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MIGRATION, URBAN UNEMPLOYMENT AND
MARKETED SURPLUS IN DEVELOPING ECONOMIES

by
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INTRODUCTION

This dissertation starts by looking at the problem of rural-urban migration in the developing countries. In doing so we come across what seems to be an apparent contradiction in the literature on economic development. The traditional view on economic development suggests that increasing urbanization is not only an indicator of economic development but also is a precondition for transition from an underdeveloped to a developed economy. However, recent literature on internal migration seems to view urbanization as a constraint on economic development. We have argued that the recent concern is not about urbanization per se, but about "over-urbanization", i.e. a rate of urbanization which far exceeds the rate at which jobs can be created for the migrants from the rural areas in the urban sector. However, as relatively few urban centres in the developing countries offer hope of an alternative source of employment to the unemployed labour force of the rural sector, rural labour migrates to a very few urban centres creating excessive pressure on the existing facilities. In Section I of Chapter 1, we have discussed the factors behind urbanization and tried to find out why the process of urbanization was less painful in the developed countries during their early period of industrialization, compared to the Third World countries of today. In Section II of the same chapter, we have taken a detailed look at the policies being followed by some of the developing countries to alleviate the problems of over-urbanization.

After taking a critical look at the recent migration literature in Chapter 2, in Chapter 3 we have constructed a model

(ii)

of the dual economy à la Lewis, with rural-urban migration. In Chapter 4, we have argued that the problem of over-urbanization is actually a symptom of a greater problem, that of unemployment both rural and urban. Historical experience tells us that jobs created will have to be in the non-agricultural sector. However, growth of the non-agricultural sector depends crucially on the availability of surplus food grains for the non-agricultural sector. Now, the importance of agricultural surplus on economic growth is nothing new. In modern growth theory its importance has been recognised since the days of the physiocrats.¹ We asked the question how this surplus food is channelled into the non-agricultural sector. In other words, what determines the marketed surplus of food grains?

In Chapter 5 we have taken a look at the literature on the marketed surplus. We have argued that in a partially monetized economy, which most of the Third World countries are, marketed surplus for food may not be positively related to price; indeed an increase in the price of food may actually reduce the available marketed surplus for food in a developing economy. Thus any attempt to create jobs in the non-agricultural sector, which pushes up the price of food through an increase in demand for it may result in a reduction in the availability of food, thereby creating inflationary pressure on the economy.

¹ See for example, Phyllis Deane, The Evolution of Economic Ideas (Cambridge University Press, 1978), chapter 3.

CHAPTER 1 The Problem of Urbanization: An Overview

Section I: Nature of the Problem

1.1.1 Historical Perspective

The subject of rural-urban migration has attracted the attention of economists and other social scientists for a long time. What is interesting to note in this field is that the process of urbanization which was seen not only as an index of economic development, but also as a positive contributing factor to economic development, is now seen as a problem facing the developing economies. One must point out that it is not the process of urbanization per se, which is seen as the problem, but the problem of urban unemployment and other sociological problems associated with it are considered to be the main culprit. For example, the National Committee on Science and Technology in India observes that unless the population growth of major Indian cities like Delhi, Calcutta, Bombay and Madras is controlled, it will very soon give rise to the problems of law and order breaking down, along with an increase in the health hazard which the medical facilities, overstrained as they are, would not be able to cope with.¹ On the other hand, if we go back to the nineteen-fifties, Davis and Golden (1954) write

"Urbanization is not only an excellent index of economic development and social modernization but also itself a stimulus to such change."

Though Davis and Golden are aware of the problem of "over urbanization", a concept which we will discuss in detail later, they see this only as a short-term problem.

In the sixties, Kindleberger (1965) first praises the role of urbanization in economic development, then goes on to argue that

1. Planned Parenthood Bulletin (Bombay), May 1979, p.4.

urbanization may not have the same beneficial effect on the developing countries as it had on the developed countries. Yet he concludes the section on urbanization in his textbook with a reference to high correlation between economic development and urbanization.² Since towards the end of the sixties, urbanization is being looked at as more of a problem than a help for the developing economies. Much of the literature is devoted towards finding a solution to urbanization and/or to the problems associated with it.

The bulk of the literature in the seventies onwards is concerned about the problems of urban unemployment, and seeks solutions in stopping people from migrating from rural to urban sector. Todaro (1976b) writes

"... projections for the year 2000 indicate that there will be over 920 million new job-seekers more than in 1970 ... Unless viable and productive economic opportunities can be created in rural areas, a sizeable proportion of these people will be forced to seek work in the already congested urban localities."³

Jolly (1970) writes about the economists who stressed the importance of urbanization,

"Far from being concerned with measures to stem the flow, the major interests of these economists was with the policies that would release labour to increase the flow ... How irrelevant most of this concern looks today."⁴

Though the time pattern of the development of the literature mentioned above is highly stylized, nonetheless this gives us the flavour of the problem and tells us how the perception of the issue has changed over time.

2. See Kindleberger (1965), pp.185-88.

3. Todaro (1976b), p.11 (emphasis added).

4. Jolly (1970), quoted in Todaro, ibid., p.1 (emphasis in the text).

Table 1.1 Rates of urban unemployment by age, in selected years
(percentage)

Country	Area	Year	Age	
			15-24 years	15 years & above
Africa				
Ghana	Large towns	1960	21.9	11.6
America				
Argentina	Buenos Aires	1965	6.3 ¹	4.2 ²
Chile	Urban areas	1968	12	6 ³
Colombia	Bogotá	1968	23.1	13.6
Curacao		1966	37.7	18.8
Panama	Urban areas	1963/64	17.9 ⁴	10.4
Uruguay	Mainly urban areas	1963	18.5	11.8
Venezuela	Urban areas	1969	14.8	7.9
Asia				
India	Urban areas	1961/62	8.0	3.2 ⁵
Iran	Teheran City	1966	9.4	4.6
Repub. of Korea	Non-farm households	1966	16.3	8.9
Malaysia	Urban areas	1965	21.0	9.8
Philippines	Urban areas	1965	20.6 ⁶	11.6 ⁷
Singapore		1966	15.7 ⁴	9.2
Sri Lanka	Urban areas	1968	39.0	15.0
Thailand	Bangkok	1966	7.7	3.4

- 1 14-29 years
 2 14 years and above
 3 12 years and above
 4 15-29 years
 5 15-60 years
 6 10-24 years
 7 10 years and above

Source: from Turnham (1971), table III.2

The above discussion leads to the natural question: how did this change in the attitude towards the role of urbanization come about? The answer seems to be that though urbanization itself is good, what the developing countries are experiencing now is the problem of "over-urbanization", which may not be helpful in tackling the problems of economic development.

