the commodity.

(1)　Sign of regression coefficient is statistically insignificant.

*　Sign of regression coefficient alternates from the ;first set of
regressions using prices to the second set of regressions
using export unit values and is statistically insignificant.

Source: World Bank (1977).

(VII) Buffer Fund Scheme for Taiwan's Hog Market

Pork is an important commodity in Taiwan, and its production is characterized by complex adjustment processes. Recent variability in prices have disrupted income flows and created considerable uncertainty in decision making by producers. This can lead to an inefficient allocation of resources.

Peng and Leuthold (1985) assessed the feasibility of adopting a buffer fund scheme for the hog-pork sector in Taiwan with the goal of stabilizing producer prices and revenues. A dynamic, 4-equation model of the hog-pork industry was developed from a structural economic model and information from time-series analysis.

Based on a 36-month moving average stabilization price and a 10 percent band, the simulation showed that producer revenue stayed practically the same with the buffer fund, but with more stability. Due to the lower prices in the moving average, producer prices were lower, but considerable stability in prices was gained. This would allow producers to make decisions in less risky environments. This reduced risk increased hog production.

Another beneficiary of the buffer fund scheme was the consumer. The increased pork supply at lower prices allowed consumers to reduce their expenditures. This also was done under conditions of less instability. Finally, this particular scheme was close to being self balanced and did not require government subsidies.

These results demonstrate that a buffer fund scheme has the potential for being a valuable policy tool for Taiwan. Many variations are possible, but this one shows a situation where both producers and consumers are better off and there is no government subsidy involved. It is up to the policy makers to choose which alternative is most desirable and fits best within the economic planning framework.

Ⅳ、Major Agricultural Price Policies Affecting Farm Prices in Taiwan

To achieve stable and sustained economic growth, a proper growth rate between the agricultural and industrial sector should be maintained. As far as agricultural development planning is concerned, two phases of agricultural policy in Taiwan after World War Ⅱ can be defined. The year 1969 can be chosen to separate the two phases of policies. Prior to 1969, the focus of policies were to increase commodity production and reduce the real prices of food through technological changes and institutional innovation. Taxation and price distortion were used to extract agricultural surplus to foster economic expansion in the nonfarm sector. The strategy and policy for creating and siphoning off agricultural surplus in Taiwan is widely discussed in the literature ,so I will not repeat the discussion here. Since the late 1960s, Taiwan's agriculture has been hard hit by developments on the domestic and international fronts. Domestically, the income gap between the farm and nonfarm sectors has continually widened. Internationally due to the favorable balance of export trade, particularly for manufactured products, Taiwan has imported cheap food and grains which depressed farm prices.

In view of the diffculties confronted by agriculture, the government announced the "Accelerated Rural Development Program (ARDP)" in September 1972. The importance of this program was comparable to the land reform program of the 1950s. Since 1973, the ARDP has been operational. Beginning in July 1979 and effective for three years, the "Program for Increasing Farm Incomes and Strengthening Rural Reconstruction" was implemented. In 1980 the All-out Grassroots Development Promotion Program" was launched. The programs for rural and grassroots development were amalgamated in July 1981 into a new program known as the "Strengthening Grassroots Reconstruction and Raising Family Income Program." In July 1985, the "Program for Improving the Agricultural Structure and Boosting Farm Income" began. The major objectives of these policies were:(1) to

raise farm income and narrow the gap between farm and non-farm income;(2)to ensure stability of the food supply and achieve self-sufficiency of major crops;(3)to improre the rural environment and farmer's welfare.

