

**Study on The Welfare Effect of
Agricultural Export Policies in Kyongnam Province**

By

Jae Min, Jung

THESIS

Submitted to

School of Public Policy and Management, KDI

In partial fulfillment of the requirements

For the degree of

MATER OF ECONOMICS AND PUBLIC POLICY

Department of International Economic Policy

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ABSTRACT

Study on The Welfare Effects of Agricultural Export Policies in Kyongnam Province

By

Jae Min, Jung

Kyongnam province has actively sought various agricultural export policies targeted at Japanese market for the growth of farm income and its regional economy.

However, the effectiveness of such export subsidy provision on the actual welfare of farm households needs to be studied carefully. Brander and Spencer(1985) say that the government subsidy to a certain economic sector will enhance the welfare of both that subsidy recipient sector and the overall nation. Eaton and Grossman(1986) say that it will decrease the welfare of both that particular sector and the overall nation. Therefore, I am concerned about whether Kyongnam provinces' export policy is actually beneficial to its farm households' and Kyongnam provincial residents' welfare. Therefore, the purpose of this paper is to answer whether Kyongnam province's export policy is actually beneficial to its farm households' and Kyongnam provincial residents' welfare.

I analyze and evaluate it through as the followed cases; (1) the real farm income of households that produces the export items (2) the real farm income of households that produces non-export items.(3) the welfare effects of Kyongnam provincial resident.

INTRODUCTION

With globalization and economic liberalization, international trade of agricultural goods has not only been increasing dramatically but has become increasingly competitive between countries. This trend has been further reinforced by the trade liberalization of the WTO system following the Uruguay Round. Since trade of agricultural goods are constrained by the distribution process from the points of production to consumption, different from most manufactured goods, the trade relation is expected to be most active between regional countries rather than long distance countries. Moreover, competitive relation among these countries is likely to grow deeper.

Such a tendency can be observed clearly in the agricultural trade relation between Korea and Japan. For instance, despite Korea's advantage of having geographical proximity to Japan, the largest agricultural importer in the world, Korea's share of Japan's agricultural import market has been weak compared to other exporters to Japan, decreasing continuously from 4.4% in 1987 (the highest) to 2.7% in 1997. Certainly, part of the reason lies in the fact that majority of Japan's imports are the goods that are also imported in Korea including Grains, meat and taste food. However, even for the goods that can be exported by Korea, the share is extremely low except for limited items such as mushroom and chestnut.

Since the inauguration of regional autonomy government in 1995, Kyongnam province has actively sought various agricultural export policies targeted at Japanese market for the growth of farm income and its regional economy. Especially, in order to build foundation of agricultural exports, Kyongnam province has promoted organization and grouping of agricultural export farm households by establishing agricultural complex for export and provided subsidies for setting up production facilities. In addition, starting

1997, it has provided Fund for Export Promotion as subsidy for promoting agricultural exports by export farm households and exporters.

However, the effectiveness of such export subsidy provision on the actual welfare of farm households needs to be studied carefully. Some economists¹⁾ say that the government subsidy to a certain economic sector will enhance the welfare of both that subsidy recipient sector and the overall nation. Others²⁾ say that it will decrease the welfare of both that particular sector and the overall nation. Therefore, I am concerned about whether Kyongnam provinces' export policy is actually beneficial to its farm households' and Kyongnam provincial residents' welfare. Therefore, the purpose of this paper is to answer whether Kyongnam province's export policy is actually beneficial to its farm households' and Kyongnam provincial residents' welfare.

The paper will also focus only on agricultural goods and exclude livestock, forestry and marine products. The effect of agricultural export policies on the farm households' real farm income and welfare will be studied by comparing the following variables; (1) the amount of subsidy; (2) the changes in the area of export crop land *vs.* non-export crop land; (3) the changes in the farm households' real income - farm households producing agricultural products for export *vs.* farm households that are not producing agricultural products for export; and (4) the changes in the net income of farm households *vs.* the amount of subsidy.

The paper is divided into five sections. Section I reviews various literatures concerning the welfare effects of export subsidies. Section II discusses the theoretical background of this study. Section III focuses on

1) Brander & Spencer(1985)

2) Eaton & Grossman(1986)

the analytical result of the variables relating to export subsidies and farm households income level. Then, in Section IV, evaluation on export policy of Kyongnam province based on the analytical result of Section III will be provided. Finally, Section V provides the conclusion of this paper regarding the effect of agricultural export subsidies on the real farm income and welfare of Kyongnam farm households and Kyongnam provincial residents.

CHAPTER I . Literature Review

1. Determinants of Agricultural Exports

The determinants of agricultural exports are as follows¹⁾; it can be divided into the determinants of exports demand and supply. The determinants of exports demands are the fluctuations of world demands, export relative price and the exchange rates of competitive countries. The determinants of exports supply are our relative prices, exchange rates, production capacity, wages, the input prices and interest rates.

2. Welfare Effects of Export Subsidies

The role of subsidies in export industries has attracted considerable interest among economists in recent years. This might be due partly to the acknowledged success of countries, where an export promotion policy has played such an important role - like Japan, Korea, etc.

There are several cases in which export promotion policy can be justified from the viewpoint of national (but not international) welfare²⁾. First, as pointed out by Spencer and Brander(1983), export subsidies may improve national welfare when the export-subsidized commodity is supplied under international oligopolistic conditions. Here, gains from exports subsidies result from a shift of the oligopolistic profit from foreign to domestic firms. This result, however, depends on what type of equilibrium concept is considered. Eaton and Grossman(1983) show that no governmental tax or subsidy policy is desirable even under oligopolistic conditions when the equilibrium is a consistent conjectural variation equilibrium. Second, subsidizing the export of a commodity that is produced under increasing

1) Eun-gyeong Lee(1996) The Determinants of Korea's Exports, Gyeongsang University Thesis of Masters Degree

2) See M. Itoh and K. Kiyono(1987) Welfare-enhancing Export Subsidies

returns to scale may enhance the country's economic welfare. In this case the social return from expanded output of the industry may exceed the private return. Third, when there is a large number of unemployed workers in the economy because of wage rigidity or some other type of distortion, production expansion induced by export subsidies may increase employment and thereby improve the country's economic welfare.

Without these special conditions, justifying an export subsidy policy in the standard model is not easy. Global export subsidies are known to be welfare reducing in general, because a uniform export subsidy (imposing the same export subsidy rate on all exported goods) worsens or at best does not change the country's terms of trade. Therefore, it lowers the country's trade welfare level. However, if export subsidies are not uniform, they do not necessarily damage the country's terms of trade. Special cases where they can be welfare increasing have been demonstrated by Brander and Spencer(1985), Feenstra(1986), and Itoh and Kiyono(1987). Abbott, Paarlberg, and Sharples(1987) have examined targeted export subsidies and found that they also can be welfare improving.

Itoh and Kiyono(1987) use a model with three goods to show that export subsidies on marginal goods(defined as goods not exported at all or exported in small quantities under free trade but whose exports can be promoted considerably by export subsidies) can increase welfare the welfare of the subsidizing country. A subsidy on marginal goods causes their production to increase and supply of non-marginal goods to decrease, thereby raising the price of the non-marginal goods and increasing the exporter's terms of trade. The "distortion" in place is the failure to take advantage of the optimal tariff for the non-marginal good.

Feenstra(1986) presents a case where export subsidies increase the welfare of the subsidizing country in a three-good, two-country model. He demonstrates that it is possible for the pattern of substitutability and complementarity across the three goods to allow for subsidies to increase

welfare. The necessary condition is that the subsidized export be a stronger substitute of another export good, or stronger complement of an import good, in the subsidizing country than abroad. Feenstra(1986) points out that the gain in welfare results from non-zero terms of trade effects in the first good. However, the subsidizing country must also be large in the good where it gains from the change in relative prices. Failure to exploit this market power creates a "foreign distortion".

The imperfect competition literature presents a case for export subsidies as a first-best policy(Brander and Spence ; 1985)). This occurs because, by allowing a firm to precommit to a higher level of output and therefore worsening the terms of trade, profits are shifted from the foreign to the domestic firm. These results are not robust to changes in the nature of the strategic interdependence between two firms.

Targeted export subsidies introduce price discrimination to global export subsidies. APS(1987) develop a general equilibrium model for targeted export subsidies and show that the welfare effect for the subsidizing country has an ambiguous sign. Therefore, a welfare improvement is possible as a result of a targeted subsidy. They also briefly outline some of the market conditions necessary for this result to occur. APS use a three-country model with a subsidizing country, a targeted country, and the rest of the world. However, as Dutton points out, it is not clear from the APS paper why their paradoxical result arises. Dutton(1990) shows the APS result arises because they first constrain the export tax to the rest of the world to be zero and it then becomes theoretically possible for the best export tax to the targeted country to be negative. This is a second-best price discrimination strategy. In this case, the prohibition of export taxes results in too many exports to a country with less elastic demand. Therefore, a targeted export subsidy to a country with elastic demand shifts exports out of the less elastic market. This result hinges not only on the differences in elasticities across importing countries, but also on the exporting country having market

power in trade.

Bohman, Carter, and Dorfman(1992) analyze the theoretical terms of trade and welfare effects of targeted export subsidies on their exporters and importers. The ability for a targeted export subsidy to be welfare-improving is inversely related to the size of the subsidized market as well as the relative size of income elasticities.

3. Country Studies

(1) U.S. Case : Export Enhancement Program(EEP) for wheat

I investigate the domestic and international impacts of the U.S. Export Enhancement Program(EEP) for wheat. Some trade theories suggest export subsidies can increase national welfare. Itoh and Kiyono(1987), and Feenstra's(1986) argument as I earlier mentioned do not apply to EEP subsidies, because wheat is not a marginal good and the U.S. has a large market share in the international market.

Targeted export subsidies introduce price discrimination to global export subsidies. APS(1987) found that targeted subsidies can be welfare improving. Dutton(1990) showed that APS achieve their result because they constrain the export tax to the rest of the world to be zero. The APS and Dutton result hinges on differences in import demand elasticities and possession of market power by the exporting country. In order to price-discriminate, the exporting country must be able to separate markets and effectively sell at different prices in different markets.

EEP used targeted in-kind subsidies to expand U.S. exports and was designed specifically to compete with subsidized exports from the EC. The U.S. government believed EEP had been successful and had authorized additional EEP expenditures under the 1990 Farm Bill. However, G. Anania, M. Bohman, and Colin A. Carter(1992) provide substantial evidence that EEP

failed to meet any of its stated criteria. The ability for a targeted export subsidy to be welfare-improving is inversely related to the size of the subsidized market as well as the relative size of income elasticities. However U.S. has been unable to separate wheat markets and sell a significant share of exports at a higher price in non-EEP markets³⁾. And also the new trade theory⁴⁾ shows that export subsidies can be welfare-improving policies in models with imperfectly competitive markets. Subsidy results in a welfare gain because subsidy cost is less than the mark-up of price over cost of additional exports. But the U.S. wheat industry does not fit this theoretical framework. Not only are excess profits lacking, but the industry requires domestic subsidies. Such subsidies should be included in the welfare analysis of increased exports.

Therefore, they argue EEP cannot be welfare-improving for the U.S., even considering strategic trade theory. They then model EEP as an in-kind, constrained, targeted export subsidy and determine its price, quantity, and budgetary effects. Empirical results show that no exporting country gains from EEP and that the intended loser, the EC, is only slightly harmed. They find the export subsidies generate only a small increase in U.S. wheat exports. EEP is an expensive program; based on their estimates for 1988, government cost of additional wheat exports under EEP reached \$469 per metric ton.

(2) U.K. Case : Costs of Protection⁵⁾

Governments have found barriers to trade, especially in agricultural sector, either direct ones or indirect ones involving the use of subsidies, to be politically the most acceptable instruments. Protection⁶⁾ is defined to

3) Japan, Korea, and Taiwan are the only wheat importers that do not receive U.S EEP subsidies in wheat and they account for a small share of total wheat imports. (Anania, Bohman, Carter)

4) Krugman surveys the literature on the new trade theory

5) In this analysis it was assumed that trade restrictions did not change the terms of trade in favour of that country.

include techniques that may be used to increase domestic production above the level that would prevail if farmers received the world market prices and nothing more.

D.G. Johnson(1973) divided the costs of protection into three main categories: (1)the loss in consumer welfare due to the consumption alternatives that consumers forgo because the prices they face do not represent the real cost alternatives; (2) the excess production cost of domestic production compared with the cost of acquiring the same marginal output through trade, and (3) the transfer of income from consumers and taxpayers to farmers and, perhaps, to resource owners that supply inputs to farmers. In the literature of international trade, as well as in the study of the economics of welfare, only the first two of these costs are considered to be 'real' costs, because the income transfers do not impose a reduction in real output over and above the excess production costs and the loss of consumer welfare. But Johnson argue that the income transfers should be considered as a cost of protection, and there would be a net cost if the value of the gains from the transfer were less than the cost.

