

**CROPPING PATTERN AND FOOD SECURITY UNDER
LIBERALISATION IN INDIA**

**Dissertation submitted to Jawaharlal Nehru university
in partial fulfilment of the requirements
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MASTER OF PHILOSOPHY

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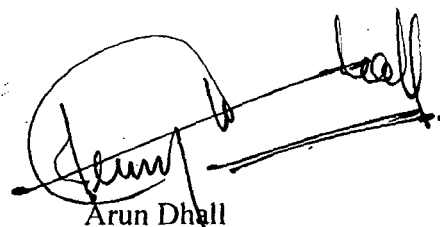


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Declaration

This is to certify that the dissertation entitled “**Cropping Pattern and Food Security Under Liberalisation in India**” submitted by Arun Dhall in partial fulfillment of the requirements for the award of the degree of Master of Philosophy of this University has not been previously submitted for any other degree of this University or any other Universities.




Arun Dhall

We recommend that this dissertation be placed before the Examiners for evaluation.



Supervisor
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Chairperson
(Prof. Jayati Ghosh)

TO MY MUMMY

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It always feels nice to see the fruits of once labour. And here I am savoring the moment. But I just happen to be a lucky person who will be awarded the M.Phil degree because of the sacrifices and constant help of some great persons that lead to this dissertation work. And the only thing I can do for them is thank and acknowledge them here. So I must grab this opportunity with both hands and express my regards and love to them.

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At the end I must say that if there is any deficiency in this dissertation then it is the incompetence on my part that can be held responsible for it. And none of the person above bears even a slightest responsibility for it

Date. 29th July 2005

Arun Dhall

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CHAPTER-I

INTRODUCTION

India has always been predominantly agricultural country. Even today this sector contributes a large share of G.D.P. and gives employment to a large section of the population. According to the 10th plan estimates as large as 57 per cent of India's population derives its livelihood from this sector. But a large proportion of people dependent on agriculture are landless laborers or are small farmers who do not have access to alternate employment opportunities and are in fact very vulnerable. Thus anything that affects this sector in fact ends up affecting a large section of population. And any policy that adversely affects this sector can put many on the verge of starvation.

Moreover when agricultural growth gets hampered then it can threaten the self sufficiency in food production of the country. And when a country is not self reliant in food production, and depends on other countries for food supplies, it faces a threat to its security and the dependent country's political as well as economic interests are at stake. Because of food dependency it may have to compromise on a number of issues affecting its long term interests. This is all the more significant because of the fact that India has

faced the repercussions, of becoming dependent on other countries for food, in the past.

Thus given the fact that India has a growing population to feed, high income elasticity for food and a large and vulnerable population dependent on agriculture, any policy that can affect this sector needs to be evaluated carefully from every angle before it is implemented. Especially when self reliance in food production is involved. In this dissertation work we look at one such policy that can bring about some changes in the Indian economy and affect the lives of millions of people: the policy of liberalisation.

In this dissertation work we intend to examine the question "Can liberalisation have any impact on cropping pattern". We will also examine what will be the changes in the cropping pattern because of the liberalisation in the country. And also how this changing pattern will affect self sufficiency in food grains production?

Agricultural sector has a very important place in our economy and it will not be wrong if we call it the back bone of the Indian economy. This sector in recent years has been facing many acute problems evidenced by the fact that, agricultural growth rate has been far from satisfactory. For instance in the four years from 1999 to 2002, for which data are available, yearly growth rate of agriculture has

been 0.3, -0.1, 6.3, and -7.0 percent respectively. Production of major food crops decreased steadily in recent years e.g. production of rice and wheat in the year 1999-00 was 89.7 and 76.4 million tonnes which decreased to the level of 72.7 and 65.1 million tonnes respectively in the year 2002-03. Gross capital formation in agriculture was 1.92 percent of the GDP which declined to 1.27 percent of the GDP in the year 2002-03. As a result we observe the stagnant growth rate of production of most of the crops and trend of farmers resorting to suicide due to grim situation of agriculture in many parts of the country. Thus the agrarian sector has been already crisis-plagued. And the latest proposals under the disguise of liberalization, as those of massive cuts in subsidies on fertilizers, food, etc. combined with the proposals for a massive hike in electricity, water and other charges would damage it even further.

After this introductory discussion the first question to be answered is what we mean by "liberalization"? Trade liberalization is a process of integrating world economies and systematically reducing and eventually eliminating all tariff and non-tariff barriers between countries as trading partners. It builds on the theory of comparative advantage in a free market. This holds that countries will benefit more if they focus their resources on sectors in which they have

comparative advantage vis-a-vis other countries. And that the free market is the best mechanism for ensuring the optimal allocation of resources. Thus a country produces what it can produce most efficiently and exchanges it with goods that are produced by other countries based on their comparative advantage. The wealth generated as a result will benefit the economy as a whole. But the theory has nothing to say about winners and losers within national economies.

Despite concerns that greater openness to the global economy would make India vulnerable to external shocks, the supporters of trade liberalization maintain their stand. It says that openness to international trade is good and it raises the income of the poor by raising overall income levels with 'insignificant' effects on the distribution of income. This means openness to trade benefits the poor and the rest of the economy equally. But we can cite many studies where this trickle down effect of liberalization is proved fallacious. The report of a UNDP project, "*Poverty and Inequality*" (2000) compiled all available data on inequality trends into the World Income Inequality Database (WIID), based on the data from 149 countries. In these 149 countries 91 countries were developing and 28 transitional, and the time span for the data is from 1950 to

1980. According to this report *“.....the evidence is clear that inequality has risen in most countries since the early - mid 1980s.”* and about the reasons of this surge in inequality it blames *“.....to an important extent, the rush to implement liberalization policies”*. Thus liberalization is not a win-win policy as its proponents try to prove. Liberalisation makes a section of population better off by increasing their income but at the same time it makes many people worse off as well. So for judging that liberalisation is good or bad for the economy as a whole we need to make value judgments i.e. is the value of benefits it creates greater than the loss of people who are worse off or not for the economy as a whole.

We have mentioned in the beginning that one of the objectives of this dissertation is to examine the effects of liberalisation on the self sufficiency of food production. So first of all let's see how for achieving self sufficiency in food production a country can secure increased production of food grains. Any country can secure higher production of food grain primarily in three ways.

- (a) By increasing the yield.
- (b) By increasing area under cultivation.
- (c) Shift of cropping pattern towards food grain crops from other crops.

Here the first measure that of increasing the yield is also a technical and structural issue apart from being an economic issue. For increasing yield better seeds, infrastructure and other technology should be available so that yield increase can be secured. Then there are a number of structural issues concerning agriculture which are supposed to increase the yield and productivity e.g. consolidation of land and land reforms etc. Nevertheless yield can also be increased by greater investments on land and providing infrastructure for better cultivation. And these latter measures come under economics ambit.

Secondly, area under cultivation can be increased to an extent but beyond a certain point it is not possible to significantly increase the supply of land for cultivation, though with some scientific measures a certain amount of waste land can be put under cultivation. Thus there should be emphasis on better utilization of available land. Through with some technical improvements and by providing infrastructure we can increase supply of cultivable land in the country to an extent. And with increased supply of land we can have increase in the production of food grains.

Thus by these two methods we can increase the potential production of food grains. But to realize this potential, food grains

need to be grown on land by farmers. Production of food grains will not increase if the incentive structure is such that farmers find it profitable to produce non food grain crops. And under these circumstances cropping pattern undergoes a shift towards non food grains crops from food grains crops. Thus if incentive structure is made profitable for food grains then it can be ensured that its production increases.

Now after mentioning that incentive structure can have an influence over cropping pattern let's see how we will establish that liberalization and free trade will affect the cropping pattern. For this, we need to establish two things. First thing is that liberalization should affect the incentive structure of different crops differently. If this condition is not fulfilled then liberalization can not have any impact on the cropping pattern. With the above condition what we mean is that with liberalization price and cost relatives of different crops undergo asymmetric changes i.e. relative profitability of different crops changes. And it becomes more profitable to grow some crops vis-a-vis some others.

The second condition for cropping pattern to be affected by free trade and liberalization is that farmers' profit maximizing behavior even with constraints that inhibit their profit maximizing behavior

(like lack of credit, less ability to bear risk, lack of access to market etc) lead them to be influenced by the prevailing incentive structure. Thus they respond to changing incentive structure by shifting to relatively more profitable crops from less profitable crops. What we mean here is that farmers' profit maximizing behavior even with the constraints produces an outcome that is similar to the outcome of a situation when there are no constraints that inhibit the profit maximizing behavior. Thus when price-cost relatives of various crops change then farmers shift to relatively more remunerative crop from a relatively lower remunerative crop. If this condition holds then we would expect changes in cropping pattern to result from land being shifted to its best use in response to changing profitability of different crops. Thus these two conditions must be fulfilled to establish any link between liberalization and cropping pattern. Both these conditions together are necessary and sufficient conditions. But if taken alone neither of them is sufficient.

Here we need to clarify one thing that given the fact that a significant amount of agriculture in India is subsistence agriculture the second condition relating to peasants profit maximisation may not be applicable to all classes of farmers every where. But for our purpose it only needs to be widely applicable i.e. it reflects a general

phenomenon. Moreover incentive structure is not the only determinant of cropping pattern, and a number of determinants like bio physical, socio economic, historical and others interact in complex ways in determining cropping pattern. Any way we will be taking up these issues separately in coming chapters.