When the economic historians examined the process of urbanization in the context of structural changes in the already developed economy, they found a correlation between industrialization (modernization) and urbanization. To examine the "stylized facts" for economic development, one can, at the risk of oversimplifying make a list of the following indicators, taken from Kuznets (1959) and Chenery and Taylor (1968). An excellent summary of these "stylized facts" can be found in Dixit (1973).⁵ Dixit writes:

"The marked shift in labour-force composition is the most important fact: the proportion of labour engaged in agriculture falls from over 70 per cent to under 20 per cent during the course of development. This decrease takes place while population is increasing, and the net effect on the absolute numbers working in agriculture is normally one of slow increase. During phases of rapid industrialization the agricultural labour force may be virtually constant; a decrease is very rare.

This movement of labour is, of course, accompanied by a shift in the composition of the national product. The share of agriculture declines from around 60 per cent to 15 per cent or even lower. In the meantime, labour productivity in both sectors increases with capital accumulation and technical progress. The increase is, if anything, more dramatic in agriculture. For the illustrative figures given above on shifts in labour and output composition, for example, the ratio of labour productivity in agriculture to that in industry rises from 0.64 to 0.71. Kuznets suggests that there is a slight decline in this ratio during the earlier phases of development, which is more than made up by a marked rise in agricultural productivity subsequently.

5 See Dixit (1973), p. 328

"With these transformations come important social and economic changes. Increased urbanisation brings about increased commercialisation of economic activities, which is made possible by increased monetisation. This promotes development of capital markets, and allows easier intersectoral movements of savings. There is more transport activity. All these factors lead to an increase in the share of services in national product."

Kuznets (1966) writes:

"In modern times these (structural changes) were changes in industrial structure within which product was turned out and resources employed - away from agriculture towards nonagricultural activities, the process of industrialization; in the distribution of population between the countryside and the cities, the process of urbanization."⁶

Why is urbanization important? Urbanization is important here, because urbanization and industrialization interact. Modern industry needs a network of transport, ease of being near the administrative centre, facilities for exports and imports, etc.

Also urbanization helps to change the attitude of the people. It creates new demands and industries can produce under the benefit of economies of scale due to the presence of large markets. This sentiment is reflected in the works of other economists as well.

Lewis (1955) writes:

"It is quite useless to expect real income per head to grow without reducing the rural population below the eighty per cent level, for the simple reason that towns of 2,000 inhabitants or less do not permit the economies of scale to be enjoyed."⁷

Lewis is aware of the possibilities that rapid urbanization can be a problem to the newly developing countries. He observes that a country pursuing the policy of industrialization will have to decide whether to locate industries in a few large cities or disperse

⁶ Kuznets (1966), p.1.

⁷ Lewis (1955), pps. 337-338 (emphasis added)

them over many small cities or even to the countryside. The solution Lewis suggested is that during the initial phase of economic development a country should build a small number of well-integrated industrial centres and after "industrialization has got over its growing pains" other industrial centres can be introduced.⁸

In this context one must point out that since in the newly developing countries there is a severe constraint on the availability of the so-called social overhead capital, i.e. roads, transport and communication system, etc., at the initial phase of the development process it is virtually impossible to spread industries in very many locations. The locational pattern of industrializations in the Third World countries is such that initial industrialization tends to start at the centres which already have the benefit of possessing these social overhead capitals compared to those in any other locations. We will have the occasion to refer back to this point in the discussion below and particularly in section II where we will be looking at the policies some Third World countries are pursuing to combat the problems of over-urbanization.

The concept of "over-urbanization" was first introduced in the literature by Davis and Golden (1954). They used the phrase in the context of Egypt (and also Greece, Korea and "probably Lebanon"). According to their definition a country is called over-urbanized when it has "far more urbanization than its degree of economic development⁹ would lead us to expect." As the main cause of over-urbanization,

8. Ibid., p.339

9. They have defined "degree of economic development" as the share of the modern sector in total GDP.

Davis and Golden found the impoverishment of agricultural population through non-equalitarian land holding system and lack of effective demand for rural non-agricultural products in the rural sector. However, they believe that over-urbanization cannot go on as it will ultimately put an end to industrialization. On the other hand, they express optimism in the fact that over-urbanization "at least represents a potential setting for enhanced output". Thirdly, they feel that over-urbanization by making the masses discontented will force the government to "take drastic action or to allow itself to be displaced by a new revolutionary group". They welcome this possibility as this will help to change "outmoded institutional and political institutions".

Though it is very difficult to sympathise with the very simplistic, though optimistic, 'solution' to the problem at hand discussed above, it makes clear the perception of the nature of the problem to the profession in the early period. The notion of over-urbanization, however, was re-introduced in the literature by Bairoch (1973). Essentially, the definition is similar to that by Davis and Golden (1954). Bairoch compares the rate of growth of employment in the manufacturing industry with the rate of urbanization for the developed countries in their early periods, and also for the developing countries. What he finds is that the difference between the rate of urbanization and percentage of population active in the manufacturing industry at the comparable stages of development was much lower for the developed countries than that in the developing countries. The following table taken from Bairoch tells its own story.

Table 1.2 Urbanization and percentage of active population engaged in manufacturing industry

	Year	Urban population as a percentage of total population	Percentage of active population in manufacturing
Europe (excluding England)	1850	11.0	16.0
	1880	16.0	18.0
	1900	24.0	20.0
	1920	29.0	21.0
	1930	32.0	22.0
Developing (market economics)	1920	6.7	8.5
	1930	7.2	8.5
	1940	9.7	8.0
	1950	12.9	7.5
	1960	16.7	9.0
Africa	1960	13.4	7.0
America	1960	32.8	14.5
Asia	1960	13.7	9.0

Source: Bairoch (1973), p.22.

1.1.2 Factors behind the problem

Let us now try to see the factors behind the problems of over-urbanization. One must point out that since industrialization in the Third World countries, by definition, cannot evolve in the same way as has happened in the most developed countries, this probably is the major cause of over-urbanization. It is not possible for the developing countries to follow a path of industrialization similar to the already developed countries. Nobody would conceive that it is possible for the developing countries to repeat all the stages of industrial revolution, say, Britain went through over two hundred years. The economic structure in the developed countries changed gradually over a long period. For the developing countries at present, given the expectations generated after independence, the task of achieving economic development is almost a race against time.