In September 1973, the long awaited Agricultural Development Act was enacted. These regulations encouraged the modernization of agriculture by enlarging the scale of farming operations, promoting vertical integration of demand-oriented production, coordination land administration and financial institutions for smooth development, and providing incentives for extension. Based on the Agricultural Development Act, concerning the agricultural production structure, the "Second Stage of the Agricultural Land Reform Program" was announced in April, 1980. In 1974, the government also established a "Rice Stabilization Fund" to pruchase rice from the market at a guaranteed price, which is higher than the production cost. The highlights of these programs include readjustments of agricultural production, enlargement of the farming scale, improvement of agriculture's public facilities, government purchase of rice at guaranteed prices, modernization of the marketing system, and the improvment of farmer's welfare and agricultural financing facilities. The general framework of the present agricultural policy in Taiwan can be summarized in Figure 5-1.

As in many other developed countries, agricutural price and income policies play an important role in Taiwan. The objectives of price and income policies are to stabilize and support agricultural prices at reasonable levels and to reduce production costs the financial burdens associated with subsidies. The major instruments are price support programs, price stabilization programs, direct payments, and input subsidies.

〔1〕Price Support Program

The purposes of a price support policy are to protect domestic production, to increase self-sufficiency, to maintain production levels, and to enhance farm income. Three methods exist to support prices: guaranteed prices, deficiency payments, and border measures. The major programs are briefly described as follwos :

a. The Rice Stabilization Fund

In 1974, the Rice Stabilization Fund was initially designed as a buffer stock scheme. The floor support price is in principle fixed with a 20 percent profit. With this reasonable support price level, rice production reached its highest recorded level of 2.71 million m.t. in 1976. Since 1975, domestic rice production accumulated 200-400 thousand m.t. of surplus each year. To protect the income of rice growers, the government has absorbed this surplus at the support price. Form 1974 to 1977, the government purchased an unlimited surplus. Heavy burdens on the public treasury changed the procurement policy limiting the purchase to 970 kg per hectare since 1977. Due to the low price of rice in the world markets, the government had to sell a part of the surplus rice to foreign buyers at a great loss. However, the subsidized export of Taiwan's surplus rice was limited by the Sino-American rice export agreement. Since 1984, Taiwan has implemented the rice field conversion program to encourage conversion of riceland to other crops, particularly soybeans and feed grains which have low selfsufficiency ratios. Rice production has dropped significantly, but the program is costly to the government. This scheme so far has benefitted the rice growers but increased the financial burden to the treasury.

b. The Small Grains Deficiency Payment

Small grains include corn, soybeans, wheat, barley, and sorghum, all are essential raw materials for processing edible oils and feeds. Aside from changes in the rice policy, the government began to liberalize its trade policy in the mid-1960s. Along with other trade liberalization measures, the government reclassified small grain imports from the "controlled" to the "permitted" category in 1967. This change promoted increases in feed grain imports. To avoid import price fluctuations and to ensure an uninterruped foreign supply of small grains, a stabilization fund called the "Small Grains Deficiency Payment" was established in November, 1971. Additional objectives of this fund were to encourage domestic production of small grains, improve farmland utilization, develop feed-related industries, and accelerate livestock production. The sources for this stabilization fund are derived

Figure 5-1 Overall Framework of Taiwan's Agricultural Policies

Policy area	Aims	Major projects/measures
1. Structural Policy	*Expansion of farm size *Encouragement of joint farming	*Second Stage of Agricultural Land Reform Program *Farmland Purchase Scheme *Regional Planning Program *Nucleus Farmer Program *Encouragement of rural industriailzed
2. Production Policy	*Adjustment of agricultural production str *Promotion of aural efficiency andiency on major produ *Improvement of agricult *Improvement of agricultural infra-structure	*Paddy Field Conversion Program *Research and extension *Water and land resource development *Farm Mechanization Scheme *Rural public investment
3. Price and Income Policy	*Price stabilization and support *Farm family income enhancement	*Price Support Scheme for rice, small grain, sugar, major crops *Price Stabilization Scheme for Imported feed grain, produce *Livestock insurance *Agricultural Development Scheme and Loan Program *Border measures *Direct payment
4. Marketing Policy	*Rationalization of Marketing channels *Improvement of food quality	*Agricultural Marketing Act *Food Processing Development Program *Joint Marketing Program *Wholesale market modernization rogram
5. Rural Life Policy	*Improvement in environmental factors in rural villages *Improvement infarm's welfare	*Farmer Health Insurance Program *Rural Village Reorganization Scheme *Establishment of farmer shopping centers

from an endowment of one million NT$ donated by two public and six private organizations, the collection of fees per ton of small grains imported, and government subsidies.