Thus for establishing a link between liberalization and cropping pattern we have to prove two things.

(1). Farmers' profit maximizing behavior even with the constraints to their

behavior, lead to an outcome where incentive structure influences the cropping pattern.

(2). Liberalization affects the incentive structure of agriculture i.e. Liberalization affects relative profitability of various crops.

And only after establishing above two points we will be in a position to comment on the effects of liberalization on the cropping pattern, and its influence on food security.

The dissertation is structured as follows. In the second chapter we will examine whether our analysis' first basic condition is fulfilled or not i.e. the constrained profit maximization of farmers leads to an outcome where incentive structure affects the cropping pattern or

not? Then in the third chapter we will try to establish that liberalization influences the incentive structure of agriculture i.e. with liberalization relative profitability of crops undergoes a change. The fourth chapter will look into the question that how liberalization will influence the cropping pattern, and how food security will be affected by the changes in the cropping pattern. The conclusion summarizes the outcomes of this research.

DATA SOURCES

In the whole analysis we would be taking help of data to substantiate our arguments. And the data has been taken mostly from two sources, Food and Agricultural Organization (FAO) and Reserve Bank of India (RBI). In the whole analysis, most of the time we have taken data for twelve years from 1990 to 2001. And wherever we need comparisons of domestic and international prices, to have a better idea of the trend, we will convert the rupees values in dollar terms by dividing rupee values with the exchange rate of the year in question.



CHAPTER-II

CONSTRAINED PROFIT MAXIMISATION OF PEASANTS

Our first chapter tries to look in to the question whether the constrained profit maximization of farmers lead to an outcome where incentive structure affects the cropping pattern or not? The reason why we are devoting a whole chapter to this question is that our entire argument is based on this premise that peasants respond to asymmetric changes in the remuneration of crops, by altering the area under cultivation for these crops. There is much debate about whether various crops such as wheat, rice, pulses, oil seeds, sugarcane etc. are responsive to profitability or not. And in this chapter we would try to come to a conclusion on the matter.

The factors determining cropping pattern may be bio-physical like soils, topography, temperature, rainfall, weeds, pests etc. They may be Socio-economic like institutions, markets, farm size, price polices, etc. or they can be historical as well. Compared to the socio-economic factors, bio-physical and historical factors are more enduring, though they do vary from region to region in setting the parameters for crop performance and income potential. For example it may be very profitable to grow sugarcane because of the high

prices but in the Rajasthan it can not be grown due to the environmental factors. Therefore it can be expected that changes in cropping pattern occurring rapidly within short spans are likely to be governed more by socio-economic factors than others. Socio-economic factors are governed in turn by government policies and programmes for crop production in the form of subsidies, support prices, infrastructural development, and protection from international competition. Thus the determinants governing cropping pattern are numerous and interact in complex ways to give a particular pattern of crops. And relative importance of each individual factor will depend on how it meets the specific objectives of farmers. Each factor's importance will depend on it help the farmers to minimize risk, or maximizes profit, or how it fulfills the farmer's subsistence needs and so on. Finding out which factors govern the cropping pattern and what the weightage of them is, in the complex mix of endless determinants is a very difficult task, if not impossible. But our objective here is not attempting to identify the determinants of cropping patterns at a given point of time. Rather, the focus here is on getting an idea as to whether peasants' constrained profit maximising behavior allows them to get influenced by the changing incentive structure or not?

Now let's first of all see what we mean here by farmers' constrained profit maximising behavior and then establish that farmers in fact are influenced by incentive structure. There is no doubt that peasants like any other rational human being are profit maximisers. And given a set of costs and output prices they choose the combination that yields the maximum profit. But there are various factors that inhibit peasant's profit maximising behavior and force them to behave otherwise. Some of these factors are limited risk bearability, lack of access to markets, and inability to invest to diversify. So let's examine these factors. And then establish that even with all these constraints to peasants' profit maximising behavior incentive structure influences the farmer's decision about the cropping pattern.

First of all profit is not the only consideration of farmers. Peasants are influenced by a whole range of factors in real life. Especially in a developing country like India where a large part of agriculture is subsistence agriculture and peasants have limited access to inputs to carry out their operation smoothly. There may be situations where profit maximization is only one of the several objectives. And where profits, and hence prices, are considerably less important to decision makers. The degree of responsiveness to prices may be

lower e.g. in areas characterized by subsistence agriculture conditions. That is economically backward regions where a significant share of farm production is consumed directly by households and where markets are underdeveloped. In the most extreme cases of a subsistence economy we would not expect to observe a response to prices or to any other profit related factor. In these circumstances, an individual farm household's objective function will depend exclusively on own family consumption requirements. And he will give little importance to generate surpluses for the market. Shifts in crops area over a given period of time will be influenced by household's desire to maximise some implicit value given by different home produced crops and leisure.

Few researchers like Rudra and Bhagat assert that own household consumption requirement is a strong motivating force. And it does dominate farmer's decision making such that markets play a very limited role in their economic decisions (Rudra 1983, Bhagat 1989). Since a large fraction of production never enters the exchange part of the economy, changes in price relationships would seem to have no relevance for cropping decisions in this case. The empirical evidence for price indifference in case of some specific crops, particularly food crops, supports the view that only small fraction of

the total production of these crops in any particular region enters the market. Hence most farmers are not responsive to profitability (Bardhan, Singh 1979). Researchers have also found that while this phenomenon holds for a few specific crops in some locality it has not been shown to be characteristic of farmers themselves. For instance Raju and Von oppen on the basis of market surveys carried out in six semi-arid states found that about 80 percent of the ground nut and 45 percent of the chickpea went to the primary markets. While in case of pigeonpea and sorghum only 35 and 25 percent of the production went to the primary markets (Raju and von Oppen 1980). Farmers in such cases may be either unable or not motivated to respond to prices changes in the same manner as farmers in regions characterized by well developed markets.

One of the primary reasons for the meagre response to prices in backward regions is the lack of access to input and product markets. High transaction costs associated with the use of markets is also responsible for the meagre response to prices. Due to the lack of road links between villages and markets or because of the distance involved, prices of inputs for farmers are considerably higher and at the same time product prices are lower (Von Oppen et al 1982). Agricultural areas with better access to markets tend to be

more dynamic with respect to productivity and cropping pattern changes than the areas further removed from markets. According to the Von Oppen et al (1982), area under commercial crops and level of inputs used decreases, and area under food crops increases with increasing distance from the market.

Furthermore, where institutional arrangements provide imperfect insurance, households will self-protect by exercising caution in making production decisions (Morduch 1995). Morduch (1993) found evidence that farm households close to subsistence (i.e. those whose consumption is more vulnerable to income shocks) are less likely to use risky high-yielding varieties of seeds, rather than safer traditional ones. All of this will shape farm household production choices. They explain why vulnerable peasants are often observed to sacrifice expected profits for greater self-protection. When farmers are of low resource base then they are willing to take less risk. As a result of this they would not grow high price crops rather, they will respond in a different way for example, growing more drought resistant crops, adopting intercropping, etc. This way they would enter into low risk crops (Duflo 2003) or diversify into crops with differing risk profiles. Thus, living and operating in risky environments is one of the foremost reasons that make farm

households behave in a manner that reduces income-risk, i.e. choosing safe or conservative strategies.

Next we can mention the limited information access as it also inhibits the farmers' response. In remote areas information reaches more slowly so farmers are hindered to take timely action. Thus their profit maximising behavior is stalled. Moreover small farmers in countries like India, with low propensity to save and poor access to efficient saving instruments do not possess the requisite know-how for crop diversification and also lack access to appropriate technology.

After mentioning the factors it is important to mention that many of the above factors, like market availability, access to information, and multiple end products, can still be consistent with the underlying assumption of profit maximization. All the above factors can, at least theoretically, be accommodated in a profit maximizing behavior to explain the crop area changes. And at this point of time it is necessary to say in most explicit way that although we find instances of farmers not behaving in a profit maximizing manner and there are theoretical bases for it yet it does not mean that these farmers are irrational. In fact they are very much rational but their

weak resource base does not allow them to behave in a profit maximizing manner.

Thus farmers' constrained profit maximization leads to the outcomes that are consistent with the outcomes where peasants maximise profit without these constraints. And in fact, as we will see below, incentive structure affects the peasants' decision of crop selection with or without the above constraints. When we say that farmers' constrained profit maximising behavior leads to an outcome that is consistent with the outcome when there are no constraints that inhibits their profit maximising behavior, what we mean is that they are influenced by the incentive structure of production in deciding which crop to grow. when profitability of various crops changes differently then farmers shift to a relatively more remunerative crops from relatively less remunerative crops. So they try to maximise their returns by changing their cropping pattern in such a way that acreage of relatively profitable crop increases. Thus if this condition is fulfilled then we would expect changes in cropping pattern to result. And land being shifted to its best use in response to changing price-cost relatives of various crops asymmetrically. From a crop perspective, this implies the existence of competition among crops for land. Crop substitution

occurs when there is a change in relative cost and prices and productivity ratios of the crops involved. A more remunerative crop substitutes the less remunerative one.