T.E. Josling carried out a study, entitled Agriculture and Britain's Trade Dilemma that is directly related to agricultural trade in the late 1960s. He makes four estimates of the various costs of British agricultural and trade policy: (1) The outgoing system of deficiency payments; (2) substitution of variable import-levies for the deficiency payments; (3) variable import-levy system with Britain inside the EC but with British prices, and (4) variable import-levy system with Britain inside the EC but with Common Market prices for farm products. British consumption of farm food products was £3,050m of which £1,500m was imported at that time. The net costs of the various programmes to Britain, which includes both the real costs and transfers that would be made to the EC, were from £3 to £356m according to the programmes. If the British were a member of the common Market with current levels of community farm

6) Johnson, D.G. (1973)

prices, the British producer would realize an increase in income of £386m and the resource cost (£34m) would be about 9% of the income transfer. In one sense it might appear that an efficient means had been found for increasing farm income, since the apparent increase in income is 11 times the real cost. However, the consumer of food might take a different viewpoint since his cost is £742m. Therefore, the cost to the consumer is £420m which is greater than the increase in return to farm resources. And so it must be greater by the amount of the real resource costs.

CHAPTER II. The Model

What will happen to the welfare of farm households when government gives subsidies to the farm households producing agricultural goods for export? As I early mentioned in introduction, some economists¹⁾ say that government's subsidy to some sector will enhance the welfare of both that sector and nation. Other economists²⁾ say that it will decrease the welfare of both that sector and nation. However, in this paper, I want to investigate how effective export subsidies increase farm households' real income and provincial welfare.

It could be presumed as the followed cases. This would be in division of: (1) the real farm income of farm households that produces the export items (2) the real farm income of farm households that produces non-export items, and as for the real farm income of farm households that produces the export items, it may then be classified into the real farm income of export-partaking and non-export-partaking groups. and (3) the welfare effects of Kyongnam provincial residents.

1. The Real Farm Income of Farm Households Producing Export Items

(1) The Real Farm Income of The Export-partaking Farm Households

The export-partaking farm households can be generally viewed as to be attaining risk-avert disposition. While the exporting agricultural items are produced and exported under a contracted form in beforehand, it is common in a fact that the price-fluctuating range of the export items is smaller than the one of the domestic agricultural item. Due to the stability of price in exporting, the farmers will willingly export even though the export price

1) Brander & Spencer(1985)

2) Eaton & Grossman(1986)

may be lower than the domestic price. In addition, because the export subsidy is considered as the additional expenses rather than effecting the direct income accretion, occasionally it may be possible to conceive lower profit than the non-exporting farmers may, it is seen that farm households would be happier as with the stable earnings. Meaning that, it is as the case one choosing the stabilized employment rather than a high risk-taking business.

I will look upon the unstable price of agricultural items in **Cobweb Model**³⁾

< The Cobweb Model >

The cobweb model provides a theoretical explanation of the cyclical component of certain price-quantity paths through time.

Cobweb model arises from three factors :

- 1) A time lag must exist between the decision to produce and the actual realization of production,
- 2) Planned production is a function of current prices. Because of the time lag in the production period, current supply is a function of lagged prices.
- 3) Current prices are mainly a function of current supply, which, in turn, is mainly determined by current production.

Therefore, the cobweb model can be expressed:

$$Q_{ts} = f_1(P_{t-1}) \quad E[P_t] = P_{t-1} \quad Q_{ts} = Q_{td} \quad P_t = f_2(Q_{td})$$

Thus, the basic causal chain may be written

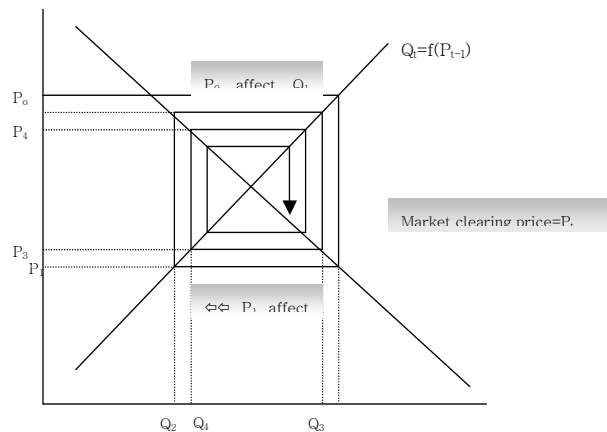
$$P_1 \quad Q_2 \quad P_2 \quad Q_3 \quad P_3 \quad \dots$$

Say, poor weather resulted in a small supply and hence a relatively high price (P_0) in time t_0 . The static short-run supply curve for normal weather, however, is shown as S. Hence, on the basis of the P_0 , producers plan to produce Q_1 , which will be realized in t_1 because of the time lag required for the product process. Once produced, the quantity Q_1 is sold in

3) John Goodwin, Agricultural Price Analysis and Forecasting, John Wiley & Sons, Inc, 1994

t1, and the market clearing price P1 is determined by the market demand relation D. Price P1 is the basis for production, which is realized as Q2, which in turn determines P2.

< Figure 1 > A Cobweb Model with a Convergent Cycle



(2) The Real Farm Income of The Non-export-partaking Farm Households

If domestic agricultural items become overly produced there is a chance that the price may slump, but there can be a price-stabilizing affect by exporting as with the decline in the quantity of domestic supply. According to Kang, Jin-koo at the Rural Development Administration, while there is a decrease in the quantity of domestic supply, it supports the domestic price which pulls the non-exporting farmers' profit up, its effect varies depending on the agricultural goods' price flexibility.

According to the Kang's research, in case of the cucumber, decrease of 1% in the domestic supply has price increase rate of 3.3% and in case of tomato, decrease of 1% has an increase rate of 6.6%. However, as for the strawberry, such effect is to be insignificant within.

2. The Real Farm Income of Farm Households That Produce Non-export Items

If government carries out the export policy for agricultural products, the productive factors of agriculture(land, labor and capital) moves to a side of exporting goods. Therefore, the production cost of non-exporting goods will increase while its supply decrease.

Thus it lower the real farm income of households producing them by lowering consumer's purchasing power owing to increasing the price of non-exporting goods.

3. The Welfare Effects of Kyongnam Provincial Resident

According to Itoh and Kiyono(1987), concentration of export subsidies on marginal goods improves the economic welfare of the country imposing the subsidy, where marginal goods are those that would be exported in small quantities or not at all under free trade but whose export can be promoted by export subsidies. This result is based on the fact that export subsidies on nonmarginal goods and those on marginal goods have opposite welfare implications for the country imposing these measures. The former expands the output of nonmarginal goods, while the latter contracts it. Since the country has monopoly power over the supply of nonmarginal goods in the world market, the former worsens the country's welfare while the latter improves it.

< Welfare-enhancing Export Subsidies >

Itoh and Kiyono(1987) present two examples in which an export subsidy improves the national welfare. The one is based on a three-good trade model, which is quite special but useful for understanding the basic mechanism in its simplest form. The other is more general framework of a continuum-of-goods trade model.

① A Three-good Trade Model

In a three-good trade model, Itoh and Kiyono(1987) suppose that there are two countries, the home and the foreign countries, and three goods, goods 1, 2, and 3. The goods are numbered so that the smaller the subscript number the greater is the home country's comparative advantage in the production of the good concerned⁴).

In standard two-good trade models, export subsidies always lower a country's welfare level since they lead to deteriorate in the terms of trade. Suppose that a country is exporting more than two goods and that the government subsidizes exports of only one of these goods. Then, although the external relative price of that particular good in terms of other goods falls, it does not necessarily imply that the country's overall terms of trade deteriorate. Quite possibly, the relative price of the other export good in terms of the import good will rise. In Itoh and Kiyono's simple example, the external price of good 2 falls relative to the price of good 1 but stays constant relative to the price of good 3. At the same time, the relative price of good 1 (another export good of the home country) in terms of good 3 moves in a direction that favors the home country. **Thus the terms of trade of the home country improve rather than deteriorate as a result of the subsidy.**

In the meanwhile, they say that nonuniform export subsidies improve a country's welfare in a many-good economy. However, characterizing the types of export subsidies that will actually improve the country's economic welfare is not easy. Their simple example suggests an answer to this question.

4) They assume that the home country produce goods 1 and 2 and the foreign country produces goods 2 and 3

Export subsidies on good 1(a nonmarginal good) and on good 2(a marginal good) have opposite effects on the production pattern of the home country: the former expands the production of good 1, while the latter contracts it. Since the home country has monopoly power in the world market of good 1, the former turns the terms of trade against the home country. Furthermore, export subsidies on good 2 force some of the foreign producers who would produce good 2 under free trade to produce good 3. **This shift in foreign factors of production from the good 2 industry to the good 3 industry causes a fall in the price of good 3 through its output expansion. This is the mechanism through which export subsidies on marginal goods improve the country's terms of trade.**

② A Continuum-of-Goods Trade Model

In a continuum-of-goods trade model, Itoh and Kiyono(1987) analyze the welfare effects of export subsidization in a continuum-of-goods, two-country, Ricardian trade model. Goods are now indexed by a real number n on the closed interval $[0, 1]$ on the real line. The goods are indexed so that the home country has a comparative advantage in the production of goods with smaller n . In this model, Itoh and Kiyono(1987) characterize which types of export subsidies improve the home country's economic welfare and which types reduce it.

Export subsidies always worsen the home country's economic welfare as long as they are imposed only on the good exported even under free trade. As a result of the export subsidy, the relative wage⁵⁾ rises, yet relative income⁶⁾ falls or at most does not change. Thus the home country's welfare level declines. To improve the national welfare, an export subsidy schedule must be designed so as to expand the set of the home country's

5) the ratio of home country's wage to foreign country's wage

6) the ratio of home country's income level to foreign country's income level

export goods. In terms of their model, the export subsidy schedule must increase the index of the marginal good.

In the meanwhile, by introducing the export subsidy schedule, the home government can achieve a higher welfare level than under free trade. Suppose that the home government imposes an infinitesimally small export subsidy on the marginal goods and those goods that almost qualify. An expansion of the set of export goods by an export subsidy shrinks the home country's supply of nonmarginal export goods. Furthermore, foreign producers are forced to produce a smaller set of goods, and therefore the foreign output of these goods is expanded. Both of these effects contribute to the increase in the home country's relative wage.

As compared with the above positive welfare impact of the export subsidy, the social cost of the subsidy is much smaller as long as the subsidy rate is low and restricted only to marginal goods.

CHAPTER III. Analysis Of The Agricultural Export Policy In Kyongnam province

By analyzing the below data, I will find out if an export policy for the agricultural goods of Kyongnam province was effective on the increase of the farm households' real income and provincial residents' welfare.

1. A Variation in The Cultivated Area of Agricultural Crops

By comparing the cultivated area changes of crops for export *versus* the cultivated area changes of crops for non-export, we can see what kind of effect has the agricultural product export policy had on the cultivated area changes of crops.

If the Kyongnam province's export policy was effective on the agricultural goods from thereof, and so the exporting amount was increased, the according crop's cultivated area would have enlarged while the other cultivated area would have diminished. Let me see if that is true in so.

(1) The Exporting Crop's Cultivated Area Transition

Table 1 shows the cultivated area transition of exporting crops in the Kyongnam province since the year 1990. While some crops' cultivated area has dramatically enlarged, the cultivated area of others had diminished on the contrast. I will observe the above as with dividing it into the crops that subsidized for expediting export since 1997 and the ones subsidized since 1999.

1) The Crops That Subsidized for Expediting Export Since 1997¹⁾

As for the vegetable group such as an greenhouse watermelon,

1) see Appendix Figure 1~3

strawberry, and red pepper had dramatically enlarged in their cultivated area with an annual average of 10-20%, but for the case of greenhouse pumpkin and tomato, the cultivated area had slowly diminished, and in cultivation of eggplant, greenhouse cucumber, along with cabbage, the area was either stagnated or decreased instead.

As for the fruit group, the sweet persimmon's cultivated area was enlarged dramatically while the pear and apple's cultivated area were slower in its increase.

Then as for the flowering plant group, the chrysanthemum, rose, and carnation cultivated area had enlarged relatively fast.

2) The Crops That Subsidized for Expediting Export Since 1999²⁾

The vegetable group's cultivated area transition had mostly been decreasing slowly or caught in a stagnation.

As in a fruit group, kiwi was slowly increased in its cultivated area, but in a case of citron, the area of the closed farms was increased due to the price drop following after the cultivated area enlargement, and then the cultivated area was rapidly diminished.

If I compare the previous two examples with export results of Kyongnam province as in table 2, it is shown that in the cases of greenhouse cucumber and eggplant, the actual results in export had quickly increased while the cultivated area had decreased on contrast. It means that the cultivated area in vegetable and fruit groups are irrelevant with export, but as in the other crops, they tend to have the increase in an export along with the enlargement of its cultivated area as well.

Especially, the export has significantly increased after promoting the export drive policy in Kyongnam province since year 1995³⁾, while the

2) see Appendix Figure 4

cultivated area did not accommodate with the increase of export.