　　Due to the government's encouragement since 1984 to shift a part of the paddy land to small grains, the support price level for small grains is equivalent to the per hectare profit of growing rice. Based on this calculation , the guaranteed price for corn per kg. is NT$15; and for soybean, NT$25; and for sorghum, NT$14. The support prices for these crops are twice as high as the import prices. The price differential is covered by this scheme. Due to natural constraint and the shortage necessary farm machines, the production of these crops has not significantly increased. The self-sufficiency rate for these crops remained below 5 percent. With recent efforts to liberalize agricultural trade, small grain import barriers fell, therefore, fee collection is impossible.

　c. The Sugar Stabilization Fund

　　After rice, sugar cane is the most important crop in Taiwan in terms of cultivated land area and foreign exchange earnings among agricultural products. As an export crop, the price of sugar is determined by supply and demand in the international markets. To protect the grower's income, the Sugar Stabilization Fund was established in November 1966. The Taiwan Sugar Corporation (TSC) was asked by the government to take charge of this Fund. Since it is a buffer fund scheme, the Taiwan Sugar Corporation can collcet, as a fee, a percentage of the sugar export value in excess of the guaranteed price and this is to be used as a Fund reserve. The TSC also establised the guaranteed price for sugar so the profit made from sugar plantations is not less than that of competitive crops. The Fund's reserve is used to subsidize the price and to generate interest earnings. The Fund's interest earnings are used to improve production techniques, to offer low interest production loans, and to promote farm mechanization for cane growers. However, due to the tremendous surplus in international markets, and the production cost increases during the last decade, Taiwan's sugar was mainly sold in domestic markets, and the fund became inoperable.

d. Contract Guaranteed Price Scheme

The government also assists farmer's organizations to promote the planned production-marketing system through contract agreements between producers and buyers including processing factories or exporters, similar to what has been done with sugar cane growers. The products under contract agreements include bananas, fresh fruits, mushrooms, asparagus, onions, seedless watermelons, bamboo, bamboo shoots, ginger, tomatoes and some summer vegetables. This system strengthened the link between producers and buyers avoiding exploitation by middlemen and provided forward price assurance to the producers. Contract production between producers and processing plants or exporting agencies is on the basis of contract guaranteed price. The objectives of this scheme are mainly to stabilize the production of raw materials for processing plants, to guarantee the contract producer's revenue, and to regulate exports. The contract guaranteed price is negotiated by representatives of both parties under government supervision based on production costs and the market situation. The fund mainly collected as a percentage of the export price above a specific level.

e. Border Measures

Before the mid-1960s, a serious deficit existed in the balance of payment situation in Taiwan. Agricultural policy was protectionist and it emphasized increasing domestic production through tariffs and import controls. Imports of several major products were prohibited and the tariff rates were over 100 percent. Since the government reformed the foreign exchange system in the late 1950s, and gradually relaxed control over foreign trade in the 1960s, foreign trade increased rapidly and evolved as the leading force in Taiwan's economic developments.

Taiwan has reduced many barriers, including tariff and nontariff restriction, especially since the Sino-American bilateral trade negotiation started in 1978. Recently, the government has put great effort into further liberalizing imports in order to enhance a sizeable trade surplus. Tariff rates on hundreds of farm products have been lowered. The weighted average tariff on farm products decreased from 28 percent in 1978 to 8 percent in 1988. Nontariff barriers are not used extensively in

Taiwan, therefore, the policy of lowering tariffs on farm products brought a sizeable influx of foreign final products into Taiwan's already saturated markets. The farmer's interests have been substantially affected and farmers have strongly protested.