Theoretically, the number of crops which can compete for a given plot of land is unlimited. But given the specific agro-climatic conditions, plot characteristics, farmer know-how, and the relevant set of prices, only a few crops compete for the same plot of land. And it is precisely within this small set of crops that a shift over time in any crop's area, absolutely or relatively, defines crop competitiveness. For instance theoretically in Punjab any number of crops can compete for acreage area but because of the climate tea can not be grown there. Thus eventually only a small number of crops compete for the available acreage area.

So here we want to say that incentive structure can influence the peasants' decision about the cropping pattern even when there are constraints that mitigate peasants profit maximising behavior. And this question was examined by Ashok Gulati also in his detailed study done in late 90's. In this study (*Trade Liberalisation and Indian Agriculture*) he studied the impact of different factors i.e. price and non-price factors on crop area changes in different regions of dry land in India over the period of 20 years from 1970 to 1990.

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He tried to reach at a conclusion by regressing various determinants of cropping pattern like own price, competing crop prices, infrastructural facilities, and yield etc with the area under cultivation for various crops. In this study he found that for sorghum in 40 per cent area under study price factors play a dominant role while non price factors exerted a dominant effect in only 35 per cent of area. And price and non price factors had an equal impact on the remaining area. Thus price variables exerted a dominant effect in 65 per cent of the area. Under price related factors the most important were found to be fertilizer price, own price and competing crop price and under non price factors most important were found to be own yield, and competing crop yield.

In case of millet in 43 per cent of the area price factors played a dominant role. Some of factors found to be responsible for acreage shift were competing crop yield, competing crop price, gross return or income from the crop and irrigation. For maize, price and non price factors had a roughly equal impact on maize area. The most important determinants of maize acreage were own yield, irrigation, competing crop price and wage. Similar were the results with chickpea, where price and non price factors were important in explaining changes in chickpea area in six of the 13 chickpea

growing cropping zones representing over half of the area. Price factors were alone important in 5 zones. Under price factors the most important were competing crop prices, competing crop yield, own yield, fertilizer prices, and wage rate. In case of pigeonpea among the 16 cropping zones 8 zones, representing over half of the pigeonpea area, had an equal impact of price and non price factors and in remaining 7 zones non price factors seem to have a greater influence. The dominant factors were found to be competing crop price, own price, own yield, fertilizer prices, and wage rate.

Non price factors had a dominant effect on ground nut acreage in 4 of the 13 cropping zones, accounting for 62 per cent of the area growing groundnuts. Price and non price factors exerted almost equal influence on acreage in 6 of the zones representing 30 per cent of the area. The more important determinants of groundnut acreage were gross returns from agriculture and irrigation and in some cases fertilizer prices were also found to be important. In case of sugarcane both price and non price factors had an equal impact on acreage change and own price was the most significant determinant along with the competing crop price and in some cases irrigation was also found to be important.

Thus, with few exceptions, the basic conclusion from this study was that farmers were generally responsive to incentive structure of different crops. Own yield was an important variable for paddy along with fertilizer prices and wage rate. There is no indication that coarse grain cereal and pulses were unresponsive or unaffected to changes in their own prices. But nor were they positively responsive to changes in own price in all the cases as one would expect under normal profit motivated behavior. Nevertheless, an important result that merits notice is that many of traditionally subsistence crops were in fact quite responsive to prices of either own or competing crops. For instance millet acreage did not respond to changes in its own price, but it did appear to have been responsive to changes in competing prices. Sorghum was for the most part, own price responsive. Then yield, fertilizer price, and wage rate emerged as the other key elements explaining shifts in area under coarse grains and pulses. However no consistent pattern emerged. Wage rate generally had a positive influence on area under millet and sorghum with the data suggesting a shift away from higher labour using crops activities as wage rate rises. Thus this study supports the proposition that farmers behave in a profit maximizing manner and change their cropping pattern as a result of changes in the relative profitability of various crops.

Similarly Dixit et al studied the role of price factors in the supply response of groundnut production and stated “...price factors emerged statistically significant in all the districts. It had a positive sign indicating its salutary impact on the groundnut production in all the cases.....the higher values of long run price elasticity coefficients indicated the pronounced long term effects of prices on groundnut production.” (P.K. Dixit et al, 1998). The results above are consistent with the findings of Sahay (1971), Basavaraja (1984), and Reddy (1996). Apart from these studies other studies, with few exceptions, also conclude that farmers are generally responsive to incentive structure changes. Especially in case of wheat, rice, and other cash crops, they respond by shifting their cropping pattern. Thus we can say that the hypotheses that area decisions are largely driven by consumption considerations stands rejected. And it suggests that factors related to profit motivation better capture the changes in crop area occurred over time. Although in quite a few cases, for specific crops, both profit and consumption related factors are important.

Now “incentive structure” can be explained as profitability of various crops and profitability of growing a crop can be influenced in two ways. Firstly by changing its cost structure i.e. by changing the cost

of production, which depends upon the fertilizer prices, wages, seeds cost and so on. Secondly profitability of various crops can be affected by changing relative prices of various crops. Thus in short incentive structure of crops can be influenced by affecting the relative prices of crops or by affecting the input prices.

The process of liberalisation with its emphasis on elimination of subsidies, withdrawal of government from supplying inputs like seeds, and pesticides, and the rule of the market is expected to increase cost of cultivation immensely. And this is what has happened in India after the initiation of liberalisation in the early 90's. Between the years 1991-93 the prices of fertilizers went up by 63 percent and rate of electricity by 43 percent. The index of WP for 1995 was 86 percent higher for fertilizers and 55 percent higher for irrigation than that of 1991 (S.S Acharya 1997). Deregulation of the input sector, the entry of seed MNC's and the creation of seed monopolies has increased the costs of inputs. The deregulation of the input sector has allowed seed MNC's into Indian agriculture for the first time. These MNC's supply seeds at much higher prices than the prices that peasants used to pay earlier. As this is evidenced by the fact that in 2002 seed supplied at Rs. 300 / kg by public sector farms costs Rs. 1600 / kg when bought from Monsanto the

company that has acquired a significant market power in the Indian seed market (V. Shiva 2004). Further these MNC's in search of quick profits have been selling untested, ill adapted, high cost seeds which need high cost chemicals and intensive irrigation. Thus with the opening of the seed sector for MNC's the old system of seed management has been done away with. The old system of seed management was based on the time tested and adapted farmers varieties. The old system accounted for 80% of the seed supply and the varieties were bred and tested in the public sector seed farms for our diverse agro climatic zones. And this was appropriate to the socio-economic conditions of the peasants (V. Shiva 2004). Yet with the new seed management the cost of cultivation has increased for peasants.

Secondly the government's new strategy in the liberalisation era of deregulating rural credit has considerably aggravated the situation. Banks shut their doors to farmers under the disguise of credit reforms. The banks often ask for land as collateral security (loan to the owner, not the tiller) for extending crop loans. So a considerable proportion of farmers, who had no possession of land but had leased in land, were denied loans in the background of increasing cost of cultivation. On the other hand, under the pretext of

'focusing' of rural institutional credit, banks and cooperative credit societies, catered to only the rich and large farmers while leaving out the small and marginal farmers (B.Singh 1998). So these small farmers driven by the need for high investment and meager availability of institutional credit turned to the private moneylenders who generally charge very high rates of interest. Thus the cost of credit has also increased especially for small and middle farmers (B. Singh 1998).

In the table below (table 1.1) we have shown index of prices paid for intermediate consumption. And it is clear from the table that cost of cultivation has been increasing through out the period. But after the initiation of liberalisation in the year 1990, the increase in the cost of intermediate consumption has really picked up pace as is clear from the total index. Thus the process of liberalisation affects the incentive structure of cultivation by increasing the prices of inputs.

Table 1.1: Index of Prices Paid for Intermediate Consumption

| Items | Wgt. | Item Indices from WPI on Base 1988-91=100 | | | | | | | | | | | |
|-----------------------------|-------|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | 1990-91 | 1991-92 | 1992-93 |
| Seed | 2.53 | 64.6 | 66.2 | 70.5 | 82.6 | 83.6 | 84.0 | 88.2 | 97.1 | 100.3 | 102.6 | 136.2 | 137.4 |
| Chemical fertilizer | 31.98 | 101.0 | 105.0 | 100.0 | 99.4 | 101.7 | 108.5 | 108.7 | 99.9 | 100.1 | 100.1 | 125.1 | 162.4 |
| Current repairs | 13.99 | 62.3 | 64.2 | 64.8 | 68.8 | 74.4 | 76.8 | 79.3 | 90.0 | 101.7 | 108.3 | 124.3 | 134.3 |
| Electricity | 3.57 | 72.2 | 77.5 | 83.5 | 82.3 | 81.7 | 91.3 | 106.6 | 104.4 | 95.5 | 100.1 | 106.6 | 117.5 |
| Insecticides and Pesticides | 2.91 | 67.3 | 73.6 | 78.9 | 81.5 | 83.3 | 85.63 | 89.4 | 93.7 | 99.8 | 106.5 | 133.4 | 136.3 |
| Diesel oil | 7.59 | 75.9 | 78.5 | 82.6 | 82.4 | 88.9 | 91.3 | 92.7 | 91.0 | 91.1 | 117.9 | 131.4 | 148.8 |
| Interest on loans | 25.19 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 100.0 | 100.0 | 100.0 | 100.0 | 115.0 |
| Hired labour | 3.69 | 42.4 | 45.4 | 48.6 | 55.8 | 66.6 | 72.0 | 81.1 | 90.3 | 100.5 | 109.2 | 120.4 | 132.5 |
| Total index | | 88.5 | 91.1 | 91.0 | 92.3 | 94.3 | 98.7 | 102.2 | 96.8 | 99.2 | 104.0 | 119.4 | 139.5 |

Source: Indian Journal of Agricultural Economics 1997

Now because of the fact that every crop uses a different set of inputs liberalisation affects the cost of cultivation of various crops differently. In fact in a large country like India it is very common that cost of cultivating the same crop be different in various regions of the country. In the table below (table 1.2) we have cost of production for some crops in the various states of India. And it is evident by this table that not only there are cost differences for various crops but also there are cost differences across the regions.