Table 1. The Cultivated Area Transition of Crops for Export

(Unit : ha)

Crops	1990	1991	1992	1993	1994	1995	1996	1997	1998
Subsidized for expediting export since 1997									
Vegetables									
Cucumber(house)	831	608	880	744	894	767	469	414	614
Strawberry(")	1,204	1,123	1,215	1,688	1,588	2,477	2,462	2,288	2,346
Pumpkin(")	88	465	766	859	640	817	921	990	1,014
Red Pepper(")	1,072	1,174	1,492	1,559	1,661	1,878	1,429	1,630	1,916
Watermelon(")	2,888	3,260	4,523	5,793	7,031	8,692	8,866	9,406	8,307
Tomato(")	352	312	338	665	594	449	702	708	566
Chinese cabbage	3,966	3,553	3,468	4,386	3,621	3,699	3,845	3,190	3,427
Eggplant(house)	355	275	268	342	287	88	68	60	42
Cabbage	118	104	124	141	185	223	133	162	142
Fruits									
Apple	1,369	1,457	1,574	1,634	1,832	1,965	2,487	2,539	2,497
Pear	1,437	1,474	1,479	1,493	1,586	1,740	2,504	2,739	2,934
Sweet persimmon	5,473	6,169	7,069	7,782	8,863	9,715	11,303	11,277	11,586
Flowers									
Lily			2	14	11	10	9	8	9
Chrysanthemum			142	165	217	220	216	241	193
Rose			60	61	76	92	116	99	134
Carnation			26	37	42	57	64	79	68
Subsidized for expediting export since 1999									
Vegetables									
Green onion	1,385	1,461	2,054	1,622	1,423	1,604	1,202	1,109	997
Onion	1,838	2,524	3,334	2,290	2,370	3,334	2,150	2,328	2,812
Garlic	6,161	8,205	7,269	5,359	5,466	6,504	6,003	5,412	5,421
Carrot	569	736	871	1,070	1,263	871	645	717	688
Radish	3,024	3,038	2,900	2,885	3,064	2,621	2,542	2,344	2,594
Fruits									
Kiwi			120	130	220	270	270	245	252
Citron			900	700	1,200	1,400	1,400	970	946

Source : Ministry of Agriculture and Forestry, Korea

Note : (house) means cultivated in greenhouse

(out) means cultivated in open area(field), not in greenhouse

- 3) Kyongnam province gave subsidies to farm households to establish greenhouse complexes for export since 1995, and supported export expediting finance for an allurements of export by providing the indirect costs of exporting agricultural goods since 1997.

Table 2. The Export Results of Agricultural Goods in Kyongnam

(Unit : 1000\$)

Crops	1992	1993	1994	1995	1996	1997	1998	1999
Subsidized for expediting export since 1997								
Vegetables								
Cucumber(house)	9.0	71.0	499.0	1,269.0	2,836.0	2,690.0	2,197.9	3,413.3
Strawberry(")		70.0	136.0	419.0	889.0	387.4	656.9	1,718.9
Pumpkin(")		52.0	116.0	132.0	222.0	196.0	322.1	323.1
Red Pepper(")			3.0	132.0	244.0	63.0	314.7	1,254.2
Watermelon(")				46.2	119.0	62.0	474.9	894.7
Tomato(")					179.0	856.2	127.5	3,934.6
Chinese cabbage				23.0	0.0	25.0	512.6	485.7
Eggplant(house)					179.0	589.0	1,526.7	1,752.1
Cabbage							604.4	
Fruits								
Apple	125.0	130.0		88.0			60.7	104.8
Pear	10.0	205.0	226.0	136.0	331.0	795.0	97.8	322.2
Sweet persimmon				50.0	95.0	30.0	832.1	2,437.2
Flowers								
Lily		48.0	386.0	550.0	163.0	0.3	231.0	69.3
Chrysanthemum.				3.0	3.0		51.0	335.4
Rose					4.0	24.0	350.7	1,643.3
Carnation					1.0	0.4	79.0	3.7
Subsidized for expediting export since 1999								
Vegetables								
Green onion							629.7	566.7
Onion							403.0	210.8
Garlic							3.6	
Carrot							409.6	83.3
Radish							222.7	29.7
Fruits								
Kiwi							124.4	
Citron							202.5	29.7

Source : Kyongsangnam-do province, Korea

(2) The Non-Exporting Crop's Cultivated Area Transition⁴⁾

The Table 3 is about observing on the non-exporting crop's cultivated

4) see Appendix Figure 5~6

area transition as after the year of 1990.

In a grains group, as for the case of rice, barley, wheat, and soy bean, the cultivated area is dramatically decreased as due to the changes in eating habit along with the inexpensive imported crops, and in a case of the sesame, perilla, and peanut, there was not much of a cultivated area variation. This is sort of to say that it is already decreased as to its minimum stage barely keeping on its existence.

As for a vegetable group, the field watermelon is rapidly dropped as with the rapid increase of the greenhouse watermelon cultivated area, and the other vegetables are intending to slowly decrease in their cultivated area variation. But on the other hand, the greenhouse melon, field pumpkin, and spinach's cultivated area is appearing to be slowly enlarging.

In a case of the fruit group, while the peach cultivated area is intending to diminish, the grape is perceived as the high-profit earning crop, so its cultivated area is coming out to be the continuously increasing one.

Table 3. The Cultivated Area Transition of Crops for Non-Export

(Unit : ha)

Crops	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grains									
Rice	149,935	144,317	135,378	132,402	126,788	118,435	114,572	113,734	114,278
Barley	25,774	18,905	14,156	12,006	8,153	7,075	6,064	4,962	5,871
Beer barley			10,900	13,500	9,100	8,400	8,200	6,600	5,495
Soy Bean	16,541	13,279	11,728	12,300	13,126	11,949	9,434	9,082	8,819
Sesame		5,706	4,912	5,214	3,398	4,790	3,937	4,505	4,440
Green perilla		1,105	1,269	1,689	1,190	1,296	577	630	783
Peaunt		575	511	469	549	516	297	227	143
Vegetables									
Sweet potato	3,767	3,420	2,971	2,877	2,762	2,602	2,540	2,438	2,709
Potato(spring)	2,302	1,852	2,751	2,679	1,783	2,107	2,496	2,397	1,986
Potato(fall)	194	493	1,173	391	466	626	1,055	674	526
Spinach	613	757	785	882	874	1,011	787	1,209	1,010
Lettuce(out)	418	421	461	664	533	474	325	299	299
Pepper(")	3,553	3,716	3,751	4,013	4,159	4,158	3,756	3,582	3,258
Cucumber(")	232	428	145	277	194	144	79	67	61
Tomato(")	71	94	115	87	111	106	37	76	38
Pumpkin(")	244	319	371	594	577	460	456	500	479
Melon(")	132	176	46	69	66	76	30	31	17
Watermelon(")	2,363	2,262	1,911	2,312	1,504	1,731	966	685	445
Strawberry(")	180	172	146	138	152	149	107	131	65
Lettuce(house)	26	77	80	120	166	148	216	215	236
Melon(")	532	639	691	758	852	1,155	771	725	914
Fruits									
Peach	1,202	1,121	979	907	850	778	780	745	738
Grape	1,011	964	923	998	1,024	1,157	1,168	1,098	1,158

Source : Ministry of Agriculture and Forestry, Korea

2. A Variation in The Real Farm Income

Through observing upon the changes of farm households' real income - households which are producing agricultural goods for export *versus* households

which are not producing agricultural goods for export, I will see if the Kyongnam province's export policy for the agricultural goods was effective at all.

I will look upon the real farm income of farm households which are partaking export, the farm households which do produce the exporting agricultural goods but do not participate in the export, and farm households which produce the non-exporting goods. The real farm income is illustrated as divided into the nominal farm income as to the customer's price index.

(1) The Real Farm Income of The Farm Households Which Are Producing Agricultural Goods For Export

The Table 4 is to show the real farm income of export-partaking farm households among the agricultural complexes for export in Kyongnam province. In 1996, each farm household averaged an farm income of 15.9 million won showing an average profit rate of 52.4%. Observing in details, there is a contrast among the farm household as with the highest profit of 38.8 million won and then the one with a loss of 12.9 million won, but overall, as shown in Table 5, the Kyongnam farm households' average farm income rate is higher than the national rate as of about 1.5 to 2 times in the farm income therein.

Table 4. The Real Farm Income of Export-partaking Farm Households

(Unit : ha, million won, %)

		No. of F.H.	Cultivated Land	Gross Farm Receipts	Farm Expenses	Farm Income	Farm Income per 10a	Average Profit Rate
1996	Total	346	109	10,467	4,977	5,490		52.4
	Average	(24)	0.32	30.3	14.4	15.9	4.97	
1997	Total	443	155	20,213	12,506	7,707		38.0
	Average	(42)	0.35	45.6	28.2	17.4	4.97	
1998	Total	575	156	22,939	14,709	8,230		35.9
	Average	(40)	0.27	39.9	25.6	14.3	5.30	

Source : Kyongnam Agricultural Research and Extension Service, Korea

Note : () shows No. of agricultural complexes for export partaking export

Table 5. Comparison of Real Farm Income

(Unit : thousand won pre F.H.)

	1996	1997	1998
National Average(A)	10,837	10,603	8,955
Kyongnam Average(B)	8,889	8,784	7,848
Export-partaking F.H.(C)	15,960	17,397	14,314
C/A	1.47	1.64	1.60
C/B	1.80	1.98	1.82

While the export-participating farm households are increasing to the 42 agricultural complexes for export as with 443 farm households, it shows that the number of export-participating complex and farm households are sharply increasing by the export policy of Kyongnam; and it also shows that although each farm household gained an average income of 17.4 million won, the profit rate has lowered as to 38%. This was caused due to the farm expenses were increased in order to increase the quality of agricultural goods for export.

In 1998, although the export-participating agricultural complexes for export were decreased in numbers, the export-partaking farm households were increased on to 575 farm households. And the average income per farm household has been of the decrease from the year before as 14.3 million won, and this is due to the fact that the each farm household's average farm expenses has decreased while the gross farm receipts has dropped even more dramatically.

On another hand as shown in the Table 6 of comparing to the farm income of exporting farm households as to the farm households which do produce the exporting items but do not participate in the export, we can see that generally the non-exporting farm households' income is higher as suggested in the prior model(see Chaper III.1.(2)) in a case of the export items such as greenhouse vegetables and flowering plants. This is because

the non-exporting farm households can be rather stable in profit as with the stability of the price within a domestic market by decreasing domestic supply.

Looking at the changes in the farm income variation⁵⁾, we can see that along with the expansion in the export, the non-exporting farm households' farm income has had rapidly increased in the cases of greenhouse red pepper, eggplant, greenhouse tomato, cucumber, and pumpkin, since the year 1995 when the Kyongnam province had promoted its export policy. Then as for a case such as the strawberry's, as if Kang, Jin-koo's statement in saying that the domestic price is almost rarely affected by the domestic supply amount, the non-exporting farm households' farm income is shown to be not increasing.

The pear and apple's case also, show the dramatic increase in non-exporting farm households' farm income along with the expansion of the export.

However, from the year 1997 as a starting point, the real farm income in almost every agricultural goods is decreasing as in 1998, which can be viewed as fundamentally caused by the increase of farm expenses due to the I.M.F crisis.

5) see Appendix Figure 7~8

Table 6. The Real Farm Income of Households Which Do Not Partake Export

Unit : thousand won per 10a

Crops	1990	1991	1992	1993	1994	1995	1996	1997	1998
Subsidized for expending export since 1997									
Vegetables									
Cucumber(house)	3,532	3,827	4,697	4,299	5,258	4,997	4,820	5,900	5,537
Strawberry(")	3,010	2,771	4,202	3,570	3,602	4,418	3,774	3,676	3,650
Pumpkin(")	2,127	3,369	2,132	2,782	2,311	1,527	2,138	2,122	2,414
Red Pepper(")	5,896	8,383	7,181	6,799	7,932	4,306	10,065	9,703	5,811
Watermelon(")	3,028	3,808	2,704	2,652	2,544	2,570	2,380	2,002	1,777
Tomato(")	3,800	4,338	6,026	4,257	3,889	5,971	2,933	4,585	3,650
Chinese cabbage	8,460	13,347	11,663	5,571	7,281	6,700	5,666	7,672	7,945
Eggplant(house)	762	817	1,111	939	822	1,361	2,115	1,918	
Cabbage	1,174	624	644	446	666	527	899	635	465
Fruits									
Apple	1,549	1,907	1,305	1,788	2,060	1,217	1,665	1,892	1,594
Pear	1,515	1,908	1,810	1,780	2,384	2,143	2,477	2,905	1,727
Sweet persimmon	1,213	1,904	1,176	1,324	1,226	1,294	1,253	1,278	837
Flowers									
Lily			9,982	9,694	6,553	6,868	6,485	6,243	4,846
Chrysanthemum.			4,143	6,168	4,748	4,621	6,279	4,590	2,038
Rose			7,809	9,318	9,704	13,184	11,629	5,973	7,227
Carnation			9,271	13,235	7,390	9,400	6,403	1,795	739
Subsidized for inducing export since 1999									
Vegetables									
Green onion	1,080	1,071	808	1,035	1,207	1,256	1,184	1,416	1,421
Onion	1,060	1,217	410	856	2,415	764	2,661	1,032	1,151
Garlic	1,124	615	716	1,298	2,013	1,420	1,220	1,596	1,668
Carrot	955	877	1,168	893	1,249	1,026	881	1,162	1,214
Radish	5,777	6,923	7,052	5,522	6,857	5,989	7,731	5,556	4,484
Fruits									
Kiwi				2,236		2,315	2,017	1,812	1,764
Citron						2,615	1,699	735	496

Source : Rural Development Administration, Annual, Standard Farm Income

(2) The Real Farm Income of The Farm Household Producing Non-exporting Agricultural Goods⁶⁾

In the case of non-exporting agricultural goods, the farm income is

6) see Appendix Figure 9~10

shown to be much lower than the exporting agricultural goods' in the most crops as suggested in the Table 7. As for its variation's change, both of the year 1995 with an export policy opening and the year 1997 as an origin the supporting of export expediting funds, there are no real particular change as thereof.