At the present time in Taiwan, politicians, farmer's groups, and consumer's groups agree that protection of the food supply, in the short-run, is justified considering national security. Three basic principles underlie the agricultural trade policy:

i) Commodities which can be domestically produced at reasonable costs should be much as possible.

ii) Some border measures must be maintained for important products so as to secure their stable domestic supply, though restrictive trade measures should be minimized.

iii) Revenue loss caused by sudden sizable foreign agricultural product imports should be compensated.

(2)Price Stabilization Program

To stabilize the major agricultural product prices, the government established buffer fund schemes for flour, soybeans and corn. The domestic marketing stabilization fund is also encouraged to help small farms sell their products at reasonable prices.

a. Import Product Price Stabilization Fund

Since over 90 percent of raw material for processing edible oils, flour and animal feeds are imported, the international price for small grains affects directly the domestic prices of compete products and the operation of related industries. Drastic price fluctuations in small grains existed during the food crisis in the early 1970s. Three key imported commodities, soybeans, wheat and corn, were regulated by import quotas and through group purchases coordinated by a government licensing procedure. Also, the bulk commodities were placed under a system of "uniform import prices". The price paid by domestic users for these commodities was admin-

istratively set at the stabilization price, which was based on the prevailing international price of the commodity. This price remained fixed for a few months to over a year. The scheme was terminated in 1988 except for the flour stabilization fund because it is close substitute for rice.

b. Producer Marketing Price Stabilization Fund

The price of hogs, vegetables, fruits and fish are usually more volatile than that of grains. To help small farms sell their products profitably, Taiwan has promoted and strengthened the joint marketing programs on hogs, vegetables, fruits, bamboo shoots, and inland and marine fish products through farmer's associations and marketing cooperatives. The goal of these organizations is to reduce the unit marketing costs, to raise the producer's bargining power, and to establish strong bonds between the producers and the traders through large volume marketing. To stabilize the price received by farmers, guaranteed prices were established and these were based on average prices prevailing in different wholesale markets. The participation farmer contributes a fee to the stabilization fund and after meeting their obligation, prices are guaranteed. This is a self-financing program with the government, market agencies and farmer's organization have contributed some matching funds.

(3)Direct Payment Program

Due to the high guaranteed price for rice and the drastic reduction of rice consumption, rice surpluses have become a major burden for the government. Increases in production costs and the Sino-American rice export agreement limit Taiwan's rice export. The most effective solution to the rice surplus problem, without affecting farmer's interests, is restricted rice production, thus the paddy field conversion program. As an incentive for rice farmers to diversify to other crops, the government guaranteed prices for growing corn, sorghum and soybeans, and adopted a payment-in-kind (PIK) approach to minimize risks associated with converting to new crops. The government pays 1,000 kg. paddy for those who grow corn, sorghum and soyghum and soybeans, pay 1,500 kg. paddy for those who grow

fruit, vegetables and grass for livestock. Those who take land out of production can also get 1,500 kg. of paddy from the government.

〔4〕Input Subsidy Program

To lighten the burden of farm production, the government abolished the 25-year old rice-fertilizer barter system and the education surtax on farmland in 1973. The government also improves the agricultural taxation system to reduce production costs and alleviate the financial burdens on farmers. Moreover, the government subsidized part of the energy costs associated with agricultural production, and the farm credit system was improved to encourage farmers to adopt new technology and to utilize their resources more efficiently. Over the years, farm credit terms eased significantly, and the government provided low-interest loans to farmers under specific programs or projects.

〔5〕General Comments

Taiwan's price and income policies can be summarized as follows:

① In Taiwan, each product or product group has its own specific price regime, reflecting the nature of the product and its historical background. However, only the rice price support and the rice field conversion program are financially supported by the government. The price scheme for fruits, vegetables, and livestock products are financially self-sufficient. These schemes, mainly operated by farmer's associations and cooperatives, have very weak financial membership. Because the free-rider problem of collective action is uncontrollable, the bargaining power of these orgaizations appears weak and the price schemes are ineffective.