Table 1.2: Cost of Production of Some Agricultural Commodities

(Rs./qtl)

| commodity | State | Cost of Production | | | | | | |
|-----------|-----------|--------------------|-----|-----|-----|-----|-----|-----|
| | | A1 | A2 | B1 | B2 | C1 | C2 | C3 |
| Wheat | Punjab | 119 | 141 | 134 | 234 | 151 | 251 | 283 |
| | Haryana | 114 | 115 | 130 | 192 | 155 | 218 | 251 |
| | Rajasthan | 107 | 124 | 128 | 189 | 173 | 234 | 273 |
| | M.P. | 193 | 193 | 224 | 316 | 252 | 344 | 387 |
| Paddy | Punjab | 105 | 123 | 119 | 209 | 134 | 224 | 253 |
| | Haryana | 169 | 171 | 188 | 260 | 229 | 300 | 336 |
| | M.P. | 169 | 169 | 189 | 260 | 224 | 295 | 340 |
| | Assam | 86 | 90 | 93 | 154 | 156 | 217 | 293 |
| Cotton | Punjab | 364 | 418 | 401 | 717 | 515 | 832 | 955 |
| | Haryana | 319 | 319 | 348 | 505 | 525 | 682 | 754 |
| Gram | Rajasthan | 186 | 222 | 221 | 358 | 313 | 450 | 538 |
| | Haryana | 249 | 250 | 294 | 530 | 427 | 664 | 749 |
| | M.P. | 198 | 298 | 344 | 509 | 398 | 563 | 624 |

Source: Indian Journal of Agricultural Economics 1998

Thus liberalisation would have led to different increases in the cost of cultivation for different crops. But cost differentials exist for different crops and across the regions even for the same crops. Thus for estimating changes in the incentive structure of agriculture for the country as a whole it is very difficult, if not impossible, to account for the cost of cultivation. And given the small ambit of our research in this dissertation work, and to make our analysis simple and avoid complexities we here make a daring assumption. And the assumption is that liberalisation by increasing the cost of inputs affects the various crops equally so that profitability of various crops changes in proportion to changes in product prices. This assumption allows us to state that relative profitability now depends upon the output prices of various crops. Thus when relative output prices of various crops change then the relative profitability of crops also undergoes a change and some crops become more profitable than others.

Below we show the output prices and area under cultivation for the three crops namely wheat, maize and rape seed for the period of 12 years from 1990 to 2001 (table 1.3). And the table shows that the area under cultivation for wheat and maize is increasing at the cost of rape seed.

Table 1.3: prices and area under cultivation

(Rs/qu.)(mil./hec.)

| Years | Maize | | Wheat | | Rapeseed | |
|-------|--------|------|--------|-------|----------|------|
| | Prices | Area | Prices | Area | Prices | Area |
| 1990 | 180 | 5.9 | 225 | 23.26 | 810 | 5.78 |
| 1991 | 210 | 5.8 | 275 | 24.59 | 815 | 6.55 |
| 1992 | 240 | 5.9 | 330 | 25.15 | 820 | 6.19 |
| 1993 | 260 | 6.0 | 350 | 25.7 | 825 | 6.29 |
| 1994 | 290 | 6.1 | 360 | 25.01 | 830 | 6.06 |
| 1995 | 310 | 5.9 | 380 | 25.89 | 860 | 6.55 |
| 1996 | 320 | 6.3 | 475 | 26.7 | 890 | 6.55 |
| 1997 | 360 | 6.3 | 510 | 27.4 | 940 | 7.04 |
| 1998 | 390 | 6.2 | 550 | 27.42 | 1000 | 6.6 |
| 1999 | 415 | 6.4 | 580 | 27.48 | 1100 | 6.11 |
| 2000 | 445 | 6.6 | 610 | 25.7 | 1200 | 4.5 |
| 2001 | 485 | 6.4 | 620 | 26.4 | 1300 | 5.1 |

Source: Economic Survey various issues.

As it is clear from the table above that area under cultivation has increased in the case of wheat and maize whereas decreased in case of rape seed. But we do not get any idea as to why this trend is taking place because of the fact that absolute prices have been

increasing in case of all the crops. But when we look at the overall growth rates of these crops i.e. for the entire period under consideration then we get a clearer picture of the profit maximizing behavior of farmers. Wheat recorded the highest growth rate of prices with 175 percent. And because of the highest price growth it also had the highest growth rate for area under cultivation (Table 1.4). After wheat the second highest growth rate for price was shown by maize with 169 percent and it also had second highest growth rate for area under cultivation which is 11.97 percent. The lowest increase in prices is in the case of rape seed among these three crops i.e. 60 percent. Rape seed recorded a negative growth for area under the cultivation of -11.76 percent as shown in the table below. So a shift in cropping pattern is taking place. The area under cultivation is decreasing in case of rapeseed and at the same time increasing in case of wheat and maize.

Table 1.4: Growth rate of Price and Area for the whole period

| MAIZE | | WHEAT | | RAPE SEED | |
|------------------|-----------------|------------------|-----------------|------------------|-----------------|
| <i>Price gr.</i> | <i>Area gr.</i> | <i>Price gr.</i> | <i>Area gr.</i> | <i>Price gr.</i> | <i>Area gr.</i> |
| 169 | 11.97 | 175 | 18.14 | 60 | -11.76 |

So farmers respond to the increased remuneration by shifting the cropping pattern. As we have seen above peasants shift the cropping pattern in favour of those crops that experience relatively rapid increase in the output prices.

From the above analysis it is clear that farmers are in fact profit maximisers. They are influenced by the incentive structure in their decision about the cropping pattern. The results that we have drawn from the above analysis are compatible with and explain the fact that it is not unreasonable to state that peasants pay due consideration to the changing profitability in deciding what to produce on their land. The underlying reason of this behavior is that peasants' profit maximising behavior with some constraints to their choices, allows them to get influenced by the incentive structure in their production decisions.

Thus we can build our argument around the premise that farmers get affected by the incentive structure in their decision about the cropping pattern. And it holds even when there are constraints that inhibit their profit maximising behavior. Our first necessary condition, for liberalisation affecting the cropping pattern, is fulfilled.



CHAPTER-III

LIBERALISATION AFFECTING INCENTIVE STRUCTURE OF AGRICULTURE

In the introduction we have seen that if liberalization is to affect cropping pattern then we need to establish two things. Firstly the farmers respond to changing incentive structure. Secondly that liberalization affects the incentive structure i.e. with liberalization price cost relatives undergo a change. And because of the change relative profitability of various crops also changes. We have seen in the first chapter that the first condition is fulfilled. And in this chapter we will try to establish that with liberalisation incentive structure of various crops changes. Liberalisation, thus, will end up affecting the cropping pattern. Again our concern here is not to exactly predict domestic prices with changing international prices but rather to see whether there is any link between liberalisation and incentive structure or not.

We have mentioned earlier that the process of liberalization means integrating world economies and systematically reducing and eventually eliminating all tariff and non-tariff barriers between countries. When different economies of the world integrate and

countries are free to buy and sell commodities from various countries and there are no tariffs, then prices in different countries tend to align themselves. So changes in world market prices will be translated into changes in domestic prices if imports and exports are freely allowed. For example, a downward movement in world rice prices will encourage private sector traders to import cheap rice in order to sell at the relatively high prices in the domestic market. These imports will put downward pressure on domestic prices. The reverse would happen if there was upward movement in world rice prices. In this case exports would be encouraged and there would be upward pressure on domestic prices. But we know that countries usually impose tariffs on the imports. So we can not have a situation of complete alignment because these tariffs cause the domestic prices to differ from international prices. Here we need to mention that there can be price wedges across countries because of the reasons like transporting costs as well. Thus prices do not become exactly equal in different countries.

Moreover the world trade in food grains, processed agricultural products and the crucial agricultural inputs such as pesticide, seed, and machinery is concentrated in the hands of few MNCs. The agricultural bio-technology under the patronage of TRIPS is further

enhancing the scope of taking total control over the global agricultural trade by the MNCs. Even before the establishment of WTO, the top ten transnational corporations were controlling one third of the seed business and three fourth of global trade in pesticides. The sale of entire processed food items was under the control of just 10 MNCs. And almost 90 percent of the innovations in the field of bio technology were again concentrated in the hands of 10 MNCs. (T.N prakash kammaradi).