Referring back to our discussion about lack of social overhead capital in the developing countries, industrialization cannot be spread in many places. In developed countries, industrialization and urbanization went side by side. In England, for example, spatial distribution of cities changes with stages of the industrialization and so did urbanization. Similar development can be witnessed in all other European countries and America.¹⁰ In the USSR on the other hand, one can see a much higher rate of urbanization compared to other developed countries. The reason behind this seems to be that as industrialization was directed towards already existing cities like Moscow, St Petersburg and Dnieper-Donbas districts, rural population migrated to these centres. The following

10. See for example P Cromar (1990) for an excellent discussion on how old cities changed with the pattern of industrialization in general in England and in Sheffield in particular. For a discussion on American case see A Pred (1977), pp.84-97 in particular.

table gives the comparative rate of growth of urban population in different countries. This shows that USSR has a higher rate of urbanization than even the developing countries during 1920-1960.¹¹

Table 1.3 Growth of the Urban Population (Average annual rate)

	1850-1920	1920-1960	1960-2000
Developing (Market) Economics			
Africa	-	4.3	4.6
America	-	4.4	4.2
Asia	-	3.8	4.0
Developed Countries			
Europe	1.9	1.3	1.1
USSR	-	4.0	2.6
North America	4.3	2.2	2.0

Source: Bairoch (1973), and UN (1969), p.24.

As has been pointed out by Dobb (1965)¹² one of the major problems during the initial period of industrialization in the USSR was large urban unemployment. Much of the unemployed labour force consisted of migrants from the villages. In Dobb's own words:

"... it (the urban unemployment) represented the seepage into the towns of part of chronic rural overpopulation which had for decades been a symptom of Russia's economic backwardness ... Only a large and rapid expansion of industry would suffice to make any appreciable inroad upon this large reservoir of surplus labour."¹³

11 On Russian Urbanization see The Cambridge Economic History Part II, Vol. VI, Chapter IX, Section IV.

12) See Dobb (1965), Chapter 8, particularly page 189.

13)

Going over to the case of Japan one can see how the definition of urban areas changes with modernisation. In 1953 the requirement of city status was adjusted to allow the inclusion of much agricultural land within the city limits. However, the population census of 1970 shows that this change was really justified.¹⁴

Let us try to see now some reasons behind the rural-urban migration and over-urbanization. These we will divide into three broad categories: demographic, sociological and economic. We will start with a discussion of the demographic reason. The first reason that comes to mind in this category is the high rate of growth of population in the Third World countries. However, this is not surprising in the sense that a population explosion has been experienced in the initial phase of modernization in all societies. Kuznets (1966) has estimated that the population of European stock has increased from around 150 million in 1750 to around 800 million in 1950, a rise of 433 per cent while the population of the rest of the world during this period has increased by less than 200 per cent (from about 580 million to about 1,600 million).¹⁵

The deceleration of the rate of growth of population generally comes at a higher level of economic development than most countries in the Third World have yet achieved. What is heartening, however, is that the natural rate of growth of population has started to slow down in quite a number of Third World countries.

When one looks at the difference between the urban and rural birth and death rates, one finds, from whatever little information there is,

14 See Kornhauser (1976), p.26, also Table 1.7.

15 Kuznets (1966), p.36

that in the developed countries, the death rate was higher in the urban sector during the early period of modernization. For example, the crude death rate in the London area during 1701-50, was 49 per thousand while that in England and Wales was 33 per thousand. In the US, till 1830, the death rate in the cities (Boston, New York, Philadelphia) was twice that in the rural townships. In 1900, in the US, the life expectancy in the urban areas was 44.0 years while that in the rural areas was 54.0. In France between 1880 and 1885 the difference between infant mortality in the urban and the rural sectors shows that the urban sector rate was 20 per cent higher till 1880 then it rose up to 25 per cent in 1885.¹⁶ The high death rate in the urban areas no doubt kept the pressure of population there lower. It is only during the twentieth century that the death rate for urban sector, in the developed countries, has started to come down (to that in the rural area - along with the overall death rate), though even now the death rate in the urban sector in some of the developed countries is slightly higher than that in the rural sector.

In the developing countries, however, the accessibility to modern medicine and health facilities in the urban sector means that the death rate in these sectors is lower than that in the rural sector. From what little evidence is available (see Table A1 and A2 in the Appendix), it seems that in some countries at least the urban sector birth rate is also higher. The following table will give an overall view.

16 Figures are taken from Dean and Cole (1964), page 127; Kuznets (1966), page 46; Bairoch (1973), pages 40,41.

Table 1.4 Rural-urban Demographic Differentials 1970

	Developed Countries rates per thousand per annum		Developing Countries rates per thousand per annum	
	Urban	Rural	Urban	Rural
Crude Birth rate	19.8	23.1	38.0	44.0
Crude death rate	9.0	9.5	15.3	21.6
Rate of natural increase	10.8	13.6	22.7	22.5

Source: Demographic Year Book, UN (1973), page 197.

Another demographic factor which probably helped to prevent over-urbanization in the developed countries is the outlet through international migration. The main recipient of the European emigration was of course North America. From a vast, often contradictory literature, one tends to agree with the view of Brinely Thomas that the emigration prior to 1860 was caused by over-population. After that period, European emigration responded to capital flows in the Atlantic economy, with alternating investment cycles in Europe and the United States. It can be seen from Thomas (1972) that while during 1870s practically all rural exodus in England was absorbed in the urban sector in 1880s, 82 per cent of rural emigration went overseas. In 1900s both rural and urban sectors lost population through overseas emigration.

Almost all European countries benefited from this safety valve.¹⁷

17. For a short but instructive discussion on this, see Grigg (1980).

Table 1.5 Net Gains (+) or Losses (-) by Migration in England
(in '000s)

	1871-81	1881-91	1891-1901	1901-1911
Rural	- 769	- 731	- 596	- 251
Urban	+ 673	+ 132	+ 551	- 346
Emigration	- 96	- 599	- 45	- 596

Source: Thomas (1972), page 176, Table 6.3.

Since the possibility of international migration on the earlier European scale is no longer possible in the present day this outlet is no longer available to the Third World countries.

Turning now to the sociological factors, the most important of these seems to be the role of education.

It is generally true that educated people tend to migrate more readily than the non-educated, in all types of society, whether developed or developing. The following table on migration intentions in Ghana is an example of what seems to be almost a universal pattern of relationship, in the Third World countries, between levels of education and migration.

The sentiment has often been expressed that the type of education system existing in the Third World countries is not suitable to these countries' needs in the sense that an urban bias in the system of education

Table 1.6 Level of Education and Intention to Migrate in Ghana
(Percentage of people in each category who either have a definite plan or intend to migrate at a future date)

	Male	Female
No schooling	22	28
Elementary schooling	40	50
Secondary or High School education	58	65

Source: Schneider *et al.* (1978), page 35.

acts as a push factor for rural-urban migration (complaints of this nature are not new as Blaug (1973)¹⁸ points out that similar sentiment was expressed in 1854 in connection with the school curriculum in Ireland). Be that as it may, there is evidence to support the view that the earning capacity of educated migrants is greater than that of the uneducated ones.¹⁹ Hence the higher the spread of education in the rural sector, the greater will be the incentive to migrate.