② The level of agricultural subsidization in Taiwan is much lower than in other developed countries. Taiwan's agricultural budget in recent years accounts for 2-3 percenct of total government expenditure. The budget allocates funds for the improvement of infrastructure and disaster restorations, agricultural research and extension, and the price supports for rice and paddy field conversion programs. The producer's subsidy equivalent (PSE) of Taiwanese major land-base crops, from 1982 to 1968, were 30 percent to 70 percent. The average PSE in Taiwan was 19.2 percent, much lower than Japan's 71.1 percnet, Korea's 59.5 percent, EEC's 35.4 per-

cent, Canada's 31.0 percent, New Zealand's 25.4 percent and USA's 24.6 percent.

③ The social cost of government policy in Taiwan is much less than that in other developed countries. Accordingly, the policy cost, in terms of the dollars of government and consumer's payments required to increase producer's surplus by $1, are lower in Taiwan than those of developed countries. The policy cost for rice in Taiwan was 1.29 in 1986 which was lower than that of Japan's 2.58 in 1976, EEC's 1.50 in 1980 and USA's 1.38 in 1985. The government and consumer shares for the cost increase inproducer's surplus are 56 percent and 44 percent, respectively.

V、The Impacts of Farm Price Policy in Taiwan

(I) On Relative Price Level of Farm Products

From a technical viewpoint, agricultural production is highly constrained by natural conditions. The annual growth rates of agricultural and industrial production in Taiwan from 1952 to 1989 were 3.1 percent and 12.4 percent, respectively. Since World War II , the agricultural terms of trade have improved if measured by the long-run trend. The data are shown in Table 5-1 and Figure 5-2, where agricultural price index each year is divided by the industrial price index and by the whole sale price index for the base year of 1971.

Table 5-1. The Relative Price of Agricultural Products in Taiwan

Period	Agri. Product	Rice
	%	%
1938-44	67	74
1945-49	108	89
1950-60	76	70
1961-72	93	94
1973-76	110	119
1977-81	97	114
1982-84	100	106
1985-88	100	112

Source: Peng, T.K. (1989).
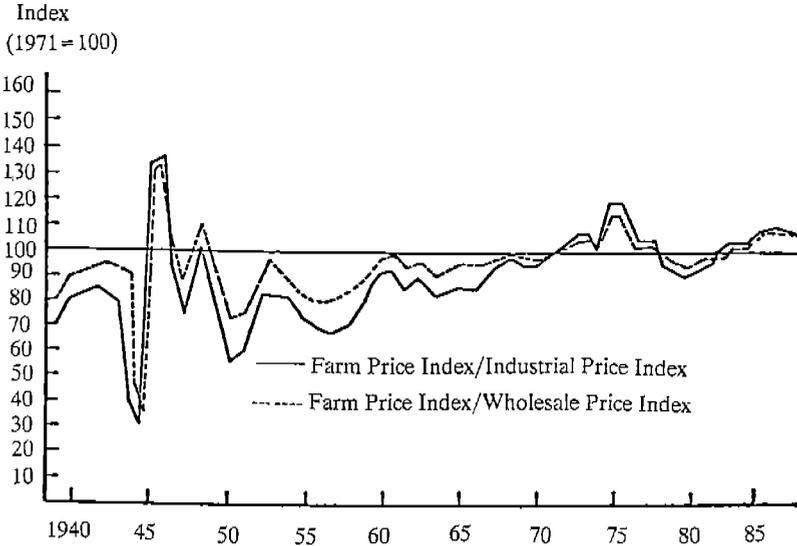
Index
(1971 = 100)