As reported by Gill and Brar (1996), table 2.1 below, agricultural exports are dominated by a few large multinational companies and trading agencies. Other empirical studies also suggest that multinational firms enjoy a certain degree of market power in the agricultural export markets (e.g. Deodhar and Sheldon; 1995, 1996). And when these mega global companies get in to individual countries they virtually assume the position of monopolies. For instance through the takeover of Cargil and few other seed companies and collaboration with the local companies like Mahico, Monsanto is emerging as the monopoly seed supplier in India.

Table 2.1: Multinational company's Market Share in Agricultural Export

| <i>Commodity</i> | <i>Market</i> | |
|------------------|---------------------------------|------------------------------|
| | <i>World exports (\$ mill.)</i> | <i>Mkt. share of 3-6 MNC</i> |
| <i>Wheat</i> | 17851 | 85-90 |
| <i>Sugar</i> | 10636 | 60 |
| <i>Coffee</i> | 9636 | 85-90 |
| <i>Rice</i> | 3613 | 70 |
| <i>Tea</i> | 1844 | 80 |
| <i>Bananas</i> | 1324 | 70-75 |
| <i>Cotton</i> | 6567 | 85-90 |
| <i>Jute</i> | 135 | 85-90 |

Source: Gill, S.S. and J.S. Brar (1996) "Global Market and Competitiveness of Indian Agriculture: Some Issues"

Thus what trade liberalization achieves is the removal of tariff and non-tariff barriers to trade. It does not guarantee perfectly competitive market structures. The existence of pronounced economies of scale and scope as well as irreversibility of investments, may lead to imperfect market structures even after liberalization. And complete alignment of domestic and international prices would be achieved only when there is a perfectly competitive

international market. When there is concentration of market power in the hands of few producers then there is the possibility of market discrimination. Thus complete equality of prices in every country can not be achieved due to imperfect nature of the competition. And we have seen above the global market for agricultural commodities are most concentrated and imperfect. So we can say that when the process of liberalization sets in and domestic markets open up for foreign producers as well as consumers, then there should be a tendency on the part of domestic and international prices to move along in the same direction, and not of complete alignment because of reasons like the existence of tariffs, imperfect world market, and costs involved in transportation of goods. So if we want to prove that liberalization affects price structure then we need to show that domestic prices are influenced by international prices only. Thus we do not need to prove complete alignment of domestic prices with international prices.

Agricultural prices are generally more unstable than that of other goods. This instability of agricultural prices is generally attributed to the inherently unstable agricultural production processes mainly due to factors like weather. In markets open to international trade, the price movements in international markets may also be an

important determinant of domestic price movements and this is what we want to examine.

In “Trade liberalization and Indian agriculture” Ashok Gulati constructed a regression model to see the impact of liberalization on domestic prices in which he found that domestic prices of groundnut were very significantly related with international prices and both tend to move in the same direction. Same was the case with wheat but the relationship was somewhat less pronounced. In case of rice there was no significant relationship but in case of mustard oil domestic prices were found to be aligning themselves with international prices but the relationship was not strong.

Similarly CSC Shekahr in his paper “Volatility of agricultural prices” ICRIER (2003) found that in markets open to international trade, the price movements in international markets was also an important determinant of domestic price movements. For coconut oil, cotton, and sugar prices the paper concludes that domestic prices and international prices have a strong relationship in most of the markets, as is clear from the table below. But for other crops nothing could be said as the results either are not significant or statistics do not reveal any relationship. As is clear from the table below (table 2.2), the results for rice markets show that effects of

international prices show expected signs but are not statistically significant. Results for wheat markets show that the influence of the International price variable is largely insignificant with the expected sign. Similarly results for groundnut oil show insignificant effects of international prices. And in cases of coconut, sugar and mustard oil results were significant. Thus on the whole, it can be said international price movements show significant effect on domestic prices in some cases.

From the above studies it is clear that there exists a relationship between domestic and international prices. And there is an over all tendency on the part of domestic and international prices to align themselves.

REGRESSION RESULTS

Table 2.2: Depicting Relationship of domestic and international Prices in different markets.

| Crop | Market | Regression results |
|---------------|-----------|--------------------|
| Rice | Bangalore | 0.052 |
| | Kakinada | 0.135 |
| | Karnal | 0.423** |
| Wheat | Karnal | 0.096 |
| | Hapur | .043 |
| | Bahraich | 0.237** |
| | Moga | 0.011 |
| Groundnut Oil | Mumbai | 0.503* |
| Coconut Oil | Cochin | 0.412*** |
| Cotton | Abohar | 0.031 |
| Sugar | Bombay | 0.229 |
| | Calcutta | 0.314* |

Note: '', '**', and '***' denote 5%, 10% and 15% significance level respectively.*

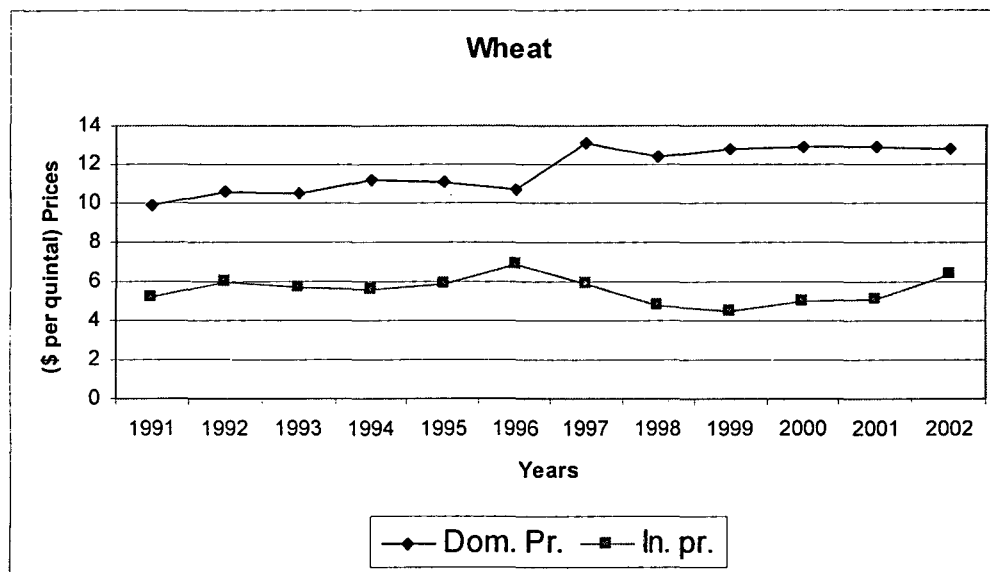
Source: volatility of agricultural prices, an analysis. C S C SEKHAR June 2003

Now let's see with the help of graphs whether there is any relationship between domestic and border prices of different crops?

As mentioned in the introduction in order to compare domestic

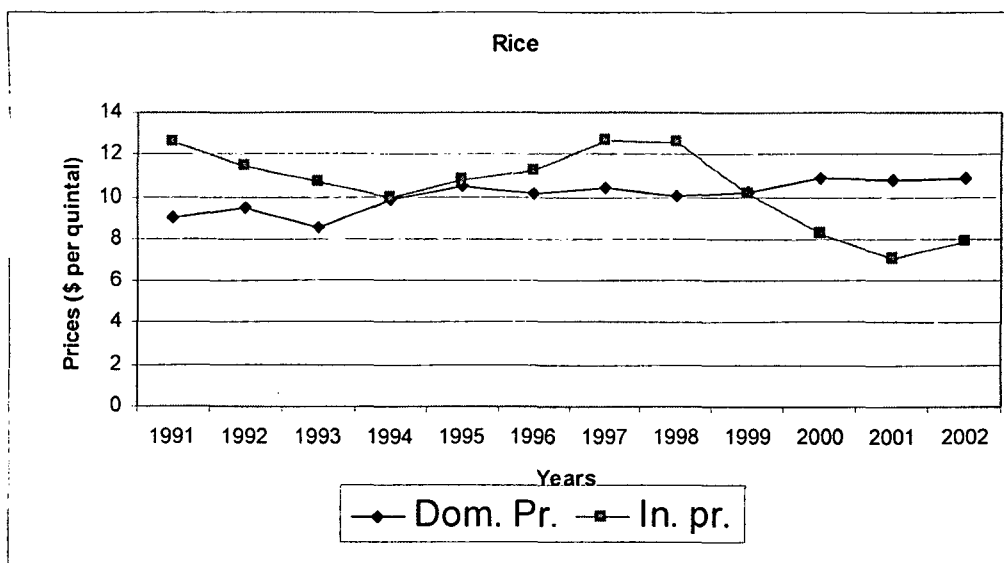
prices and international prices we would have to convert domestic prices into dollar terms with the help of the exchange rate. We are showing some line graphs below for various crops, in these graphs years are depicted on the X axis while prices are depicted on the Y axis. In these graphs we use the MSP data for domestic prices. For international prices we take a common market which is generally regarded as a big market for the concerned commodity. For wheat we use export prices of U.S.A. Similarly in case of rice we would use Thailand's prices. In case of sugarcane for better comparability we would use both domestic and international prices from FAO's official website. As far as domestic prices are concerned we would use the prices of common varieties and not of fine or super fine varieties to make the prices more comparable.