Insofar as education is a contributing factor towards internal migration, we will see that this factor is working more strongly in the Third World countries now than it did in the developed countries at the comparable stage of their development. The reason behind this, though it may sound paradoxical, is that education is spreading at a much faster rate in the developing countries compared to the rate at which it spread in the already developed countries at the similar stage of development. From UNESCO data one can see that the percentage of illiterate persons among the population of 14 years of age in the developing countries has come down from 74 in 1950 to 56 in 1970.

18. Blaug (1973), page 47, footnote 1. Also see pages 46-51 for a critique of this sentiment. For a treatment sympathetic to this view, see Mehmet (1978), Chapter 10, particularly pages 227-228.

19. See, for example, Connell *et al.* (1976), pages 61-68, Barnum and Sabot (1976), chapter 3.

It has been estimated that 31 per cent of rural children in Africa, 47 per cent in Asia and 67 per cent in America receive primary education. In Europe in the nineteenth century the annual rate of increase of children receiving primary education was only increased by 1.8 per cent, which gives an increase in the rate of school attendance of only 1 per cent which is less than one third of that in the present day developing countries. Though the situation in Europe improved from 1880, in primary education, in the field of secondary education the growth rate is even faster in the developing countries.

The following table shows the growth of secondary education in the developing countries:

Table 1.7 Growth of Secondary Education
(Percentage rate of school attendance)

	1950	1960	1968
Africa	5	12	16
Asia	15	26	36
America	9	15	25

The comparable rate was not reached in Europe until the end of the Second World War, in America until 1920. The rate of school attendance among the population of school age, at the secondary level, for some European countries in the 1850s, was 2.4 per cent for France, 3.5 per cent for Norway, and 2 per cent for Belgium.²⁰

20. All the information about rates of school attendance has been taken from Bairoch (1973); see also Cipola (1969).

Among other sociological factors that have been found to contribute to internal migration are more access to piped water, electricity, recreations (cinema, etc.), better medical care, etc.²¹ However, the most important one seems to be the chance for better (or higher) education. Attraction for higher education is an important contribution to rural-urban migration since most, if not all, institutions for higher education (e.g. universities) tend to be located in the cities. Again this is not peculiar to the developing countries alone. The spatial distribution of old universities in Britain, for example, will confirm this view.

The economic reason for rural-urban migration is given as differential in income or wages. We must be cautious here. Since in the rural areas income or wages in kind are difficult to record, rural income and wages are often under-estimates. All we can have is some indication, not of the rural wage, but of wages in agriculture. These figures too are not available for many countries. From whatever information is available one can see that over the years the gap has widened by at least 35 per cent, average urban wages being between 100 and 200 per cent higher than average rural wages.²²

The difference between rural and urban wages in the Western economies was between 10 and 30 per cent in the case of unskilled workers and 10 and 45 per cent in the case of skilled workers. In the textiles industry, which provided the bulk of the employment, the difference was almost negligible.²³

21. See Yap (1977), page 245, for a list of studies dealing with these.

22. See Bairoch (1973), chapter 2, pages 28-32 in particular.

23. See Bairoch (1973), page 32.

There is reason to believe that parents of rural children often invest in their education to enable them to migrate out of the village. Moock (1972) has shown that where the villagers find that the resource base of the village is not sufficient for raising or even maintaining the income level they view education "as an instrument for removing youngsters from the land".²⁴ This is how education and income differentials may combine. Indeed, educated migrants tend to earn more than the uneducated ones. For example, Barnum and Sabot (1976) have found that in Tanzania educated migrants have an earning capacity 1.75 times higher than that of the uneducated migrants.

What we have seen so far we may summarize as saying that the rate of urbanization in the Third World countries is very high compared to that in the developed countries in the sense that urbanization tends to run at a faster rate than industrialization as compared with the developed countries. One important reason for this turns out to be rather paradoxical. It is that some advantages of modernization, which causes internal migration, such as the spread of education, decrease in the death rate and increase in the birth rate, etc., seem to be available to the masses at a comparatively earlier phase of development than they were to the common people in the developed countries. On purely humanitarian grounds no one should argue against this development. The other main reason seems to be the lack of social overhead capital. The countries which are following a programme of industrialization have to concentrate industries on a few areas which already have communications, transport and other facilities and the interaction between industrialization and

24 Moock (1972) quoted in Connell (1975).

urbanization cannot obviously progress in the same way as it has done in the past. From a short run point of view, the economies in the West experienced problems of urban unemployment and hardship during the downturn of the business cycle. But the effect of that was smoothed out by emigration. One must remember that the phase of labour shortage and immigration in the West started in a big way only after the Second World War. None of the developing countries has reached such a position as yet.

In the next section we will study the policies being followed in some (mainly) Asian countries to tackle the problem of over-urbanization.

Section II: Policies to control over-urbanization

We will now discuss the policies being pursued in the Third World countries to cope with the problem of over-urbanization under three broad categories - (1) Direct Controls over mobility; (2) Steps taken in the urban areas; (3) Steps taken in the rural areas.

1.2.1 Direct Controls

In only two of the developing countries have serious attempts been made to control the problems of rural-urban migration and over-urbanization - China and Indonesia. In China the "rustication" programme for sending urban youth to the rural areas started in the late sixties. During the period 1969-1973 about 10 to 15 million urban school graduates were conscripted to migrate to the rural sector.²⁵ Restrictions in the form of passes were imposed on the rural population to enter and seek employment in the urban sector. The location-specific grain rations and other penalties on migration from rural areas are

25. Oberai (1981), page 233. Rawski (1979) puts this figure to 12 million (page 127).

also useful deterrents on rural-urban migration. Labourers who migrate to find non-farm jobs have to pay substantial fees to their original units. This acts as an economic deterrent for migrants who have little prospect of finding well-paid employment.²⁶

While from all accounts the Chinese strategy of absorbing its under-employed urban labour force into rural agriculture and industry seems to have produced success, one must point out one or two problems associated with it. One problem seems to be the hostility of the rural community towards the urban youth, since they are weak and are often unwilling to undertake gruelling physical tasks. However this seems to be a transitional problem.²⁷ On the other hand, "several million" urban youth have left the rural areas without permission. These youths are "living a kind of semi-legal life between town and country".²⁸ These youths of course remain unemployed.

What seems to be the major problem behind using such a strategy as that discussed above is that unless one has a completely regulated social system, this sort of legal restriction is hard to operate. This becomes clear when we look at the restrictions tried in Indonesia.