Figure 5-2 The Trend of Relative Price for Taiwan's Agricultural Products

The prices of farm products increased relative to prices of nonfarm products during 1945-1949, 1973-1976, and again after 1981. In general, the terms of trade were unfavorable to agricultural products before the early 1970s, but this changed after 1973. In the early stage of economic development in Taiwan, as mentioned before, the government adopted price distortion and taxation approaches to siphon agricultural surplus to nonagricultural sectors. Traditionally, rice is a staple and the most important food grain therefore production and marketing of rice was laways tightly controlled. The government implemented the rice-for-fertilizer barter system with an exchange ratio unfavorable to rice farmers, a compulsory government procurement of paddy rice at a lower market price, and a paid-in-kind land tax to siphon off agricultural surplus. Rice collected was rationed to the armed forces and distributed to military dependents and civilian government emplooyees. Moreover, the stocks were sold on the free market to stabilize rice prices or they were exported. The terms of trade, therefore, were unfavorable to agricultural products, particularly in the case of rice, from 1938 to 1972 except during the early 1940s hyperinflationary period.

Since 1973, the government implemented a series of rural development programs to speed the process of agricultural modernization. Instead of implementing a lower price policy for rice, the government enacted price support and stabilization schemes (these were elaborated on the last section). The price of farm products, especially for rice, increased relative to the prices of nonfarm products since 1974. In the 1977-1981 period, agricultural prices dropped sharply due to higher livestock production in the business cycle through period and the influx of foreign agricultual products.

Relative growth of supply and demand has been another factor affecting the movement of the relative price for farm products. Generally speaking, the growth in demand for any commodity or service depends on the growth rate of population, real per capita income, and the income elasticity of demand for any particular commodity or group of commodities. An increase in per capita income means, not only a smaller percentage of income is spent on food (Engel's Law), but also that the pattern of food consumption changes. The proportion of calories and individual consumes from the basic starchy staple is expected to decline, usually this is known as Bennett's Law. This has a considerable impact on agricultural production and its structure.

In Taiwan, the annual economic growth rate was 8.8 percent from 1953 to 1987. The proportion of food expenditure to household consumption expenditure decreased from 54.4 percent in 1953 to 30.4 percent in 1987. The consumption of starchy foods dropped considerably over the last two decades in Taiwan, while the indirect consumption of grain in high quality foods increased dramatically. According to the "Food Balance Sheet" published by Council of Agriculture, per capita annual consumption of rice and sweet potato fell significantly, while annual per capita consumption of meat, eggs, dairy products, vegetables and fruit rose significantly from 1953 to 1987, as shown in Table 5-2. As for the per capita consumption of grain (including rice, wheat corn, soybean, barley, and sorghum), direct consumption was increased before 1974 and then dropped. Indirect per capita consumption of grain, on the other hand, rose consistently, causing total grain consumption to

increase from 171.0 kilograms in 1953 to 411.4 kilograms in 1987. Calories from starchy staples declined (see Figures 5-3 and 5-4).

Table 5-2. Per Capita Food Availability in Taiwan Unit:kg

Iterm	1953	1960	1970	1980	1987
Cereals					
Total	157.1	159.7	164.1	138.8	110.2
Rice	141.2	137.7	134.5	105.5	78.2
Vegetable	60.2	61.1	84.8	129.6	125.4
Fruit	17.9	22.1	45.8	70.2	93.5
Meat	17.8	16.2	25.3	42.6	57.7
Egg	1.4	1.6	4.1	8.0	11.5
Fish	16.1	21.7	34.2	38.7	44.9
Milk	1.6	3.2	10.4	24.6	33.6
Other	100.4	110.9	84.6	81.3	96.3

Source: Council of Agriculture, Basic Agricultural Statistics, R.O.C. 1988.
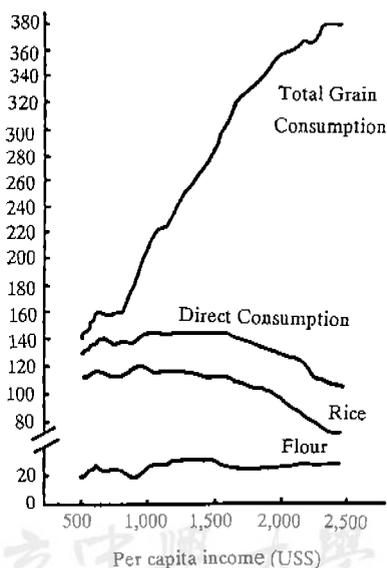