Fig 2.1: Domestic and international prices of wheat



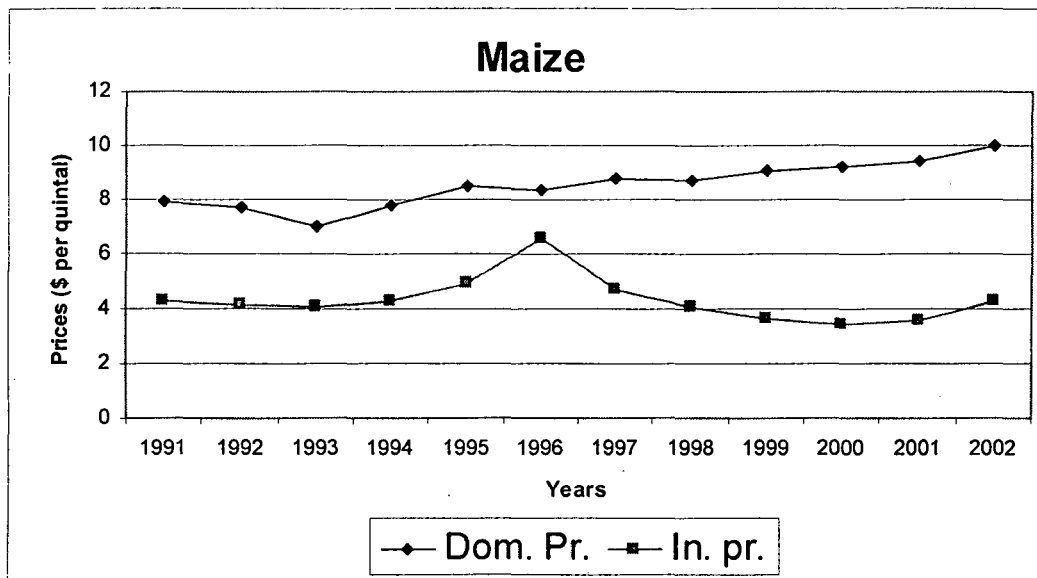
*Data Source: In. pr. 'Globalization and Indian agriculture' (G.S Bhalla)
Dom. pr. 'MSP prices' (Economic survey 2005)*

Fig 2.5: Domestic and international prices of Rice



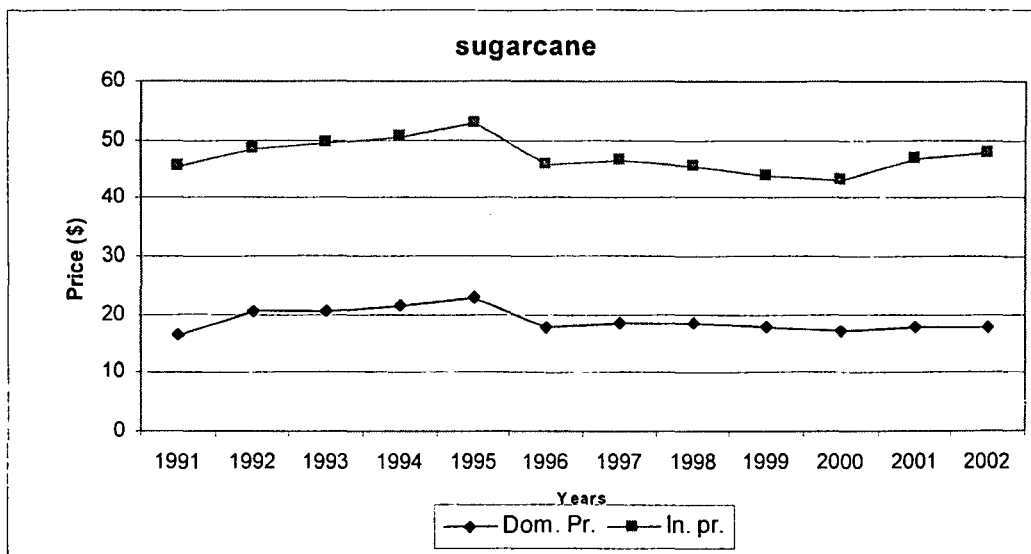
*Data Source: In. pr. 'Globalization and Indian agriculture' (G.S Bhalla)
Dom. pr. 'MSP prices' (Economic survey 2005)*

Fig 2.6: Domestic and international prices of Maize



*Data Source: In. pr. 'Globalization and Indian agriculture' (G.S Bhalla)
Dom. pr. 'MSP prices' (Economic survey 2005)*

Fig 2.4: Domestic and international prices of sugarcane



*Data Source: In. pr. FAO
Dom. Pr FAO*

With the help of above graphs we can see that in case of wheat there is a reasonable degree of alignment and both international and domestic prices move in the same direction for some years. In case of sugarcane we observe that domestic and international prices are moving in the same direction in almost every year. Thus they are found to be aligning themselves throughout the period. For maize we find a weak aligning trend as graphs of domestic and international prices do not move in the same direction for every year. So the relationship in case of maize is not as pronounced as in the case of sugarcane. But in the case of rice we find that there is no relationship between international and domestic price as both move in the opposite direction most of the time.

Thus with the help of graphs we know that domestic prices depict a tendency to get influenced by international prices in a few crops. This tendency is strong in case of some crops like sugarcane and weak in some others like cotton. And at the same time graphs could not establish the link between international and domestic prices for some crops like rice.

Thus from our above analysis we can conclude that domestic prices do get influenced by international prices in some cases. And in fact domestic prices tend to align themselves with international prices.

But the question why some crops are more influenced from international prices than the others is yet to be answered. And its answer lies in the fact that domestic prices are determined from a whole range of factors like domestic demand, domestic supply, procurement prices, support prices, access to imports, cost of cultivation, etc. And importance of all these factors in determining domestic prices varies from crop to crop. This way international price is just one of the determinants of domestic prices and its ability to influence domestic prices of the crops is greater in case of some crops in comparison to some others. Thus, ignoring differential movements in cost of cultivation, we can say liberalization influences the incentive structure of various crops.

At this point of time it is necessary to take note of the support price policy of the government. This policy guarantees a minimum price to peasants for a number of crops e.g. wheat, rice, sugarcane etc. In the policy of support prices government declares a minimum price for the crops and purchases at the declared price whatever amount peasants are willing to sell. Thus support prices ensure that peasants get a minimum price that covers cost plus a reasonable rate of profit. So this system guards peasants against the market fluctuations in prices. And this way the system acts as the incentive

to produce crops that are under support price policy of the government. In case the market prices falls below the declared support price the state comes in and purchases at the support price whatever amount that is offered for sale by the peasants. Thus domestic market prices should be influenced by the levels of support prices, and support prices should guard domestic prices from international price variations. But what we observe above is that the domestic prices are affected by international prices variations even for the crops that are covered under support price system. So support prices are not being able to insulate domestic prices from international price variations. Moreover as we will see in the next chapter, most of the food grains crops that are covered under the support price policy are shrinking as far as area under cultivation is concerned. Thus support prices as a mechanism to provide an incentive to produce has not been successful since the liberalisation process started.

To conclude our chapter we need to state that the second condition, vital for our argument, is also fulfilled: liberalization can influence the cropping pattern. Liberalization can affect the incentive structure and farmers are responsive to the incentive structure and respond to it by changing the cropping pattern.



CHAPTER-IV

HOW CROPPING PATTERN WOULD BE AFFECTED BY

LIBERALISATION

At this moment we know that under conditions of liberalization the incentive structure in the domestic market will be influenced by the changes in the incentive structure in the international market. If relative prices of some crops start increasing in the international market then the relative prices of the same crops are also likely to start increasing in the domestic market. This is because of the free market mechanism under liberalization and removal of barriers to free trade. Same is the case with the cost of cultivation, as we have shown in the very first chapter that with liberalisation the cost of cultivation would increase and affect the profitability of crops. So farmers in the domestic market will shift their cropping pattern towards relatively more remunerative crops, away from the less remunerative crops.

The assumption that cost increases would affect all the crops equally under the conditions of full liberalization¹ lead us to a

¹ Although we have shown in the previous chapter that liberalisation would affect the cost of cultivation asymmetrically for various crops yet we make this assumption for making our analysis simple and avoid complexities.

particular situation. Under it if international relative prices undergo a change making some crops relatively more profitable then there would be an incentive for farmers in the domestic market to change their cropping pattern. This shift in cropping pattern will be towards relatively more profitable crops. At the margin, area under cultivation of those crops that experience an increase in prices relatively to other crops will increase.

This is what we observe happening in India. With growing pressure from IMF and WTO Indian government is increasingly complying with the guidelines given by these international agencies and opening the Indian market for foreign goods. As a result more and more commercialization of Indian agriculture is taking place. International incentive structure is directing the cropping pattern of the country. This is evident from the fact that recently we observe a rapid increase in the area under commercial crops. For instance in the year 1990-91 area under cultivation for rubber, cotton and sugarcane was 0.3, 7.4, and 3.7 million hectares respectively. For the same crops, in the year 2001-02, area under cultivation was 0.6, 9.1, and 4.4 million hectares respectively. Thus after the initiation of liberalisation, area under the above crops increased by 100, 22.9 and 41.9 percent respectively. Between the years 1984-85

and 1994-95 area under coarse cereals decreased by 72.1 million hectare (S.S Acharya 1997). At the same time developed countries that are nominees of liberalisation in developing countries are giving huge subsidies to their agricultural sector which adds to the woes of developing countries. The developed countries give substantial subsidies to their farmers for growing food which lead to surpluses of grains. Often, these surpluses find their way in to the world markets at subsidized prices where they destroy production incentives in the less developed countries, not to mention the countries that choose not to or do not have the resources to, subsidize their farmers (IPC Report 1996). Further “inappropriate” food aid depresses prices to developing country farmers, undermining the ability of developing countries to grow food domestically.