In Indonesia, to restrict migration into Jakarta, the government in 1970 made it illegal for anyone without an official permit to live in the city. Persons who want to migrate to the city are given a temporary permit at a deposit of a considerable sum of money. If within six months of their entering the city, they find a job, they receive their deposit back with a permanent permit to live in the city;

26) Rawski (1972), pages 126-128; see also Lanrui and LüKuan (1982),
 27) particularly pages 132-136.
 28)

otherwise they are transported back to where they came from. This type of restriction is very difficult to administer. On one hand they can give rise to petty corruption, which seems to have happened. On the other, though police in Jakarta from time to time round up illegal migrants and send them back, there are reports that they come back to Jakarta almost immediately.²⁹

1.2.2 Steps taken in the urban areas

This can be looked upon as an exercise in the spatial distribution of industries and administrative centres. The growth pole theory of development maintains that incentives such as lower taxes, improved infrastructure, cheaper investible funds, etc., should be used to encourage setting up of new industries in the areas away from the existing urban areas. In the past Japan's experience in this area has proven successful. Korea, in a bid to reduce pressure on Seoul, has followed the same strategy. From early 1970 industries were directed away from Seoul within easy access to its market and infrastructural facilities. This strategy has achieved its desired goal in keeping the growth of Seoul to a moderate level.³⁰

However, for a more populous country like India, the strategy of creating new urban-industrial complexes has so far proved a mixed success. In the areas where heavy industries were established urbanization has become rapid but has brought along with it the familiar problems of slum dwellers, etc. The so-called Steel Towns in India show that within 20 years of their existence they have attracted huge numbers of slum dwellers.

29 Oberai (1981), page 233.

30 Oberai (1981), page 237.

Table 1.8 Marginal Settlements in New Steel Towns in 1971.

	Population (000)	Population in Marginal Settlements (000)	Percentage of Column 1
Rourkela	172	53	31
Bhilai	245	65	29
Durgapur	207	50	30
Bokaro	107	18	17

Source: K C Sivaramakerishan, quoted in Bose (1979), page 346.

What is more, the slums have extended over and swallowed up the rural areas nearby.³¹ Nonetheless, these towns have reduced the pressure on urbanization on the traditional cities. Location of small and medium sized industries to give rise to new urban centres, however, has not been that successful. The reason for that, not surprisingly, is attributed to the lack of infrastructural facilities and the inadequacy of their own resources to attract supporting industries or markets. On the other hand, the establishment of heavy industries, with their accompanying system of support is very costly.

The establishment of market towns near the prosperous rural areas has proven successful in India when they have links with big manufacturing towns. This is particularly true for the Punjab region. However, very few other countries have adopted this strategy on a wide basis, because it works only when linkages of market towns with rural areas and big industrial towns are already well established, since these are very costly to set up. Attempts to establish new towns near existing cities, on the other hand, have resulted in these new towns growing towards the existing cities.

31 Bose (1979), page 345.

In the next section, where we will be discussing rural industrialization, we will see that the question of infrastructure, i.e. social overhead capital, recurs.

1.2.3 Steps taken in the rural areas

Under this heading we will discuss two broad areas - improvement in agricultural productivity and rural industrialization. Starting with the strategy of increase in agricultural productivity, we can see that the rationale lies behind the argument that improved agriculture will increase the level of income on one hand and will increase the employment opportunities on the other, thus arresting the growth of rural urban migration. China, India, Thailand among other Asian countries are following this strategy, while in China the deliberate policy is to employ at least some of the urban unemployed in agriculture. In other countries the strategy is restricted to providing employment to the rural unemployed. In the case of India, the effect of agriculture productivity increase through High Yielding Varieties (HYV) of seeds, fertilizers, irrigation - which has brought in the so-called Green Revolution - has created more employment in agriculture. In Haryana, the Indian state where the Green Revolution is most successful, the employment opportunities in agriculture and allied activities have grown annually at a rate of 1.91 per cent between the years 1961-71. During the same period the male agricultural workers grew at a rate of 1.83 per cent per annum and unemployment opportunities in the industrial sector by only 0.47 per cent.³² What is interesting is that during the same period the proportion of cultivators in the total (male) workforce has decreased from 88.8 to 75.9 per cent, while that of the

32. Bhalla (1981), page 1024, Table 4.

agricultural labourers has increased from 11.2 to 24.1 per cent.³³

The reason for this is that agricultural labourers' real wage rates and number of days work available have both increased. In fact, from 1969 onwards cultivators operating less than 5 acres of land (in better irrigated areas) had low family income (in spite of the rise in this) than the household selling only labour. In the whole of the seventies both in Haryana and Punjab, the other state where the Green Revolution proved a success, not only the rural employment of its own labour increased, but it also provided employment for migrants from a poor state, Bihar.

However, one must be cautious about the continuity of the success of the Green Revolution in providing rural employment opportunities.

Krishna (1974) has shown, using Indian data, that technical change (i.e. mechanization) in agriculture has a negative direct effect on employment. But the indirect effect on employment, through an increase in the demand for non-farm production and consumption goods by the farm sector and the induced input, consumption and investment demands in the farm sector itself, is positive. However, he finds that "the aggregate employment growth may fail to keep pace with the growth of the labour force."³⁴

Admittedly Krishna's conclusion is based on one specific set of assumptions about productivity and the labour force growth rate. However, simulation studies done on the data from Punjab confirm Krishna's result.³⁵ Day and Singh go on to write:

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33. Bhalla (1981), page 1024, table 5.
 34. Krishna (1974), page 320.
 35. Day and Singh (1977).

"Disappointment over the performance of the industrial sector and the advent of the Green Revolution with its promises of spectacular increases in output and labor-absorptive capacity has brought about a renewed interest in the role of agriculture in development strategies. Perhaps there now exists the danger of over-relying on agriculture to solve the problems of low growth in output and productivity in the non farm economy."³⁶

If one goes back to the "stylized facts" of the process of economic development mentioned above, the caution expressed in the above paragraph seems entirely justified. We have seen that though during the earlier phase of economic development the proportion of employment in agriculture increases, ultimately the bulk of employment is provided by nono-agricultural activities. Rawski (1979) expresses similar caution about China's policy of finding increased employment in the agricultural sector in the future.³⁷

Other employment generating strategies for the agricultural sector are based on the idea that small farms are more employment-oriented than large ones. The literature on this issue suggests that the inverse relationship between farm size and labour absorption is not as straightforward as is suggested in some quarters. In Haryana, for example, where HYV seed technology has been used, the relationship has vanished completely.³⁸ However, insofar as land reform can improve the rural employment situation through encouraging small farms, the policy has not been pursued vigorously except in China and Sri Lanka. Similarly, where tenancy reforms have been undertaken, as in Bangladesh, India, Pakistan, Nepal, Thailand and the Philippines, this has actually worsened the position of the tenants, who reacted