As in the prior model(see Chaper III.2.), I assumed that if the export policy is accelerated, the agricultural productive factors(land, labor and capital) moves from non-exporting corps side to the exporting crops side, which then raises the production cost of non-exporting goods, therefore having to increase the price of non-exporting goods as a result in lowering the real farm income with the loss of consumers' purchasing power. However, just as the Appendix Table 1~4 illustrates, a variation in the production factors which are farm expenses and intermediary material expenses does not really present a particular difference from the exporting agricultural crops'.

Therefore, it is shown that the export policy is not effective enough as to move the production factors from the non-exporting agricultural crops.

Table 7. The Real Farm Income of Farm Households Producing Non-exporting Goods

(Unit : thousand won)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grains									
Rice	555	524	550	486	513	539	642	638	576
Barley	157	177	217	181	177	232	193	156	78
Beer barley	177	184	212	155	194	185	171	163	74
Been	184	183	186	181	161	234	223	182	212
Sesame	573	540	639	356	625	523	586	617	315
Green perilla	175	205	220	175	187	169	177	156	134
Peanut	385	366	383	367	397	321	303	302	347
Vegetables									
Sweet potato	693	991	901	780	617	653	738	566	363
Potato(spring)	577	1,181	542	551	1,301	888	821	550	698
Potato(fall)	1,074	1,073	516	513	490	596	404	761	1,016
Spinich	700	862	788	673	992	913	1,853	1,826	1,261
Lettuce(out)	934	883	1,017	1,109	1,160	1,272	1,321	1,300	0
Red Pepper(")	580	850	1,422	1,315	1,003	1,266	1,052	848	1,169
Cucumber(")	1,146	1,261	1,382	1,346	1,488	1,376			
Tomato(")	1,105	1,678	1,709	2,027					
Pumpkin(")	399	449	570	521	558	572	851	916	611
Melon(")	663	1,007	1,248	837	1,289	1,199	1,287	1,246	1,106
Watermelon(")	1,029	1,233	1,045	822	1,131	1,034	1,292	911	351
Strawberry(")	987	933	1,212	1,011	885	924	1,241	1,117	1,068
Lettuce(house)	1,268	1,701	1,791	1,109	1,622	1,464	1,654	1,638	1,894
Melon(")	2,185	2,879	3,099	3,049	3,407	3,216	2,803	2,570	2,112
Fruits									
Peach	883	1,252	1,405	1,769	1,958	1,656	1,816	1,705	931
Grape	1,247	1,354	1,240	1,956	2,812	3,018	2,755	2,539	2,144

Source : Rural Development Administration, Annual, Standard Farm Income

3. The Net Income Variation of Farm Households *Versus* The Amount of Subsidy

In a comparison of net income variation of farm households and the amount of subsidy, I will see if the Kyongnam's agricultural export policy was effective upon the enhance of the farm households' real farm income.

(1) The Amount of Subsidy

The agricultural export subsidies from the Kyongnam province can be largely categorized into the subsidies for establishing agricultural complexes for export to construct export foundation and the export expediting funds for inducing the export. The invested amount in the agricultural complexes as indicated in the Table 7 was 144 billion won including the subsidized amount of 68 billion won as in total of 94 agricultural complexes from the year 1995 to 1999. And, 'Export Expediting Funds' as to induce the export of the fresh agricultural goods has provided total of 2,604 million won. Therefor, total of 70.8 billion won has provided from the year 1995 to 1999.

Table 8. The Amount of Subsidies

	(Unit : million won)					
	total	1995	1996	1997	1998	1999
total	70,804	30,300	17,800	12,144	4,131	6,429
Establishing agricultural complex for export	68,000	30,300	17,800	11,800	3,200	4,900
Export Expediting Finance	2,804	0	0	344	931	1,529

Source : Kyongnam province, Korea

(2) Net Farm Income of Farm households

The Table 9 is a comparison in between the Kyongnam-supported subsidy along with the real farm income of the farm households that had participated in the exporting and the actual export results of fresh agricultural goods. As the table well indicates as of from the year 1996 to 1997, the export-partaking exporting complexes' total real income and the actual export results is smaller than the supported subsidy. However, in 1998, it shows that the actual export results and the real income is bigger than the supported subsidy as thereof.

Therefore, we might see that the total subsidy is greater than the real farm income as in a simple grand totaling from 1996 to 1998, but if we considers the non-exporting farm households' increase rate in their real farm income caused by a stability of domestic price, although it may not be exactly measured, the farm households' increase in the real farm income would be greater than the total subsidy as thereof.

Table 9. The Comparison between Net Income And Subsidy

		(Unit : million won)		
	계	1996	1997	1998
Real Income	21,427	5,490	7,707	8,230
Real Export	27,100	4,442	5,231	17,427
Real Subsidy	31,556	16,969	11,080	3,507

note : CPI : 1995Y-100, 1996Y-104.9, 1997Y-109.6, 1998Y-117.8

Exchange rate : 1996-805won/us\$, 1997-950, 1998-1,403

4. The Comparison in The Range of Fluctuation in The Price of The Exporting And Domestic Agricultural Goods

As seen in the cobweb model in prior, it suggested the instability of the price as the characteristic in the agricultural products, and as the export-preferring farm households attain a tendency to be risk-avert, they turn out to prefer the stability of export price even when the export price may be lower than the domestic price, which then leads to a satisfaction in

as compared to the non-exporting farm households. I will seek to verify the above in checking as if a range of fluctuation in the export price is indeed smaller than the one of the domestic price.

As we finds in the price of exporting and domestic goods as of the Table 9 and Figure 2, it is seen that in contrast to a not so huge range of fluctuation in export price, while the range of fluctuation in domestic price is relatively intense.

Figure 2. The Price of Exporting Goods

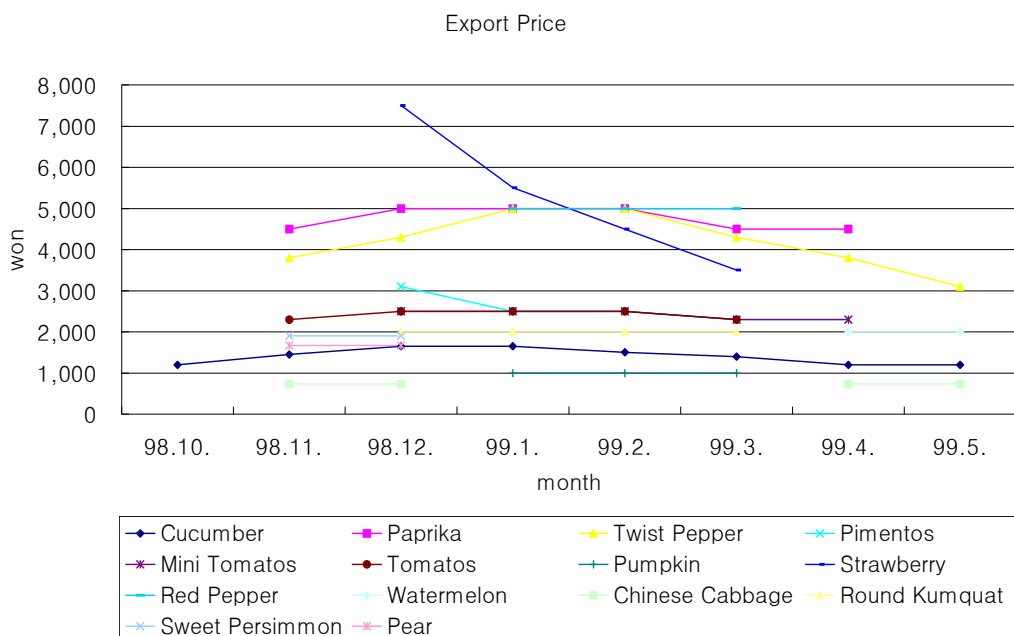


Figure 3. The Price of Domestic Goods

Domestic Price

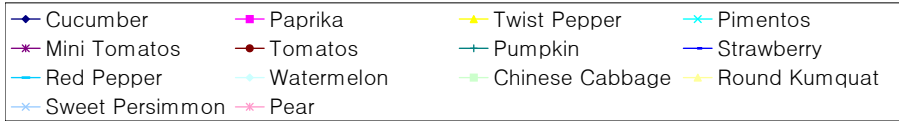
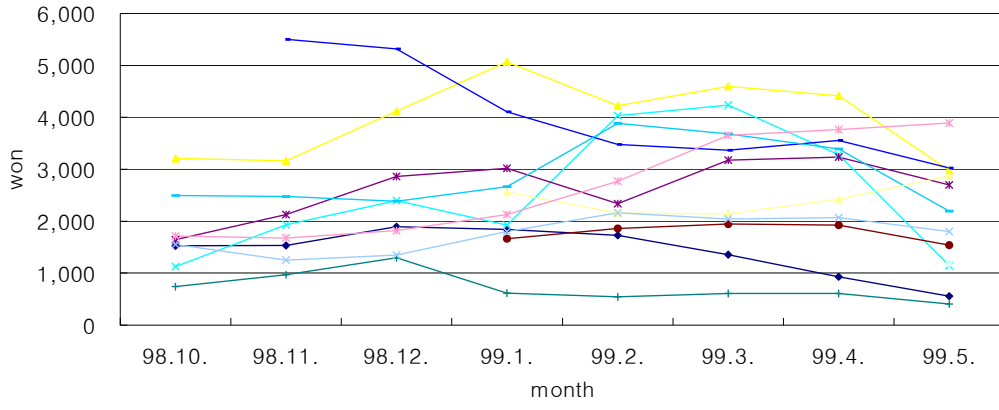


Table 10. The Price Comparison Between Exporting Goods And Domestic Goods

(Unit : won)

Agricultural Goods	1998.			1999.				
	Month 10	11	12	1	2	3	4	5
Export Price								
Cucumber	1,200	1,450	1,650	1,650	1,500	1,400	1,200	1,200
Paprika		4,500	5,000	5,000	5,000	4,500	4,500	
Twist Pepper		3,800	4,300	5,000	5,000	4,300	3,800	3,100
Pimentos			3,100	2,500	2,500	2,300	2,300	
Mini Tomato			2,500	2,500	2,500	2,300	2,300	
Tomato		2,300	2,500	2,500	2,500	2,300		
Pumpkin				1,000	1,000	1,000		
Strawberry			7,500	5,500	4,500	3,500		
Red Pepper(fresh)				5,000	5,000	5,000		
Wattermelon							2,000	2,000
Chinese Cabbage		733	733				733	733
Round Kumquat			2,000	2,000	2,000	2,000		
Sweet Persimmon		1,900	1,900					
Pear		1,667	1,667					
Domestic Price								
Cucumber	1,528	1,531	1,893	1,838	1,731	1,356	929	556
Paprika								
Twist Pepper(4kg)	3,207	3,167	4,120	5,067	4,225	4,596	4,412	2,978
Pimantos(10kg)	1,126	1,933	2,400	1,925	4,035	4,237	3,283	1,148
Mini Tomatos(5kg)	1,641	2,129	2,865	3,020	2,340	3,180	3,237	2,700
Tomatos(5kg)				1,663	1,860	1,948	1,923	1,541
Pumpkin	741	972	1,300	618	541	610	609	407
Strawberry(2kg)		5,500	5,318	4,107	3,478	3,370	3,559	3,025
Red Pepper(10kg,fresh)	2,494	2,479	2,385	2,667	3,885	3,679	3,390	2,194
Watermelon(6kg)								1,183
Chinese Cabbage(10kg)								
Round Kumquat(10kg)상				2,558	2,158	2,144	2,422	2,875
Sweet Persimmon(10kg)	1,553	1,253	1,351	1,804	2,160	2,042	2,072	1,800
Pear(15kg)	1713	1679	1823	2128	2773	3658	3767	3890

Source : Kyongnam Agricultural Research and Extension Service,
Garak Market

5. The Movement Analysis of The Price in Agricultural Production Factor

If an export policy is promoted in the Kyongnam province, the agricultural production factors will move over to the agricultural crops for export or agricultural complexes for export side and the price of agricultural production factors for the non-exporting crops will increase. Thus I will observe if the agricultural production factors have increased after promoting the export policy as it is assumed that the non-exporting crops' price increase is having to result in a decrease of the real farm income, followed by a loss of the consumers' purchasing power.

To begin with, if I look into the variation of the farm expenses⁷⁾ as the Appendix Table 1~2 show the variation of the farm expenses, the most vegetable group excluding the greenhouse red pepper and cucumber, is apparent in their decreasing before or after the year 1995 when they began the large scale of support in agricultural complexes for export, and also the variation changes of the intermediary agricultural factors, show the similar tendency, too. And it shows that the farm expenses are continuously increasing in case of some vegetables and flowing plants such as the greenhouse red pepper, cucumber, rose and chrysanthemum that require much need of the heating expenses during the winter time.