This is exactly what we observe in India, due to the progressive reduction in the support, the farmers in India are gradually shifting away from foodgrains production during the post liberalisation era. From 1990-91 to 1997-98 total area under food crops has come down by around 4 million hectares in India (prakash 2001). The food crop area and non-food crop area in India were 70.34 and 29.66 percent respectively in 1981-82. By 1998-99 food crops area

got reduced to 65.44% and non-food crops area was enhanced to 34.56%. If we calculate the decadal growth rate of area under cultivation for food grains then the picture gets clear. We can see (table 3.1) below that in the decade of 70's and 80's area under food grains increased at the rate of 0.7156 and 0.0940 percent per annum respectively but after the starting of liberalisation in early 90's area under food grains decreased with the rate of -3.89 percent.

In the table (table 3.2) below we have decadal growth rate of some cash crops. And it is clear from the table that area under cultivation for cotton, sugarcane and coffee has been increasing over the same period. The trend increase of area under cultivation for these crops is particularly consistent in the decade of 90's. In 90's all the above crops experienced increases in cultivated area with cotton, sugarcane and coffee increasing at the rate of 18.14, 13.55, and 25.92 percent respectively.

Thus we observe that in the decade of 90's when the process of liberalisation was in full swing, area under food grains decreased. And at the same time, area under cash crops experienced an increasing trend.

Table 3.1: Decadal growth rate of area under food grains

| <i>Years</i> | <i>Growth rate</i> |
|--------------|--------------------|
| 1971-80 | 0.7156 |
| 1981-90 | 0.0940 |
| 1991-00 | -3.895 |

Table 3.2: Decadal growth rate of area under cash crops

| <i>Years</i> | <i>Cotton</i> | <i>Sugarcane</i> | <i>coffee</i> |
|--------------|---------------|------------------|---------------|
| 1971-80 | 6.83 | - 0.38 | 42.85 |
| 1981-90 | -1.53 | 28.83 | 19.04 |
| 1991-00 | 18.14 | 13.55 | 25.92 |

Thus liberalisation has put the emphasis on agri-exports. Cultivation of staple food is being replaced by cash crops, tomatoes in place of wheat, flowers in place of rice, and so on. To reap the so called comparative advantages in terms of good climate and availability of cheap labour states like Karnataka have embarked the production of fully export oriented hi-tech floriculture during late 90's in India. To capture the lucrative world market, not only the scare resources and capital were diverted lavishly but huge

subsidies were also provided to floriculture. (Shivaramane, 1998). In Kerala, vast tracts of forests and paddy fields have been converted into rubber, coffee and coconut plantations. Every year, about 25,000 hectares of good paddy land are being diverted for non-paddy purposes (Devender Sharma). Thus India is gradually moving back to the pre-Green Revolution days when food was largely imported to feed the hungry

We have established the link between liberalisation and food crops above. We can say that with liberalisation agriculture will become more and more commercial. As a result area under cultivation for cash crops and non food crops will increasingly compete out the food crops. We noticed above that area under food grains has been showing a decreasing trend. Especially after the initiation of liberalisation and government's effort to integrate Indian market with international market by removing trade barriers.

Over the years the increase in world food production has been propelled largely by rising productivity, driven in part by increased irrigation and increased use of fertilizers (IPC Report 1996)². And as cash crops have claimed more area at the expense of grains, yield has not risen enough to compensate for area decline and the

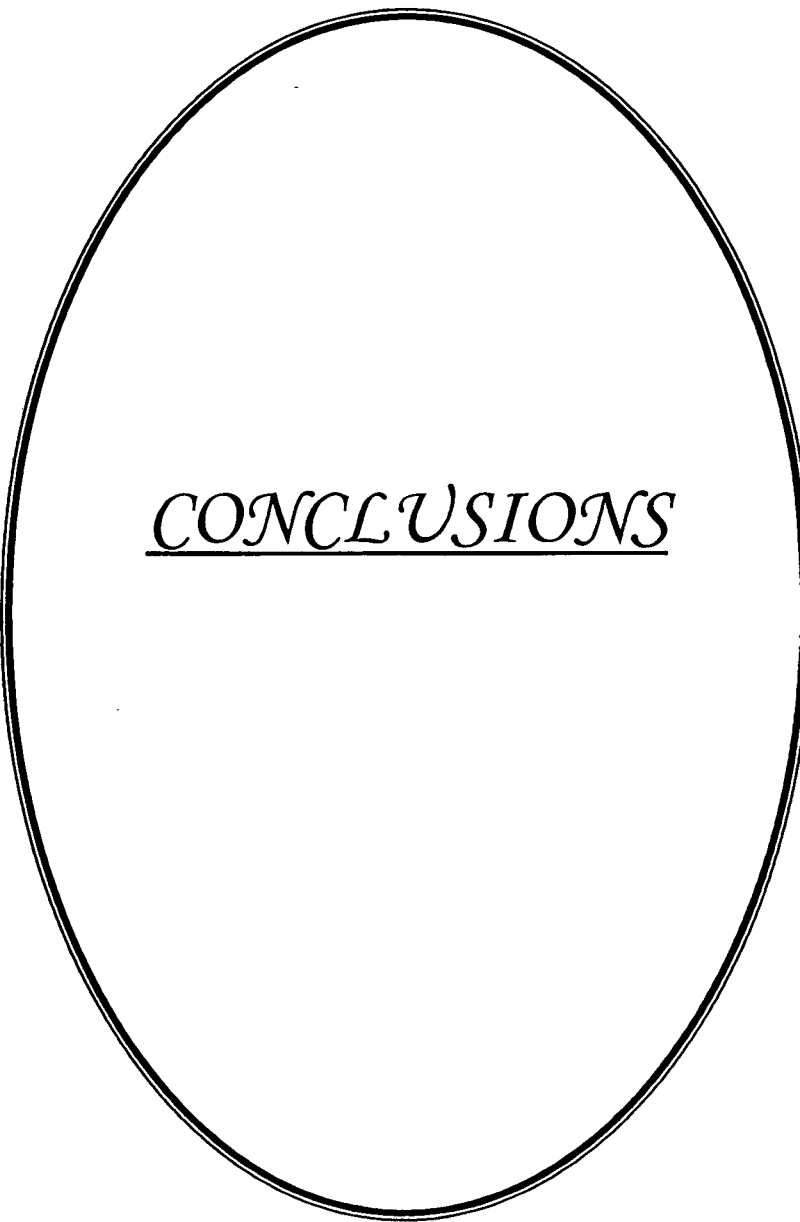
² "Food security by 2005" IPC report 1996

compound growth rate of food grains output has dropped to only 1.7% below the population growth rate, during the period 1990-1 to 1995-6 for the first time in three decades (Utsa patnaik). The period after this saw some improvement but even now the growth rate of food grain production has become stagnant. So given the high growth rate of population the present situation is really worrying. And India needs to take some drastic measures to improve the growth rate of production of food grains.

Thus the impact of liberalisation on production of food crops is not favorable. Moreover liberalisation also has implications for food security through the link with incomes and expenditures. Any change in the trade regime will have a direct effect on both rural and urban incomes, and employment, and through these on income distribution. This is all the more important because the vast majority of the hungry and malnourished suffer from inadequate income and not from inadequate food supplies. So the process of liberalisation and free trade is not conducive for attaining the goal of food security. And as our economy will become more and more integrated with world markets, the task of attaining food security will become increasingly difficult. So we can conclude we that the arguments given by proponents of liberalisation can not be taken at

their face value. We found that the potential gains from trade liberalization are not guaranteed and will not necessarily be reflected in improved food security status of all the groups within society. In particular, there are likely to be significant differences between the impacts on small scale marginal farmers and big commercial farmers. In fact liberalisation has made the things worse. Commercial crops are eating into the fertile land tracts meant for essential food grains at a time when declining food grain production and access to food remain the two biggest problems confronting the country.

Thus we can conclude the chapter and say in the end that that liberalisation with its emphasis on free trade based on comparative advantage brings about a significant change in the cropping pattern of the country. As we found above that with liberalisation area under food crops will decrease and under non food crops will increase. Thus liberalisation will affect food security adversely with the above effect on cropping pattern.



CONCLUSIONS

CONCLUSIONS

Agriculture is not regarded as an occupation in India; in fact it is regarded as a way of life. The importance of agriculture in Indian economy can be judged by the statement of pt. Jawaharlal Nehru. Once he said "Every thing else can wait but agriculture". Agriculture was accorded due consideration in the Indian economic planning when in the first five year plan it was given top priority. This was because of the fact that India was primarily an agricultural economy at that time. Moreover self reliance in food production was also at the back of mind of Indian planners at that time. And now even after 58 years of independence, with diversification of Indian economy to a significant extent the importance of self reliance does not decreases. In fact it has become all the more important given the fact that India is going to become the most populous country in coming years.