36 Day and Singh (1977), page 171.

37 Rawski (1979), page 145.

38 Bhalla (1981), pages 1028-1029. See also Rudra and Sen (1980) for an up-to-date discussion on this issue.

by emigrating from the rural areas.³⁹ Most of the Latin American countries seem to have a similar experience.⁴⁰

We now turn to the question of rural industrialization. Before we go any further, it should be pointed out that if by industrialization we mean the setting up of industries viable enough to reap the benefits of economies of scale, then we are back to the question of providing big enough markets, transport facilities, indeed, the whole issue of superstructure availability. In the case of China, the rural industrialization strategy is proving successful. However, one must not forget that the distinction between rural and urban industries can be a bit blurred. For example, in China, the "county-run enterprises classified as 'rural' are located in small urban centres."⁴¹ As Rawski (1979) writes:

"Policy statements emphasizing the primacy of rural development and the well-publicized program of compulsory migration to the countryside for urban school graduates have created the impression that China's urban population may have stopped growing during 1960s and 1970s. This is not the case."⁴²

In fact we can see from the table below, the truth in the above statement.

Table 1.9 Urbanization in China (Index)

1953	1957	Mid 1970s	
		Low Estimate	High Estimate
76.4	100.0	144.6	168.0

Source: Rawski (1979), pages 27-28, Table 2-3.

39 Oberai (1981), page 238.

40 Peck and Standing (1979), pages 775-782

41 Paine (1978), page 702.

42 Rawski (1979), page 26. For a discussion on China's urbanization from 1949-57, see Thompson (1979), pages 299-311.

In fact, China has built up small and medium cities, the population of which has grown at a much faster rate than in the big cities. Many of these cities are completely new, in the sense that of twenty-nine new cities described in 1974 only thirteen were listed as municipalities in 1958.⁴³

In India the experience of rural industrialization shows the need for access to the urban areas. The following table shows that as the distance of the rural industries increases from the nearest urban area industrial activities in the rural areas suffer, according to the indicators shown in the table.

Table 1.10 Distance from the nearest urban area and rural industrial activity

Distance (km)	Percentage of workers in manufacturing	Percentage of income from manufacturing	Annual per capita income from manufacturing (rupees)
Below 5	8.42	12.52	5,934.85
5 - 10	6.70	7.36	1,642.75
10 - 20	5.29	3.50	428.02
Above 20	3.79	2.54	335.15

Source: Papola & Misra (1980), page 1737 (Table 5).

So far as the lack of social and medical facilities is concerned, the integrated rural development programmes have been suggested as the

⁴³ Ibid., page 26.

remedy. The integrated rural development implies providing social and physical infrastructure in the rural areas. As Oberai (1981) points out, most of these projects are relatively new and their impact on migration, amongst other variables, cannot be assessed as yet. However, the scheme has proved a success in Sri Lanka. In fact, one estimate puts a decline of real income in the urban sector between 1963-73 at 1.8 per cent per year while that in the rural sector has actually increased by 2 per cent per year.⁴⁴ The relatively slower pace of urbanization in Sri Lanka is attributed to this.

A derivative of the idea of integrated rural development can be put as the "urbanization of the countryside". Cuba's policy of industrialization is following this route. The capital city, Havana, is ignored, while more than 300 new small towns, set up since 1964, receive priorities in resource allocation. This has resulted in the growth of Havana lagging behind the overall rate of growth of population.⁴⁵

44 Oberai (1981), page 239

45 Peck and Standing (1979), pages 757-758.

SECTION III: Conclusion

In this chapter we have tried to show that urbanization is a logical consequence of industrialization and economic development. The "stylized facts" of economic development discussed in section I point out how with economic development the labour force employed in the agricultural (or traditional) sector as a proportion of the total labour force declines and both the industrial and service sectors gain in importance as providers of employment. However, in the developed countries industrialization and urbanization interacted with each other over a long period of time. In case of developing countries the situation is different. When a developing country follows the path of industrialization, the constraints on the availability of economic infrastructure suitable to sustain modern industries, compel it to locate the industries in a few areas already having this infrastructure. Thus, during the earlier phase of economic development, job opportunities and prospects of higher income can be found only in a handful of areas which are being industrialized, i.e. a few urban areas. If the economy has surplus labour in the (traditional or) rural sector, it is not surprising that the hitherto unemployed or underemployed labour from the rural sector will migrate to the urban sector in search of jobs; if the job opportunities in the urban areas fail to grow at a rate fast enough to absorb the labour force growing at a rate equal to natural rate of growth plus the rate of internal migration, the end result will be urban unemployment. This is the problem which has been described as the problem of over-urbanization in section I above. In our view, the main reason behind over-urbanization is lack of job

opportunities and/or low income in the non-urbanized area. Non economic factors like spread of education, attraction of certain facilities and entertainments in the urban areas, ease of communications, changes in social attitude, etc., all no doubt contribute towards internal migration, but the fact remains that unless a migrant is sure about earning a relatively better living in the urban areas, whatever the other attractions of city life are, he would not decide to migrate. Looking from this point of view, the problem of internal migration is a symptom of the unemployment problem in an economy as a whole.

What are the solutions? In section II, we have discussed the steps taken by a number of developing countries to tackle the problem of over urbanization. Apart from the imposition of legally enforced restrictions on the movement of labour (mainly in China) the rest seem to concentrate on providing alternative job opportunities away from the existing urban centre. This brings us to the strategy of creation of alternative employment in the "rural areas". We must bear in mind that, in a labour surplus economy (of Lewis type) one cannot argue in terms of creating jobs in the agricultural sector. By definition in a labour surplus economy agricultural sector is characterized by the existence of unemployed or partially employed labour force.

In an economy where surplus labour does not exist, one can, of course, argue that there are scopes for creating additional employment in rural sector. However, if one accepts Jorgenson's⁴⁶ view of

⁴⁶ See Jorgenson (1961, 1967)

dual economy, where initially there is no surplus labour in the agricultural sector, but with the passage of time labour saving technical progress in agriculture release labour from that sector, then the strategy of creating additional employment in agriculture may not work. Be that as it may, from what little evidence we have on the impact of modernization of agriculture on agricultural employment, it seems that though introduction of modern farming methods and technology can, in some cases, contribute towards a net gain in employment through creating additional jobs in areas like maintenance and repairs of farm machinery, etc., it is too optimistic that this will continue to provide employment for a growing population indefinitely.