6. Are Agricultural Products of Kyognam Province Marginal Goods?

According to Itoh and Kiyono(1987), concentration of export subsidies on marginal goods improves the economic welfare of the country imposing the subsidy, where marginal goods are those that would be exported in small quantities or not at all under free trade but whose export can be promoted by export subsidies.

Whether Kyongnam's agricultural goods are marginal products or not can be examined by comparing the export performance and export subsidy rates before and after the export promotional policies. If they are marginal

7) see Appendix Figure 11~14

goods, export would have been either non-existent or very small under free trade and increase only with export subsidies or other export policies. If they are non-marginal goods, export trend of Kyongnam agricultural products.

The table 11 and 12 show that agricultural export in Kyongnam reached 130million USD in 1999, over three times larger than 58million USD export level in 1994 when Kyongnam started to promote its agricultural export policies. Among the exported products, export of fresh agricultural goods increased from 1,474 thousand USD in export of marine products increased only by 1.3 times from 300 million USD during the same period.

As Itoh and Kiyono(1987) earlier mentioned, marginal goods are those that would be exported in small quantities or not at all under free trade but whose export can be promoted by export subsidies. Therefore, it can be concluded that Kyongnam's agricultural products, especially fresh agricultural products are marginal goods, while marine products are non-marginal goods.

Table 11. The Actual Export Results of The Agricultural And Marine Products In Kyongnam

(Unit : thousand dollars)

	1994	1995	1996	1997	1998	1999
Total	380,623	438,618	495,151	473,800	574,001	670,429
Agricultural Products	42,369	58,362	74,592	88,450	117,473	129,956
Livestock Products	16,992	23,620	39,000	47,971	62,290	70,035
Forestry Products	21,560	26,636	46,645	68,581	51,447	59,443
Marine Products	299,702	330,000	334,914	268,798	342,791	410,995

Source : Kyongnam province, Korea

Figure 4. The Actual Export Results of The Agricultural And Marine Products In Kyongnam

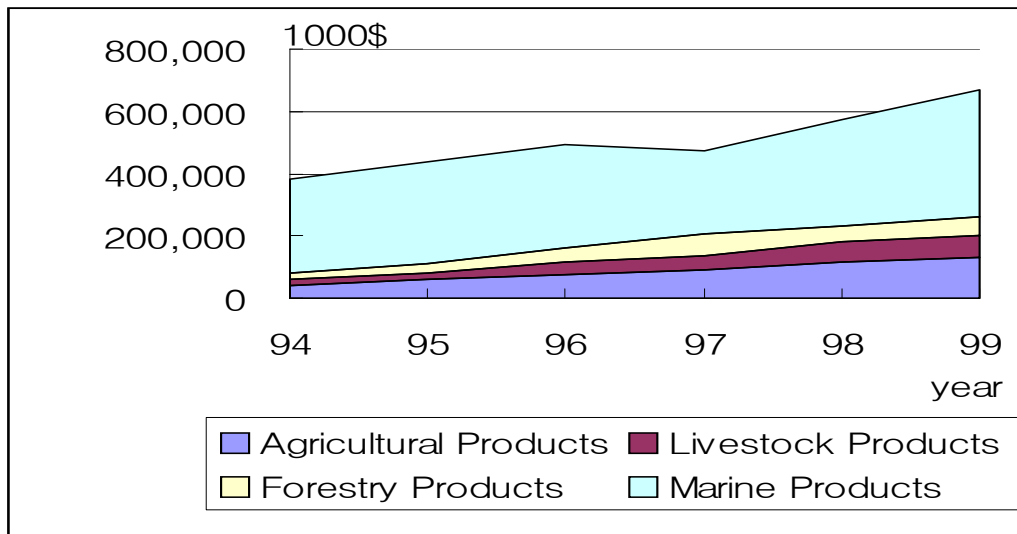


Table 12. The Export Results of Fresh Agricultural Goods in Kyongnam province

(Unit : thousand dollars)

	1992	1993	1994	1995	1996	1997	1998	1999
Total	144	636	1,474 (1times)	5,113 (3.5times)	5,787 (3.9times)	6,035 (4.1times)	14,632 (9.9times)	22,760 (15.4times)
Fresh Vegetables	9	253	862	4,286	5,188	5,164	12,488	17,485
Fruits	135	335	226	274	426	825	1,349	2,989
Flowers		48	386	553	173	46	795	2,286

Source : Kyongsangnam-do province, Korea

CHAPTER IV. Evaluation of The Agricultural Export Policy in Kyongnam Province

1. The Actual Export Results of The Agricultural And Marine Products in Kyongnam

Meanwhile the Table 11, 12 and 13 are showing the variation in export results of the agricultural and marine products in Kyongnam province and they show the rapid enlargement in an export of the agricultural products along with the fact that, it covered 15% of the national rate in 1999 as for the agricultural items, but especially as for the fresh vegetable groups that really had no export until recent, had even taken over more than 21% as thereof. This is viewed in the results of the export drive policy of Kyongnam province since the year 1995.

Kyongnam's main agricultural export policy is as below.

- ① the establishing of the agricultural complexes for export that lead the agricultural export
- ② the support of agricultural export expediting funds for an induce of export by providing the indirect costs of exporting agricultural goods to increase the competitive power
- ③ the establishment of a department that is in exclusive charge of undertaking the administrative support in an export of the agricultural goods
- ④ the management advises along with the technique and diagnosis upon the farm households cultivating agricultural goods for export
- ⑤ the counsel and constant export-related information offerings through a system such as the Internet
- ⑥ the establishment of a trading firm named the 'Kyongnam Trade Company' which would provide the service in relations of exporting agricultural goods as by having the province finance 51% as therein
- ⑦ the establishment of direct route in between the city of Masan and

Shimonoseki as for a direct connection of the Kyongnam and Japan, the major export market.

Table 13. Kyongnam's Agricultural Export Rate Covered in Nation

(Unit : thousand\$, %)

Classification	1998			1999		
	National Export	Kyongnam Export	Portion	National Export	Kyongnam Export	Portion
Total	1,635,400	231,211	14.1	1,720,000	259,434	15.1
Fresh Agricultural Products	111,000	14,632	13.2	137,600	22,676	16.5
Vegetables	59,400	12,488	21.0	83,000	17,341	20.9
Fruits	39,400	1,349	3.4	36,600	3,049	8.3
Flowers	12,200	795	6.5	18,000	2,286	12.7
Agricultural Process	1,092,000	102,842	9.4	1,086,200	107,280	9.9
Kimch	43,700	11,984	27.4	78,000	20,424	26.2
Others	1,048,300	90,858	8.7	1,008,200	86,856	8.6
Livestock Products	314,300	62,290	19.8	348,200	70,035	20.1
Forestry Products	118,100	51,447	43.6	148,000	59,443	40.2

Source : Ministry of Agriculture and Forestry, Korea
Kyongnam, province

2. The Effects On The Agricultural Goods' Export

In chapter III and IV, I have observed if the Kyongnam agricultural export policy has been effective upon the real farm income and welfare enhance of the farm households. In a conclusion, as the Table 12 shows the results of the Kyongnam agricultural export policy, it can be seen that it had rapidly expanded in export since 1995 and below affects were brought in along with the growth in the export.

(1) The Contribution In Stabilizing The Price Of Domestic Greenhouse Floriculture

Our nation's greenhouse area is 9.8m² per one residential individual, and which is revealing of the price slump problems in the greenhouse vegetable group due to the overcapacity of greenhouse area.¹⁾ But in Japan's case as with a similar propensity in consuming agricultural goods as us, the increasing tendency of the cultivated area was slowing down as of 8m², while the G.N.I. per a residential individual is exceeding \$10,000.00. At this point, the agricultural goods' export can reduce the domestic supply to have an affect to help stabilizing the domestic price. As it relates to the crops' price flexibility, Kang²⁾ says the cucumbers are high in its rate and the strawberry is low as in. In a case of the cucumber, if its domestic supply were deducted in 1%, it then would increase the domestic price as to 3.3%, and in a case of the tomato, it would increase 1.6%, and almost not be affected as for the strawberry.

The Table 14 shows the Kyongnam's agricultural export rate covered in nation as well as the total produced amount in the Kyongnam province.

As the Table 14 illustrates, it can be seen that it is largely contributing to reduce the domestic supply of the fresh agricultural crops such as in case of a cucumber covering 8.4% production of the Kyongnam province and 0.6% of the national production rate, and the tomato with 6.2% in Kyongnam province and 0.7% of national rate as well.

Applying the Kang's research to my data, I could assume that 0.6% of the decrease in cucumber's domestic supply increase the domestic price as to 1.98%, and 0.7% of tomato increase 1.12%

Thus the export of agricultural goods in Kyongnam province is contributing to increase the farm households' real farm income which are producing the exporting goods without actually exporting the goods.

1) Kang Jin-koo, Farm management officer, Rural Development Administration, Korea

23) Kang Jin-koo, Farm management officer, Rural Development Administration, Korea

Table 14. Kyongnam's Major Agricultural Goods' Export Rate Covered in Nation

(Unit : million blossom, thousand M/T, %)

Classification	1998					1999				
	National Yield	Kyong-nam Yield	Kyong-nam Export	C/A	C/B	National Yield	Kyong-nam Yield	Kyong-nam Export	C/A	C/B
	(A)	(B)	(C)			(A)	(B)	(C)		
Subsidized for inducing export since 1997										
Vegetables										
Cucumber(house)	343	25	1.4	0.4	5.7	360	25	2.1	0.6	8.4
Strawberry(")	147	55	0.3	0.2	0.6	144	50	0.6	0.4	1.2
Pumpkin(")	113	34	0.5	0.4	1.4	126	46	0.5	0.4	1.0
Red Pepper(")	141	60	0.9	0.6	1.5	221	137	0.8	0.4	0.6
Watermelon(")	554	218	0.5	0.1	0.2	682	242	0.7	0.1	0.3
Tomato(")	221	30	1.2	0.5	3.9	280	30	1.8	0.7	6.2
Chinese cabbage	2,779	224	0.7	0.0	0.3	2,523	146	0.9	0.0	0.6
Eggplant(house)	9	0.6	1.1	11.2	176.3	12	2	1	8.6	56.3
Cabbage	193	5	0.7	0.4	15.5	4	6	0.0	0.0	0.0
Fruits										
Apple	459	30	0.04	0.0	0.1	490	46	0.16	0.0	0.3
Pear	260	19	0.06	0.0	0.3	259	23	0.19	0.1	0.8
Sweet persimmon	210	113	0.6	0.3	0.5	214	117	1.8	0.8	1.6
Flowers										
Lily	46	2	0.14	0.3	6.3	63	3	0.08	0.1	3.1
Chrysanthemum	343	114	0.2	0.1	0.2	369	131	1.23	0.3	0.9
Rose	588	145	1.0	0.2	0.7	539	94	4.4	0.8	4.7
Carnation	173	87	0.3	0.2	0.3	143	43	0.15	0.0	0.0
Subsidized for inducing export since 1999										
Vegetables										
Green onion	339	20	0.2	0.1	1.0	400	25	0.18	0.0	0.7
Onion	872	164	0.8	0.1	0.5	936	207	0.5	0.1	0.3
Garlic	394	62	0	0.0	0.0	484	72	0.0	0.0	0.0
Carrot	147	13	0.4	0.3	3.4	2	0.6	0.09	4.0	16.1
Radish	1,602	100	0.5	0.0	0.5	1,441	91	0.06	0.0	0.1
Fruits										
Kiwi		30	0.07		2.5		3	0.0		0.0
Citron		5	0.06		1.3		3	0.005		0.2

Source : Ministry of Agriculture and Forestry, Korea
Kyongnam, province

(2) The Real Farm Income of Export-Partaking Farm Households

The real farm income of export-partaking farm households varies on the differences of each producing crop, farmer's technique level, along with the

discrepancy in between the exporting and domestic price, but the Table 5 is a comparison of the exporting farm households' average real farm income as to the nation and Kyongnam's average real farm income. As the Table 5 well illustrates, I can see that the Kyongnam's average real farm income is higher than the national average real farm income as with about 1.5-2 times.

Therefore, I can state that the Kyongnam province's export policy has contributed to the increase in farm income of the exporting farm households.

3. The Effects on Welfare Enhance of Kyongnam Provincial Resident

As I mentioned in the Model(Chapter II), concentration of export subsidies on marginal goods improves the economic welfare of the country imposing the subsidy, where marginal goods are those that would be exported in small quantities or not at all under free trade but whose export can be promoted by export subsidies.

And, as already mentioned in chapter three, Kyongnam's agricultural products are marginal goods as defined by Itoh and Kiyono(1987) based on its increase of exports from 1994 to 1999 by over 3 times and by 15 times for fresh agricultural goods. It can be said then that Kyongnam province has enhanced the welfare of its provincial residents by improving Korea's terms of trade for agricultural goods and promotion its agricultural exports through provision of the export subsidies.

In case of marine products, since their export level has already been high even before the Kyongnam's export policies, they are non-marginal good as defined by Itoh and Kiyono(1987). Itoh and Kiyono also explain that welfare is aggravated if export subsidy is provided to non-marginal goods. Based on such explanation and considering the fact that, fortunately, Kyongnam province has not been providing any export subsidy for the marine products, it can be said that Kyongnam's export policy has been

consistently promote residents' welfare.