Self reliance is very essential for the survival of a country. If a country is not able to produce its own requirements of food then it has to face many repercussions. The effects of being dependent on others for food assumes a more serious character if the country in question happens to be a developing country. Firstly the food

dependent country has to devote the scarce foreign exchange for importing food. Secondly being dependent on other countries for food is like giving a remote control to them that they can use to get things done from us by just a push of the button. A country's economical and political interests are at stake in food dependency conditions. This is exactly what happened in Indian case before the green revolution. But liberalisation always talks about the gains of free market mechanism, completely ignoring this aspect.

Now let's see whether we have been able to answer the questions that we posed in the introduction, or not? The first question was "can liberalisation have any impact on the cropping pattern or not?" Then we showed that liberalisation can influence the cropping pattern if two conditions are fulfilled. Firstly farmers are influenced by the incentive structure. And secondly that liberalisation would influence the incentive structure of agriculture. Regarding the first condition we established in the chapter No. 2 that farmers are influenced by the incentive structure. And this condition holds even in the presence of the constraints that inhibit peasant's profit maximising behavior. Some of the constraints we mentioned were limited risk bearability, lack of access to markets, inability to invest to diversify, and subsistence agriculture. Then we showed that in

Indian economy peasants do get influenced by changes in the incentive structure. Thus in the first chapter we established that the first condition was fulfilled.

In the third chapter we took up the second condition that the liberalisation can influence the incentive structure of agriculture or not. There we said that incentive structure had two aspects to it, cost of cultivation and prices of output crops. Then we showed in the chapter that liberalisation had led to the increase in cost of cultivation. And under the conditions of free trade international prices affect the domestic prices. Thus we established that liberalisation, by affecting cost of cultivation and output prices, affects the incentive structure of cultivating various crops.

This way, with both the chapters i.e. chapter no. 2 and 3, we were able to conclude that liberalisation can influence the cropping pattern by affecting the incentive structure of agriculture. Thus our first question of this dissertation is answered. Then in the fourth chapter we established that incentive structure in the international market will influence the domestic cropping pattern directly and indirectly. When there are changes in the relative profitability of crops in the world market then peasants of home country will grow more profitable crops and export them. This is how world market

will influence the cropping pattern directly. Then we showed that world market will affect the cropping pattern indirectly by influencing the relative profitability of crops in the domestic market. Thus under free trade conditions cropping pattern in the domestic market will be determined by incentive structure of the world market.

In the same chapter we showed that liberalisation would affect the cropping pattern in such a way that area under food grains crops will decrease and under non-food grain crops would increase. We also showed that area under cash crops is on the rise after the initiation of liberalisation. And at the same time area under food crops is on the decline. In the same chapter we concluded that liberalisation by changing cropping pattern away from food crops will adversely affect the food security of the country. But Food security is a multi-dimensional concept and can be explained as a situation where the nation is able to produce sufficient amount of food stuff and that food stuff is accessible to actual consumers. Sufficient food means the amount of food that can provide adequate caloric intake for every resident of the country. So food self-sufficiency and food security is defined in terms of satisfaction of people's basic needs. And here the question of purchasing power

and access to food in the sense of ability to purchase become very important especially in a poor country like India. It is quite possible that a situation arises where food output per head rises but the distribution of the output worsens and we end up with the same or even lower level of food security. Put very simply, this implies that food security and equity are two sides of the same coin and we can not achieve food security with a significant degree of inequitable distribution of income.

Here what we are stressing is that liberalisation by affecting the cropping pattern affects the food security from the supply side. But it is very possible that liberalisation can threaten the food security from demand side by adversely affecting purchasing power of the people. And we know situations where we secure increases in overall income do not necessarily improve the purchasing power of poor. It is possible that with increasing income, distribution of income gets worse and we end up with a situation where the poor are getting poorer and rich are getting richer. So let's see how liberalisation will affect this aspect of food security.

Proponents of liberalization argue with the help of trade models that by integrating the world economies, through the process of liberalization, overall output of the world as a whole will increase.

But for arriving at this conclusion they make some simplifying assumptions which are crucial for this conclusion. For instance it assumes perfect competition, where no country or firm is able to influence prices, where there are no economies of scale and where products are homogeneous. It also assumes that second-best situations have been recognized and acted upon, and that externalities have been internalized. As we have seen earlier in the second chapter, these assumptions are very strong and hardly hold in the real life situations. We saw that the international trade regime is not perfectly competitive. Thus the expected results of the process of liberalization are not likely to be realized in the real life situations.

We have a large number of empirical studies that conclude that there is no relationship between liberalization and growth. Rodrik in his study concludes that *“there is no convincing evidence that trade liberalization is predictably associated with subsequent economic growth and that studies that suggest that there is evidence are misattributing macroeconomic phenomena to trade policy”*. Rodrik further finds that the *“only systematic relationship is that countries reduce barriers as they get richer”* concluding that initial economic growth was generated when trade was protected. (Rodrik, D. 2001). So it is not appropriate to say that liberalization will lead to enhanced growth for sure.

Moreover even if we agree with the suggestion that liberalization would improve the growth rate of countries yet it does not ensure that purchasing power of every one will increase. And it is because of the fact that distributional effects of liberalization are likely to be adverse.

Thus the ideology of liberalization as far as economic policy is concerned makes an implicit assumption regarding the equitable distribution of benefits of growth. When it says that the liberalization would engender economic growth, which in turn would lead to enhanced economic welfare then it assumes that in the long-term no-one will be made worse off. So the ideology of liberalization believes in the trickle down effect. As the richer sections of the population become better off the benefits of higher growth will filter down the income ladder. In this way the poor are also expected to get better off. But the proponents of liberalization have failed to provide any convincing reason for such an assumption.

There are numerous studies that point out that the most severely affected groups with liberalization are those that have limited access to capital and are further excluded due to lack of finance or credit. They are therefore unable to cope with the changes that

liberalization brings about. The report of a UNU–UNDP project, *“Poverty and Inequality”* (2000) shows clearly that inequality has risen in most countries since the early-mid 1980s. The project analysis indicated that, to an important extent, the rush to implement liberalisation policies triggered the recent surges in inequality.

In the report *“True World Income Distribution, 1988 and 1993”* (1999) the World Bank calculates income distribution for individuals based on household survey data from 91 countries, and adjusted for differences in purchasing power parity between the countries. The study found that inequality increased from an already very high 63 in 1988 to 66 in 1993. Similarly in another paper by the world bank *“The simultaneous evolution of growth and inequality”*(1999) Mattias Lundberg and Lyn Squire find that greater openness to trade is correlated negatively with the income growth of the poorest 40% of the population. It concludes that greater openness harms the poorest.

The UNCTAD report, *“Globalisation and Liberalisation effects of international relations on poverty”* (1996) stated that *“.....the benefits of globalization and liberalisation to low-income agricultural producers are likely to be very limited..... The greatest scope for*

increased trade is in relatively high- value sub-sectors such as horticulture but their relative capital intensity limits the scope for low income producers to benefit". It goes on to say that "*Where additional agricultural income brought about by globalization and liberalisation is concentrated in the hands of larger producers, and liberalisation gives rise to an increase in the concentration of land ownership, an increase in overall poverty is possible*". And this is what we observe happening in India. Thus only certain type of farmers benefit from globalization and the fruits of liberalisation and globalization even if they occur are not reaching to the poor. Disparities are on the rise around the country and millions of people live in wretched conditions side-by-side those who enjoy unprecedented prosperity. This way we can conclude that that with liberalization concentration of income has increased resource wise. With growing commercialization of agriculture small farmers have been hit hard. Risk in Agriculture has increased with growing commercialization as there are more price fluctuations than earlier and small farmers with low risk bearing capability are unable to cope with these price fluctuations. As a result they have to resort to credit for even buying seeds for reproduction. But, with liberalization creeping in every sphere of the economy, they are unable to get credit from banks because of the banking sector reforms (B.Singh1998). Farmers have

to go to local money lenders who are more interested in swallowing the land than the interest incomes. And unable to cope with this vicious circle, small farmers ultimately lose their land and become landless laborers. The situation gets worse with industry unable to provide sufficient avenues for employment so more and more people fall back on agriculture (Jayati Ghosh). This way the distribution of income further gets worse with liberalization. As a result purchasing power of poor is decreasing rapidly with the liberalisation. Thus liberalization and globalization appears to increase both poverty and inequality. So effects of liberalization on purchasing power are not favorable so food security is threatened by the liberalization process on this account.

Thus the food security will be adversely affected by the liberalisation on both accounts i.e. availability and purchasing power. And after the whole analysis we are in a position to conclude that the process of liberalisation poses a great threat to food security of the country. This is evident by the fact that in rural India, the average caloric intake per capita fell from 2,183 in 1993-94 to 2,149 in 1999-2000. Per capita net availability per day (gram) decreased from 510 in the year 1991 to 416 in the year 2001.

Still unmindful of the serious repercussion of disruption of national food self-sufficiency, India has been falling in to the traps of the globalization. And the saddest part is that Indian planners are not paying any attention to this aspect of liberalisation. India is blindly pushing for liberalisation with great zeal and enthusiasm ignoring the repercussions of it on the food security of India.



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