Moreover, recent evidence from an ILO study of twenty-six villages in the Ludhiana district of the Green Revolution Belt in Punjab, India (see Oberai and Mannohan Singh (1982)) suggests that rural urban migration actually promotes adoption of new technology in the agricultural sector. The authors find that "policies which reduce rural-urban migration are more likely to slow down the adoption of new technology as well as lower output and employment."⁴⁷ This only goes to strengthen our conclusion that modernization of agriculture cannot be a solution to the problem of over urbanization.

Let us now discuss the case of rural industrialization as a strategy to control over urbanization. We have seen in section II how expensive this strategy can be. However, from what evidence

⁴⁷ Oberai and Mannohan Singh (1982), page 342.

we have got from India, it suggests that rural industries become viable, only when they are situated near an urban centre or have good transport and communication facilities with an urban centre. What is more interesting, the historical experience of Japan (discussed in section I) and the recent experience of India and China (in section II), would suggest that the areas where rural industrialization is successful will turn into urban areas. Looking from this point of view, the strategy of rural industrialization is just a strategy for location of industries or a strategy for creating new urban centres. Whatever way we look at it, such strategy, as discussed above, is expensive and there are no easy short-term solutions to the problem. The point worth stressing here is that in the long run, industry and service sectors in the modern (or urban) sector will be the provider of bulk of employment, when the process of economic development is completed.

It is now a question of spreading the urban centres or spreading industrialization within a country. This is a long term problem. It will be inappropriate to pretend that one can suggest any immediate solution to this. The solution lies in the success of industrialization and modernization of these economies.

However, in the short run the planners can alleviate some problems of unemployment by creating additional jobs, through choice of appropriate techniques of production or, as so often is the case in most Third World countries, by creating jobs in the service sector. How easy or difficult is such a strategy? We will come back to this question later in our thesis (chapters 4-8).

Table A1: Live birth rates (number of live births per 1000 inhabitants) by urban/rural residence

Country	Year	Urban	Rural
Egypt	1977	35.4	38.8
Dominican Republic	1976	36.2	33.9
El Salvador	1975	39.3	39.6
Panama	1978	26.8	31.4
Afghanistan	1978	38.0	46.4
India	1977	27.8	34.2
Iran	1977	35.3*	45.8*
Israel	1978	23.9	31.7

* Provisional

Source: Demographic Yearbook, U.N. (1979.)

Table A2: Crude death rates (number of deaths per 1000 inhabitants) by urban/rural residence.

Country	Year	Urban	Rural
Burundi	1965	20.4	25.8
Dominican Republic	1976	7.8	2.9
El Salvador	1978	8.7	5.5
Mexico	1975	7.2	7.4
Panama	1977	4.4	4.7
Ecuador	1976	7.8	8.7
Zaire	1963/64	9.0	23.0
Afghanistan	1978	13.0	22.4
India	1977	9.4	16.0

Source: Demographic Yearbook, U.N. (1967, 1969, 1979).

CHAPTER 2 Survey of Literature on Migration

2.1 The Basic Models

The theoretical literature on internal migration which seems to dominate the thinking of the profession in the seventies and eighties has its roots in a paper by Todaro (1969). While Todaro's type of analysis, which is mainly neo-classical, has helped to clarify some issues, one unfortunately gets the impression, after surveying the vast literature which followed in the wake of Todaro (1969), that perhaps a disproportionate amount of energy and enthusiasm was spent in reading more in this type of model than it can really offer. In what follows, we will examine the basic features of the Todaro type models and will discuss the conclusions arrived at in different papers. We will then point out what, to us, are the major weaknesses of this type of analysis.

The basic Todaro (1969, 1976a) model is summarised in Todaro (1976b) and starts by challenging the behaviour pattern of rural-urban migration assumed in the dual economy models belonging to both the classical and neoclassical schools of Lewis (1955), Jorgenson (1961) and Fei and Ranis (1961, 1966). In these earlier models, migration depended only on the wage differentials between the two sectors. Todaro, in his 1969 paper, introduced a "probability" variable, which will determine the chance for a migrant to obtain a job in the urban sector. Thus migration is now made a function of the differential between expected urban income and rural income. Todaro (1969) retains the Lewisian assumption of surplus labour in the rural sector. We will now see the basic feature of Todaro's models (1969, 1976a) along the lines presented in his summary (Todaro (1976b)).

The main point, as we have seen, is that migrants' decision to migrate depends on the expected urban income (W_U^e), given by $W_U^e = \pi W_U$, where π is the subjective probability of getting a job in the urban sector, W_U is the urban sector wage rate, and the rural wage rate (or income) is W_R . The rate of migration (m) is defined as $m = \frac{M}{N_R}$, where M is the number of migrants leaving the rural sector, in a given period, and N_R is the total rural labour force in the same period.¹ Thus the rate of growth of rural labour force is given by:

$$(1) \quad \dot{N}_R = (\beta - m)N_R, \text{ where } \beta \text{ is the natural rate of growth of labour.}$$

The rate of growth of the urban labour force (N_U) is given by

$$(2) \quad \dot{N}_U = \beta N_U + mN_R$$

Todaro assumes that the urban employment opportunities (E) grow at a constant rate g , giving

$$(3) \quad \dot{E} = gE$$

We now come to the specification of the probability variable (π).

In Todaro (1976b) this seems to be defined as $\pi = \frac{E}{N_U}$. In other places, however, Todaro (1969, 1976a) the definition is different; there the probability is defined as

$$(4) \quad \pi = \frac{gE}{U}, \text{ where } U \text{ is the size of the unemployed labour force in the urban sector.}$$

We will see below that the earlier definition of π was also used by Harris-Todaro (1970). One must point out here that (4), strictly speaking, is hard to accept as a probability. This is because depending on the unit of measurement of time it can exceed unity.²

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1. Todaro has pointed out that he is actually working with a "one-time period horizon". See Todaro (1969), p.187.
 2. On this point see Blomqvist (1978), p.5. Blomqvist modifies it to $\pi = [(g+b)E]/U$, where b is the rate of turnover of jobs.

Following Todaro, we define $\alpha = W_U/W_R$ or (Y_U/Y_R) which are rural-urban wage (or income) differentials. The migration function then is

$m = F(\pi, \alpha, Z)$ where Z is a catch-all variable for sociological factors affecting the decision to migrate. It is logical that $F_\alpha > 0$, but the sign of F_Z has to be determined. Assuming Z is given from outside and is constant the migration function then becomes

$$(5) \quad m = f(\pi, \alpha) \quad \frac{\partial f}{\partial \pi} > 0, \quad \frac{\partial f}{\partial \alpha} > 0$$

Hence the total labour supply function for the urban sector becomes

$$(6) \quad \frac{\dot{N}_U}{N_U} = \beta + \frac{N_R}{N_U} f(\pi, \alpha)^3$$

Todaro then compares (6) with the growth rate of urban employment $\frac{\dot{E}}{E}$ and examines the dynamic process of rural-urban migration under condition of an increase in urban job creation with changes in the value of α , the urban-rural income differential.