In the meanwhile, according to Itoh and Kiyono(1987), an infinitesimal export subsidy on marginal goods raises the home country's welfare level. It should be then examined whether the rate of Kyongnam's export subsidy provision to its export agricultural goods is at an appropriate level. For fresh agricultural products, the export expediting fund has been provided to farm households and exporting companies at 50% each since 1997, up to 10% of total export amount, with an intention to support the additional indirect cost incurred for selection, packaging, and transporting the goods for export compared to selling to domestic markets estimated at about 10% over the total cost. As it can be seen in Appendix 1, Table 2, in 1997, total amount of 344 million won subsidy was provided for 23 product types including greenhouse vegetables, flowers, and fruits. In 1998 the subsidy amount reached 931 million won for 24 product types. In 1999, total of 1,530 million won was provided with increase in subsidy products to 27 products up to 8% subsidy rate of total exporting since 1998.(See Appendix 1, table 6)

Therefore, it can be said that the export subsidy level paid by Kyongnam province has been decreasing every year(decrease from 5% in 1997 and 1998 to 4% and 3% since 1999), which means that export policy of Kyongnam province has been contributing to promoting welfare of its residents according to Itoh and Kiyono(1987)'s conditions.

CHAPTER V. Conclusion

I observed to see if the export policy of Kyongnam province was indeed an effective plan for an increase in the real income and welfare of farm households as through the viewpoint of farm households producing exporting-crops, non-exporting crops.

It was acknowledged that the policy was effective in increasing the real farm income of farm households in export-partaking farm households. According to the record, Kyongnam farm households' average real farm income was 1.5 to 2 times greater than that of the national farm households' real farm income along with the fact which shows more than 15 times of expansion in export in 1999 compared to the one of 1994 by the export expedition policy.

Also, in order to cope with the agricultural import liberalization with launch of WTO system, government established developing plan for the agricultural and marine community and expedited it as to be supporting with an immense amount of 5,700 billion won for the doubling of the greenhouse vegetables' area from 1990, which then resulted in a huge hardship of overproduction and a drop of the crops' price accordingly. At this point, although there may be different as depending on the price flexibility coefficient, I could see that they also had largely contributed to the stabilization of the price by reducing the domestic supply amount through the export.

And, it can be said that Kyongnam province contributed to its residents' welfare promotion by radically increasing agricultural exports through active promotion of export policies including provision of minimal export expediting funds to its agricultural products which are marginal goods. However, there has been a few problems in provision of export expediting funds. Although the level of subsidy provision differs by products types, 3% or 4%, it is mostly uniform. Therefore, in order to make welfare

promotion more effective, even among the marginal goods, more categories should be defined and the rate of subsidy differentiated further.

And since it is a national research, it may be differential as with the Kyongnam province's exporting farm households, according to Cho, Jae-kyu's research about the perception upon export-participating farm households¹⁾, the farmers which participated by the administration's suggestion was of 81.9%²⁾ along with the unsatisfied farm households' rate among them of 37.1% due to the decrease in their farm income was relatively much apparent. Although there may be depending on the export of agricultural goods, it cannot be but limited unless the profit is guaranteed. Thus for the export expediting, the below matters would have to be taken care of first as for guaranteeing the profit rate.

① The security of quantity: the exporting crop's profit is closely related with productivity per unit area. And supporting system is necessary to back up the exporting farm households technically to a certain point. Although many studies are currently being conducted as for the testing level, it is definitely in a need of the competent manpower to provide the technique at a producing site; it will require the disposition at the city and county' Rural Guidance Center as of ones who are exclusively in charge of advising to the farm households producing exporting crops with the techniques.

② The improvement of an exporting path for the price elevation: as the general transition path of the exporting agricultural products is as [farm households - Korean exporting group - Japanese importing group - large retail trade or wholesale store] and Korean exporting and Japanese importing

1) Cho Jae-Kyu(1997), Farm management officer, Rural Development Administration, '96 Research Report.

2) Cho Jae-Kyu(1997), Farm management officer, Rural Development Administration, '96 Research Report.

groups have the main initiative compromising as to the domestic wholesale value as its standard, but due to the low price compromising capability, the export price had decreased in 23-30% in 1997 to 1998. Therefore, most of the current subcontracting level of agricultural goods exporting marketing will have to develop it out as to the direct-list exporting and field marketing.

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< Appendix 1 >

Table 1. Farm Expenses of Exporting Crops

(Unit : thousand won)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Subsidized for expediting export since 1997									
Vegetables									
Cucumber(house)	3,357	2,799	2,259	2,357	2,709	2,854	3,021	3,137	3,097
Strawberry(")	3,064	2,663	2,247	2,490	2,594	2,452	2,408	2,403	2,153
Pumpkin(")	1,893	1,912	1,703	1,477	1,323	1,254	1,471	1,293	1,076
Pepper(")	2,701	2,930	3,161	3,568	3,474	4,139	5,072	5,485	5,968
Watermelon(")	1,386	1,785	1,715	1,177	1,193	1,209	1,153	1,108	1,034
Tomato(")	2,376	2,234	2,137	2,029	2,280	2,938	2,814	2,854	2,791
Chinese Cabbage	416	436	380	391	303	353	345	301	324
Eggplant(house)	532	483	471	382	472	819	782	717	3,051
Cabbage	651	388	331	306	1,460	284	301	275	258
Fruits									
Apple	983	977	995	1,019	864	866	847	962	763
Pear	1,132	1,035	1,079	960	804	881	1,042	895	859
Sweet Persimmon	596	557	575	583	538	498	520	473	456
Flowers									
Lily	0	0	8,616	10,089	8,907	9,389	8,368	7,313	6,297
Chrysanthemum.	0	0	3,421	4,193	1,888	2,134	2,976	2,888	3,560
Rose	0	0	6,554	7,394	8,466	8,540	9,472	9,353	9,992
Carnation	0	0	10,426	11,371	11,075	11,115	10,847	9,657	7,909
Subsidized for Expediting export since 1999									
Vegetables									
Green onion	0	0	8,616	10,089	8,907	9,389	8,368	7,313	6,297
Onion	0	0	3,421	4,193	1,888	2,134	2,976	2,888	3,560
Garlic	0	0	6,554	7,394	8,466	8,540	9,472	9,353	9,992
Carrot	0	0	10,426	11,371	11,075	11,115	10,847	9,657	7,909
Radish	259	265	321	274	288	335	322	360	309
Fruits									
Kiwi	0	0	0	0	0	860	876	872	815
Citron	0	0	0	0	0	583	740	438	376

Table 2. Farm Expenses of Non-Exporting Crops

	(Unit : thousand won)								
	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grains									
Rice	183	167	239	198	56	115	111	104	107
Barley	114	129	101	90	68	86	86	73	68
Beer barley	155	140	137	134	112	135	115	105	94
Been	111	113	115	103	99	101	102	67	67
Sesame	189	163	164	108	39	58	59	50	57
Green Perilla	167	90	87	82	69	66	66	72	47
Peanut	257	241	223	181	165	200	207	194	176
Vegetables									
Sweet potato	257	280	249	255	212	248	244	197	152
Potato(spring)	401	482	499	452	368	421	395	352	367
Potato(fall)	420	431	392	342	376	398	307	333	284
Spinach	341	381	363	338	359	254	281	228	223
Lettuce(out)	390	342	285	338	354	345	339	284	0
Pepper(")	529	483	345	374	267	303	289	258	237
Cucumber(")	792	746	720	649	878	674	0	0	0
Tomato(")	773	690	739	682	0	0	0	0	0
Pumpkin(")	400	403	426	358	434	404	341	348	274
Melon(")	684	539	503	477	533	525	522	452	406
Watermelon(")	571	470	438	416	422	429	468	503	442
Strawberry(")	695	667	824	658	654	699	636	651	565
Lettuce(house)	1,317	1,508	1,092	1,066	739	852	913	883	667
Melon(")	2,040	1,834	1,680	1,488	1,361	1,922	1,421	1,616	1,248
Fruits									
Peach	779	741	776	693	590	659	575	574	498
Grape	744	834	784	675	646	632	668	652	647

Table 3. Mediatory Material Expenses of Exporting Crops

(Unit : thousand won)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Subsidized for expediting export since 1997									
Vegetables									
Cucumber(house)	3,018	2,489	2,013	2,155	2,510	2,643	2,852	2,958	2,913
Strawberry(")	2,568	2,208	1,721	1,976	2,205	2,013	1,977	2,027	1,770
Pumpkin(")	1,646	1,651	1,411	1,249	1,119	1,105	1,331	1,193	986
Red Pepper(")	2,215	2,360	2,365	2,953	3,017	3,774	4,618	5,143	5,537
Watermelon(")	1,186	1,559	1,426	1,015	1,031	1,064	999	974	908
Tomato(")	1,975	1,929	1,861	1,747	2,011	2,572	2,542	2,616	2,579
Chinese Cabbage	308	346	292	279	232	264	259	208	232
Eggplant(house)	433	402	400	326	418	683	718	682	2,772
Cabbage	515	256	208	183	1,299	185	200	188	178
Fruits									
Apple	646	610	628	683	592	608	606	724	599
Pear	604	604	625	552	560	628	747	651	635
Sweet Persimmom	395	369	388	416	383	359	397	347	342
Flowers									
Lily	0	0	7,957	9,468	8,370	8,885	7,835	6,886	5,967
Chrysanthemum.	0	0	2,738	3,513	1,091	1,569	2,456	2,496	2,919
Rose	0	0	5,494	6,144	6,888	7,185	8,054	8,144	8,812
Carnation	0	0	8,971	9,733	9,294	9,568	9,578	8,733	6,770
Subsidized for inducing export since 1999									
Vegetables									
Green onion	0	0	0	0	0	0	0	0	0
Onion	286	213	205	225	244	281	232	239	230
Garlic	349	349	242	258	174	219	218	210	172
Carrot	1,101	951	442	379	393	482	365	342	337
Radish	290	334	243	211	252	317	324	303	323
Fruits									
Kiwi	269	251	288	235	247	279	245	236	180
Citron	0	0	0	0	0	753	700	696	632

Table 4. Mediatory Material Expenses of Non-Exporting Crops

(Unit : thousand won)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Grains									
Rice	147	139	215	183	44	102	99	94	95
Barley	100	114	88	79	60	80	78	67	63
Beer barley	144	125	120	121	105	119	113	103	91
Been	102	100	105	96	92	94	94	63	64
Sesame	162	148	147	87	16	44	43	40	46
Green perilla	146	70	69	62	58	56	55	59	40
Peanut	197	161	168	153	141	177	181	168	122
Vegetables									
Sweet potato	205	234	203	194	152	187	180	151	139
Potato(spring)	321	394	402	407	291	356	346	292	290
Potato(fall)	343	380	353	292	453	337	256	262	222
Spinach	272	293	307	272	303	233	250	214	173
Lettuce(out)	277	236	189	217	238	267	237	186	0
Pepper(")	444	411	273	300	184	232	215	196	189
Cucumber(")	658	584	574	519	716	595	0	0	0
Tomato(")	637	540	615	542	0	0	0	0	0
Pumpkin(")	333	318	356	301	394	357	285	306	263
Melon(")	534	434	1,466	360	1,391	427	438	389	342
Watermelon(")	458	392	363	355	377	357	417	388	307
Strawberry(")	530	549	594	551	522	629	491	495	447
Lettuce(house)	1,098	1,084	657	672	603	635	756	726	427
Melon(")	1,699	1,629	1,466	1,342	1,168	1,672	1,420	1,366	1,087
Fruits									
Peach	507	469	467	425	361	460	430	432	383
Grape	475	573	579	498	462	488	546	508	510

Table 5. Establishing Funds for Agricultural Complex for Export

(Unit : 0.1billion won)

구분	계	1995	1996	1997	1998	1999
No. of Complex	94	23	19	16	15	21
Total Funds	1,440	597	351	289	68	135
Subsidy	680	303	178	118	32	49
Loan	1,154	183	102	111	22	56
Own Charge	286	111	71	60	14	30

Source : Kyongnam Province, Korea

Table 6. The Amount of Expediting Export Subsidy

(Unit : million won)

	Total	1997	1998	1999
Total	2,805	344	931	1,530
Producers	1,443	172	466	805
Exporting Companies	1,362	172	465	725

Source : Kyongnam Province, Korea

< APPENDIX 2 >

Figure 1. The Area Changes of Vegetables for Export(1)