Figure 5-3 Per capita Consumption of Grain Relative to Income

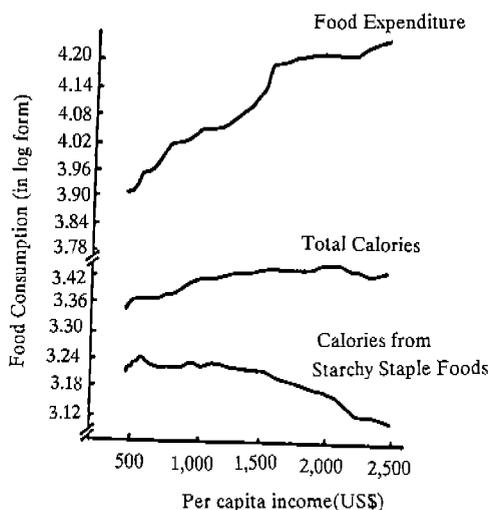Price Stabilization Measures and Their Impacts

Figure 5-4 Food Consumption in Relation to Income Level

Both the population growth rate and the income elasticity of food demand declined from 1962 to 1981 in Taiwan. The growth rate of aggregate demand for food, therefore, also slowed. However, the rapid change in food consumption patterns, and natural constraints on producing high quality food, the increasing rate of agricultural production is less than the growth rate of aggregate demand for food and has increased slower than the output in the rest of economy, as shown in Table 5-3. As a result, farm product prices increased quickly relative to nonfarm products prices, see Table 5-4, and a large amout of agricultural products have been imported.

Table 5-3. Growth Rate of Food Demand and Agricultural Production

Period	Growth Rate of		Income	Growth Rate of	
	Population	Income	Elasticity	Demand	Production
1962-66	3.1	5.4	0.5	5.8	5.8
1967-71	2.9	7.8	0.4	6.3	5.7
1972-76	1.9	5.7	0.4	4.1	3.3
1977-81	1.9	4.9	0.3	3.6	1.1

Source : Peng, T.K., (1989).

Table 5-4. The Annual Change Rate of Price Index Unit:%

Period	WPI	CPI	Agri.Prod. Price	Agri. Process Product	Industrial Product
1945-51	290.1	-	445.0	240.0	300.5
1952-60	10.3	-	14.0	12.5	8.6
1961-72	2.0	3.3	2.5	2.4	1.1
1973-81	10.2	13.4	16.3	12.8	13.4
1982-88	-2.0	-0.8	-1.4	-2.1	-2.0

Source: Directorate-General of Budget, Accounting & Statistics,
Executive Yuan, Monthly Report of Price Statistics,
Taiwan District.

As for the relative prices among the different agricultural products, the price level of crops, such as rice, coarse grain, fresh vegetables, and fruits are relatively high compared to livestock and fishery products in Taiwan, as shown in Table 5-5. For crop products, the prices of rice and coarse grain have been guaranteed at high level, and the demand for vegetables and fruits are so strong that the prices are maintained at a reasonable level. The demand for high quality food, such as pork, poultry, meat, milk, and eggs are strong. The livestock and fishery industries are highly commercialized and through modernization, productivity in these industries increased fast enough to absorb the increase in production costs. Thus, the prices for these products have increased slightly over the last two decades. The real retail price of eggs in Taiwan has even declined during the last decade.

Table 5-5. Annual Increasing Rate of Agricultural Product Price

Year	Crops Product	Livestock Product
	Base Year : 1951=100	
1951-66	9.0	8.1
1967-81	8.1	6.2
1982-87	-0.2	-3.8

Source : PDAF, Monthly Report on Agricultural Price in Taiwan, 1988.