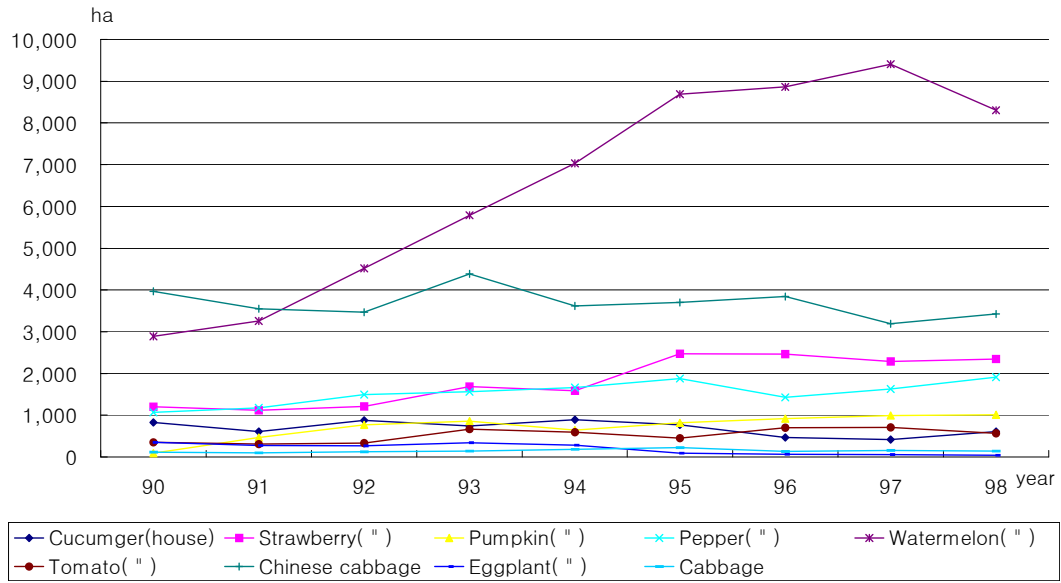


Figure 2. The Area Changes of Fruits for Export

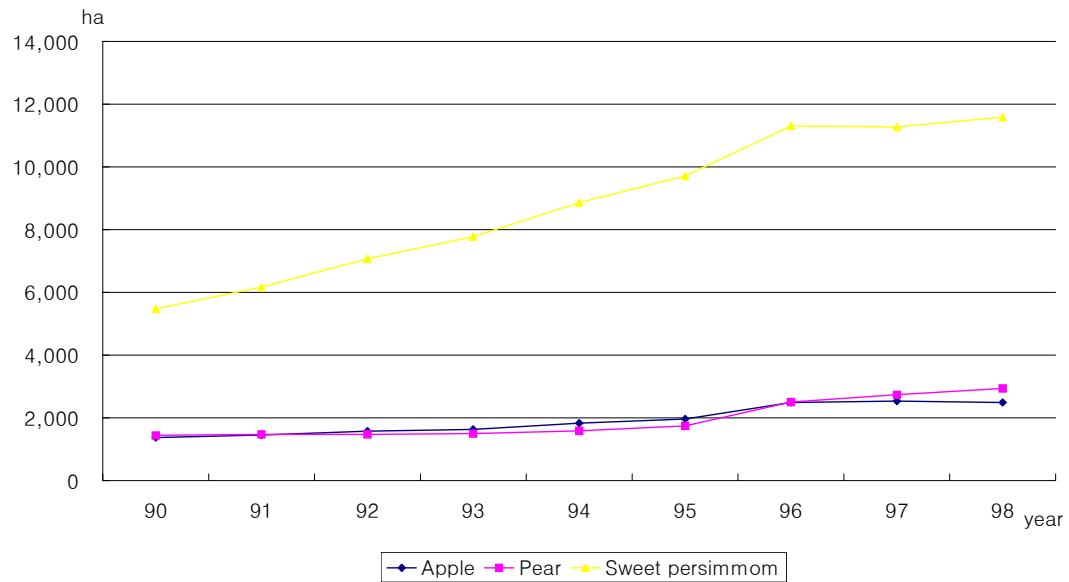


Figure 3. The Area Changes of Flowers for Export

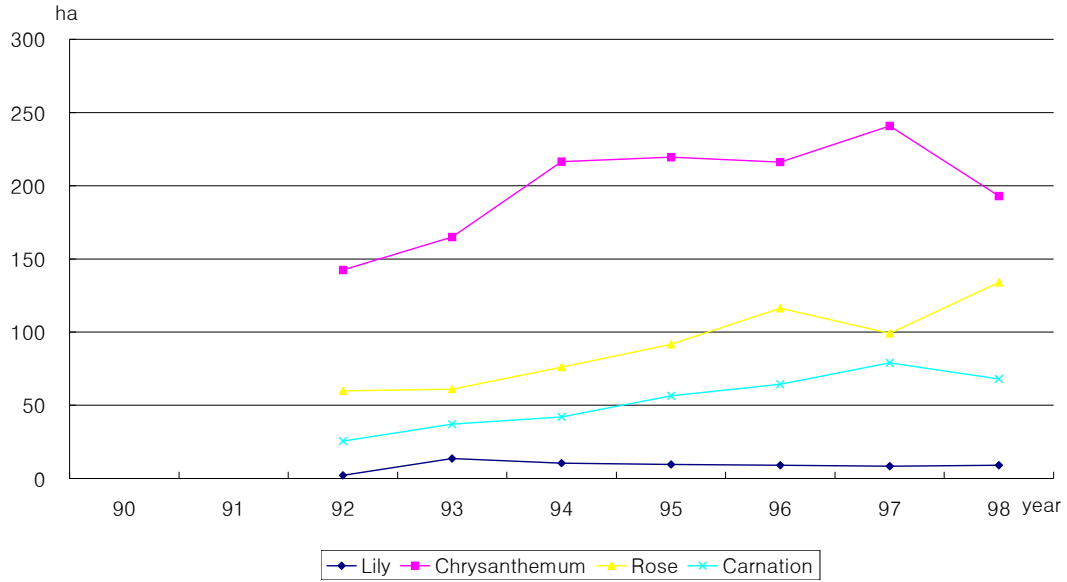


Figure 4. The Area Changes of Vegetables for Export(2)

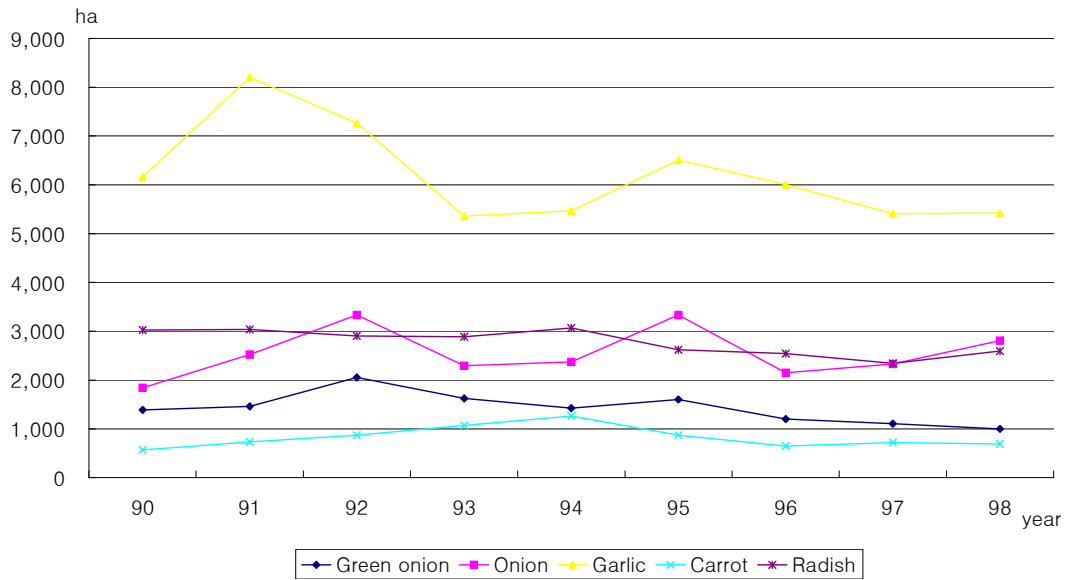


Figure 5. The Area Changes of Grains for Non-Export

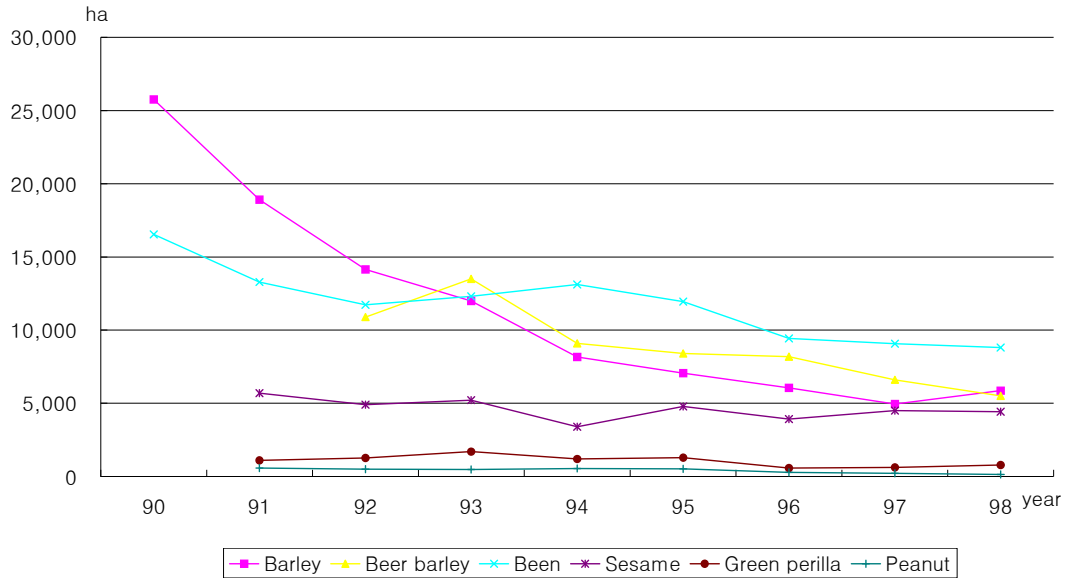


Figure 6. The Area Changes of Vegetables for Non-Export

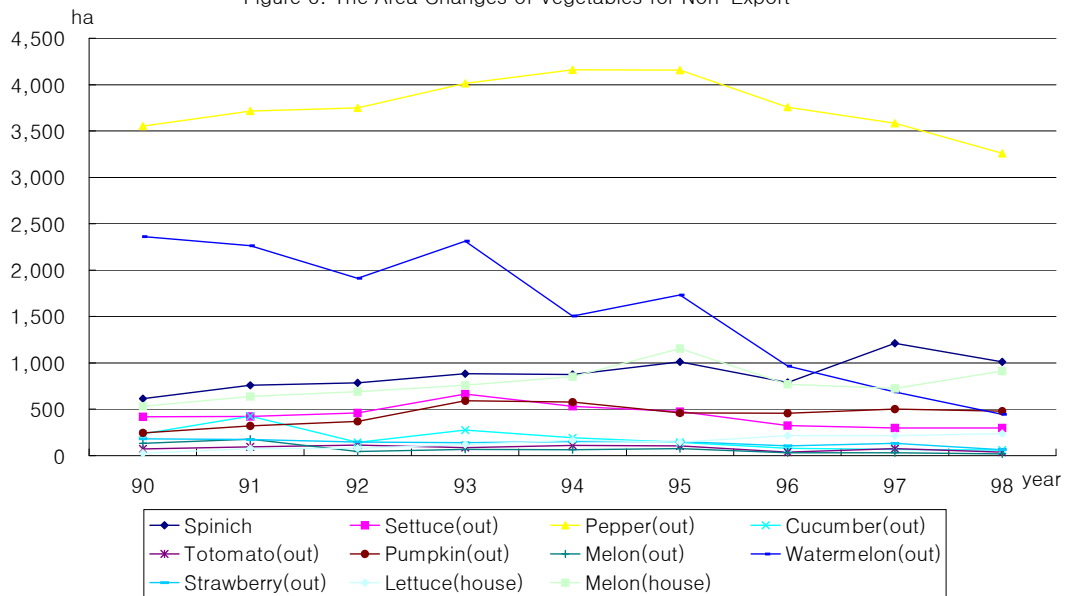


Figure 7. The Real Farm Income Changes of Vegetables for Export(1)

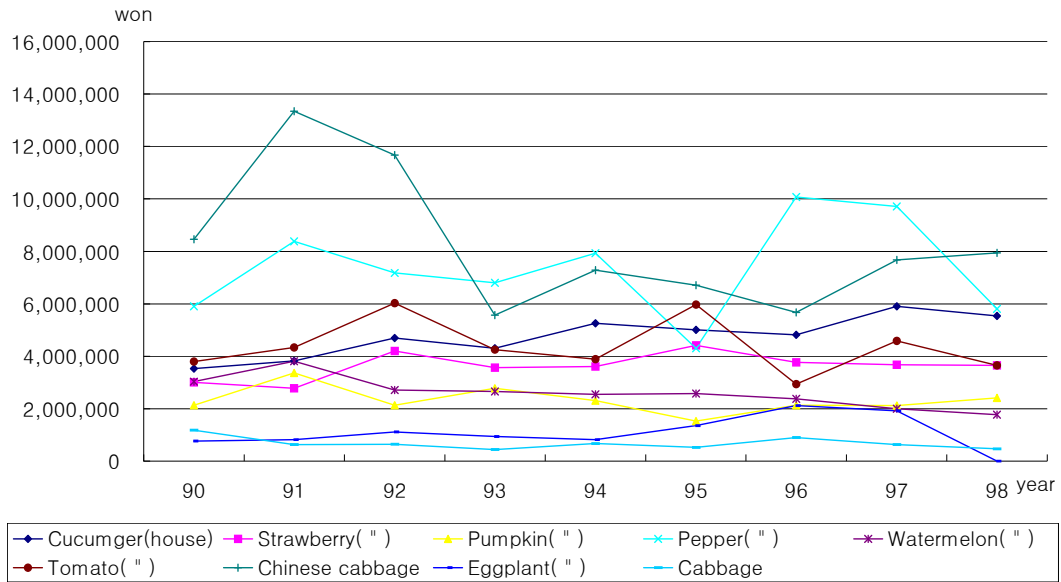


Figure 8. The Real Farm Income Changes of Vegetables for Export(2)