(II) On the Stability of Farm Products

Annual increases are generally greater in agricultural prices than nonagricultural prices. Moreover, agricultural prices are more volatile than the prices of most nonfarm goods or services. Factors affection price fluctuations for agricultural and industrial commodities in Taiwan have changed since the oil crisis in 1973. Industrial product prices, however, were more volatile than agricultural prices during this period. The instability index for agricultural prices was 18.5 percent from 1973-1976 and 8.7 percent from 1977-1981, while the index for industrial prices was 19.9 percent and 10.7 percent during the same periods, as shown in Table 5-6. The farm price stabilization and support programs implemented in the 1970s were successful in moderating price fluctuations. Fluctuations in export demand for industrial products stemming from worldwide protectionism and oil crisises contributed to the instability in industrial product prices since the 1970s.

Table 5-6. The Instability Index* of Price Index Unit:%

Period	WPI	Agri. Prod. Price	Agri. Process Price	Industrial Pro. Price
1946-51	290.1	445.0	240.6	300.5
1952-60	10.5	15.4	12.7	9.3
1961-72	2.9	3.5	4.9	2.4
1973-76	18.1	18.5	13.9	19.9
1977-81	9.9	8.7	7.2	10.7
1982-88	0.02	0.02	0.03	0.02

*Instability Index (Michaley Index) $= \sum_{t=1}^{n} |(P_t - P_{t-1})| / P_{t-1} / n-1$.
Source : Same as Table 5-1.

VI 、 Concluding Remarks

The desirability of price stabilization from standpoint of welfare has long been debated in economic literature. If attention is focused on price stabilization - defined as an operation intended to smooth out commodity price fluctuations

around the trend set by market forces - than the welfare and income effects of price stabilization on producers and consumer should be carefully considered. Since the pure welfare effects of price stabilization are always positive for both producers and consumers. The income effect of price stability becomes the critical criterion for determining at first approximation in which commodity producers or consumers would gain most from price stability.

Therefore, no answer concerning the desirability of price stabilization for developing countries (or producers) can be given until the size of the income and pure welfare effect is quantified to determine whether positive pure welfare gains are larger than income losses. It should be noted, however, that in quantifying the size of the welfare effect of stabilization, the costs of buffer schemes should be explicitly considered. It would seem doubtful that in the presence of an income loss, the size of the pure welfare gains could be enough to make price stabilization worthwhile for developing countries if they were also required to bear the burden of the financial costs of price stabilization measures. In the developed countries, the need to reduce budget burdens will play a crucial role in implementing the measures of price stabilization.

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農產品價格穩定措施及其影響

彭 作 奎[*]

摘 要

　　農產品價格對一國之政治及經濟有相當之影響，蓋其水準會影響農民所得，消費者福利以及出口利益等。然農產品價格常較工業產品及勞務價格更不穩定，惟農產價格不穩定之影響及穩定措施之效果長久以來即爭論不休，頗難獲得一致的看法。本文之主要目的在探討世界不同發展程度國家採取價格穩定政策之目標、方法以其效果。

　　一般而言，價格穩定政策在減少價格及所得之不穩定，改善資源分配，提高糧食自給率，提高價格及所得水準以及降低消費者之風險。所採用之措施不外乎為「以價穩價」，「以量穩價」及「差價補貼」等。

　　價格穩定措施對社會總福利均有提升作用，但其分配則視價格不穩之來源而定。價格穩定措施對收益之穩定效果亦視價格不穩定之來源及供需彈性大小而定。至於穩定措施對出口利益之影響亦取決於價格不穩定之來源。由此可見，農產品價格穩定措施之效果需視產品供需特性而定，無法保證農民將因價格穩定而獲益。

　　台灣地區實施農產品價格穩定措施多年，對於農產物價及一般物價水準之穩定貢獻良多，農產品之交易條件亦見改善。但未來在制定農產品價格安定制度立法之前，應對各種重要農產品之供需特性，價格不穩定來源詳加研究，以提出適切之制度，以免農民或消費者受害。

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