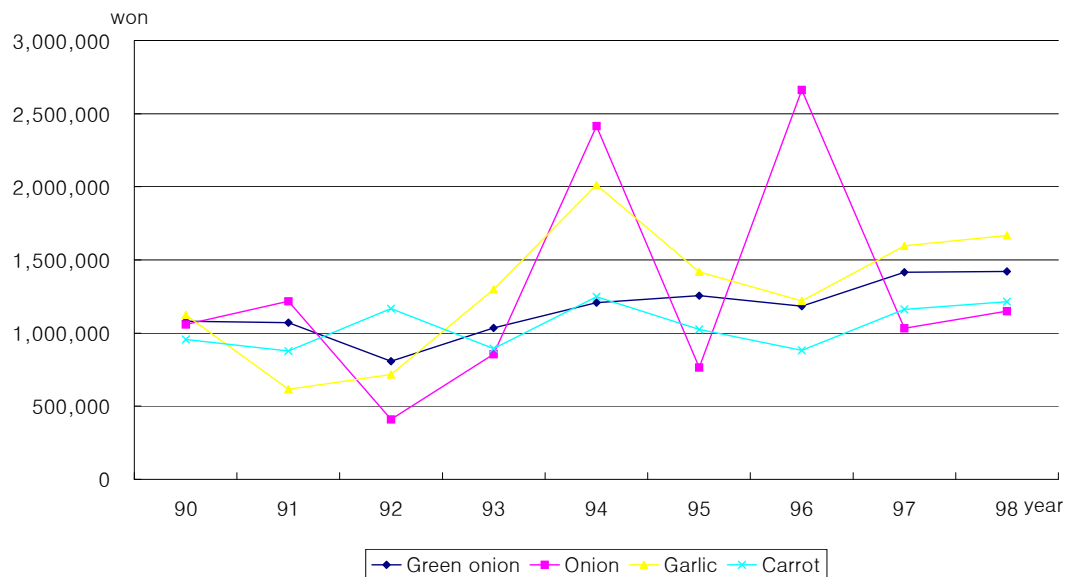


Figure 9. The Real Farm Income Changes of Grains for Non-Export

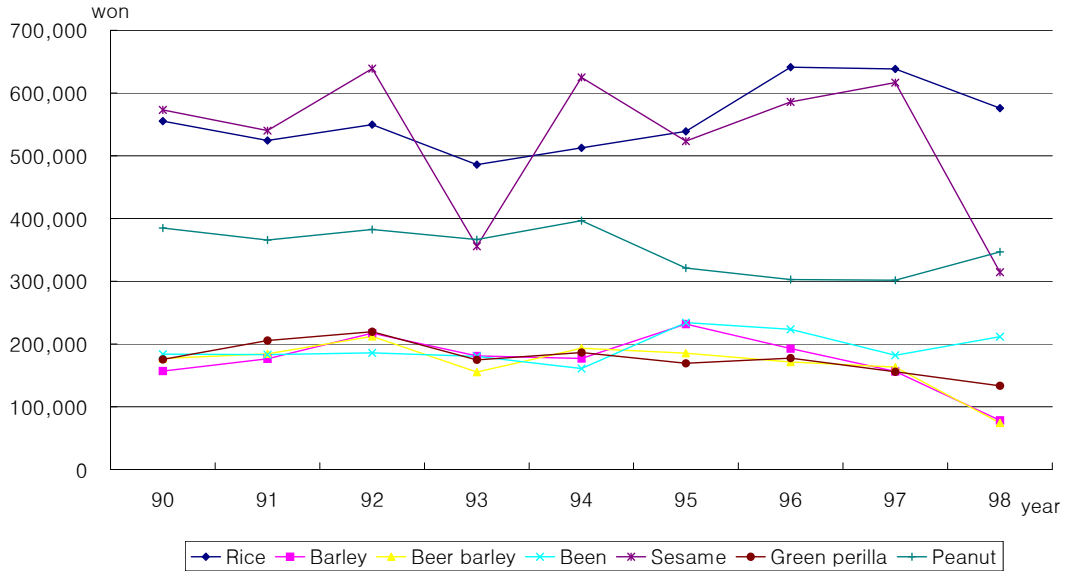


Figure 10. The Real Farm Income Changes of Vegetables for Non-Export

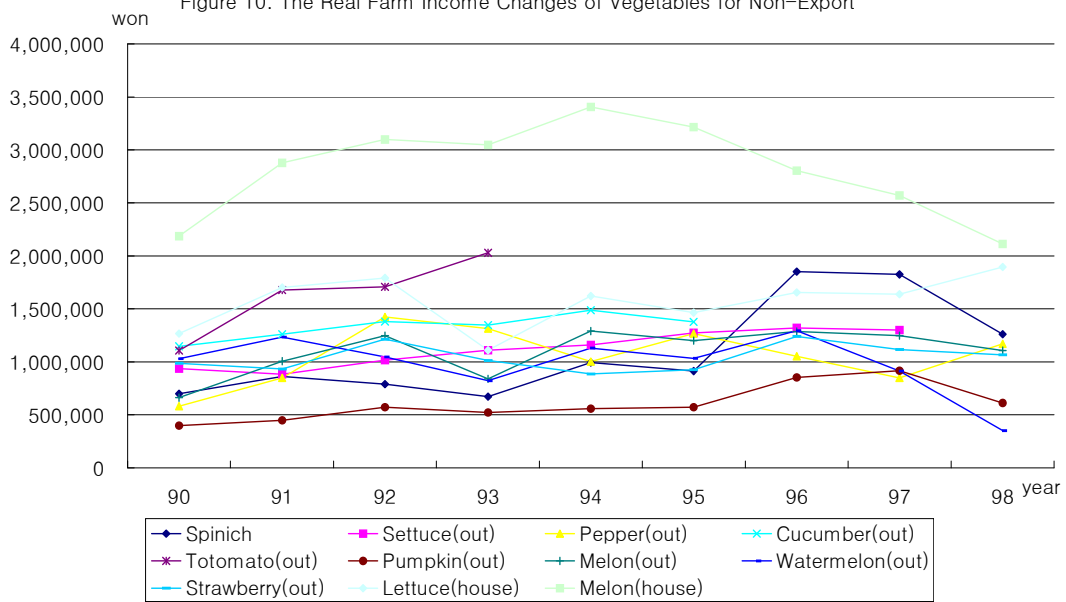


Figure 11. The Farm Expenses Changes of Vegetables for Export(1)

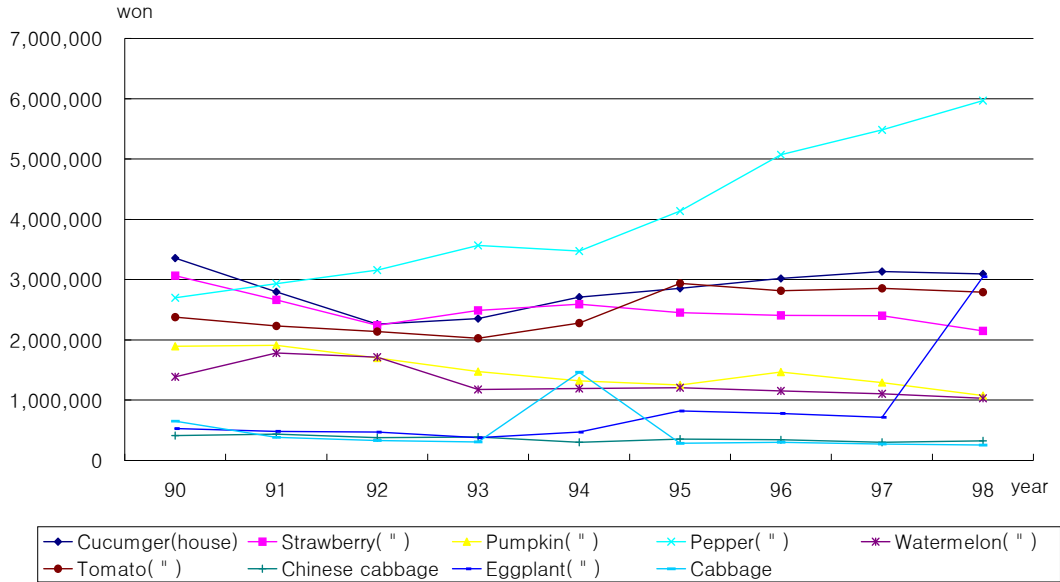


Figure 12. The Farm Expenses Changes of Vegetables for Export(2)

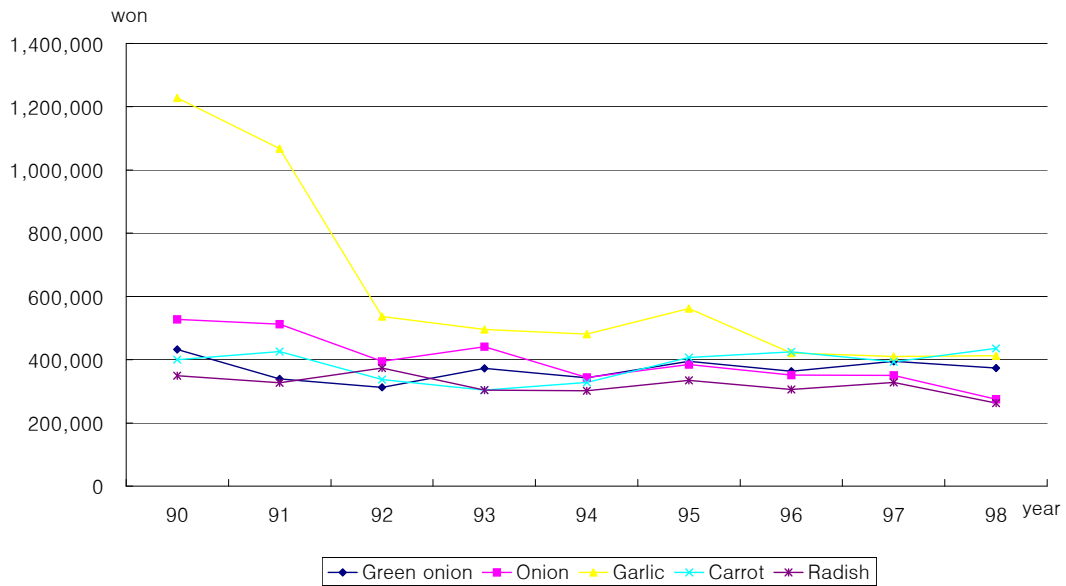


Figure 13. The Farm Expenses Changes of Grains for Non-Export

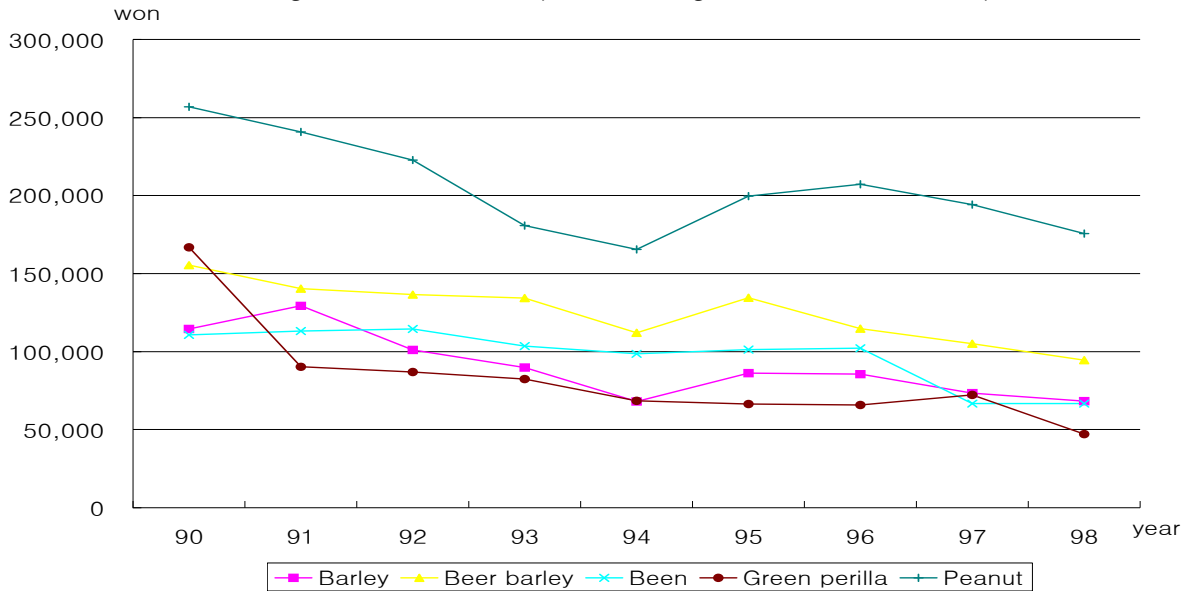


Figure 14. The Farm Expenses Chagnes of Vegetablea for Not-Export