The conclusions arrived at are not surprising. We can summarize them as follows: given a level of α , constant, there exists an equilibrium level of urban unemployment. If, however, the urban-rural wage differential, α , is allowed to increase, it will give rise to an increase in rural-urban migration (via an increase in the expected income differential), and hence to urban unemployment as well.

In his more recent papers (1976a, 1976b) Todaro seems to have changed his emphasis regarding what causes migration in the face of

3. In Todaro (1976b) α also is assumed to be a constant.

rising urban unemployment. Todaro (1969) writes that urban unemployment⁴

"will vary directly with the urban-rural percentage real income differential ...; ⁵ and inversely with the rate of job creation...."

However, Todaro (1976a) says:

"One important implication of the model is that efforts to create more urban jobs to cope with rising unemployment may in fact, through induced migration, lead to even more urban unemployment and perhaps even to higher unemployment rates as well."⁶

The difference in the emphasis reflected in the two quotations above can perhaps be explained with reference to the fact that Todaro's later paper discusses not only Todaro (1969) but Harris and Todaro (1970) as well. This is a little awkward because the treatment of the problem is slightly different in these two papers.⁷ The Todaro (1976a) paper is closer to his 1969 paper in spirit, though in this later paper his main concern is to construct a simplified empirically testable formula for the hypothesis that any urban job creation to reduce unemployment may result in higher urban unemployment through induced migration. The critical condition for the level of unemployment to increase is given by:

$$(7) \quad n > \frac{gE}{M}$$

where n is the elasticity of the flow of migration with respect to the probability of finding a job in the urban sector.⁸ In symbols one can write:

$$n = \frac{d \log m}{d \log \pi}$$

4 The size of the urban "traditional sector" in Todaro's language.

5 Todaro (1969), page 145.

6 Todaro (1976a), page 212.

7 On this see Blomqvist (1978).

8 The condition for rate of unemployment to increase is given by

$$n > \frac{g(E+U)}{M}$$

where $m = \frac{M}{L_R}$ and $\pi = \frac{gE}{U}$ as defined above.

The condition (7) is derived under the assumption that urban-rural income differentials remain unchanged. The thought process behind (7) can be summarised in a few words. Job creation in the urban sector increases the probability to find a job through (4), this increases the expected urban income, given a constant urban-rural income differential (α) and hence migration through (5). The elasticity η is a measure of the proportionate increase in the rate of migration given an increase in the probability. In the ultimate analysis if the level of migration (M) is greater than the number of jobs created ($gE = \frac{dE}{dt}$) then the ultimate result is an increase in urban unemployment. (In this paper natural rate of growth is assumed to be zero.)

It seems, however, that the condition (7) in Todaro (1976a) goes against Todaro's conclusions. From Todaro's own empirical values $\frac{gE}{M}$ is less than unity giving $M > gE$, which implies an increase in urban unemployment. However, since η is also less than unity in all the examples of empirical values Todaro has quoted, we can see that the rate of growth of migration is less than the rate of growth of job creation.⁹ Thus ultimately one is bound to get $M = gE$ giving $\eta < \frac{gE}{M}$ ¹⁰ which means that the increase in the level of urban unemployment will eventually come to an end.¹¹ We will take another critical look at Todaro (1969, 1976a, 1976b) later in connection with an overall discussion of the Todaro type models, but now we will consider the paper by Harris and Todaro (1970), referred to as HT from now on.

The HT model can be looked at as a trade model with labour mobility, which takes the form of the migration of labour from the rural to the urban sector. The rural sector here is identical with the agricultural sector.

9. This is all the more so as Todaro writes $d\pi/\pi = dg/g$.

10. Since $\eta < 1$ from Todaro (1976a), pages 215, 217-8.

11. See Blomqvist (1978) for a more detailed discussion on this and also an alternative formulation.

HT do not assume surplus labour in agriculture and also assume migrants keep their ties with the rural sector and thus their income contributes to rural welfare. Production in the two sectors is determined by labour alone,¹² so the production function can be written as:

$$(8) \quad X_R = q(N_R) \quad q' > 0, q'' < 0$$

$$(9) \quad X_U = f(N_U)^{13} \quad f' > 0, f'' < 0$$

Prices are determined by the relative outputs in the two sectors¹³ and are therefore given by:

$$(10) \quad P = P(X_U/X_R) \quad P' > 0$$

which is the price of the agricultural good since urban sector output is taken as the numeraire.¹⁴

Wages are determined by the marginal productivity of labour. When in the rural sector they find their own level; in the urban sector, they are assumed to be equal to the fixed minimum urban wage.

Thus we have

$$(11) \quad W_R = Pq',$$

expressing the rural wage in terms of urban goods, and

$$(12) \quad W_U = f' = \bar{W}_U,$$

where \bar{W}_U is the minimum urban wage and labour is hired up to the point where W_U equals the marginal productivity of labour.

12. HT include capital for both sectors and land for agriculture sector but these are assumed to be fixed.

13. In HT rural is agriculture and urban is manufacture: we have changed their subscripts.

14. At a first glance equations (8) to (10) may seem odd, for an increase in the labour force both in the rural and urban sectors will increase total output (at a decreasing rate) in both sectors. However, since HT assume zero growth of the total labour force output in either of the sectors can only be affected through labour movements between the sectors.

The expected urban wage (w_u^e) is given by $w_u \cdot \pi$ but π here is defined as

$$(13) \quad \pi = \frac{E}{N_u}$$

where E is the total urban sector employment and N_u is the total urban sector labour force (employed plus unemployed).

This says that at each period the total labour force goes into a pool from which a certain number of people are chosen for employment.

The equilibrium condition is given by

$$(14) \quad w_R = w_u^e.$$

The above equation is an equilibrium condition with reference to the implicit migration function

$$(15) \quad M = \psi\left(\frac{w_u E}{N_u} - w_R\right) \quad \psi' > 0, \quad \psi(0) = 0$$

Assuming that the natural rate of growth is zero, one can have

$$(16) \quad \frac{N_u}{N_u} = M$$

which says the growth of the labour force in the urban sector is entirely due to migration.

Next HT (page 131) give up the assumption that urban minimum wage is fixed in terms of manufactured goods, and assumes instead that it is fixed in terms of agricultural goods. As there is no surplus labour in the rural sector, migration decreases agricultural output in HT, thereby increasing the price of rural product in terms of manufactured goods, and hence increases $P\bar{w}_u$. Since employment in the urban sector is up to the point where $f' = P\bar{w}_u$ this will lower urban employment.

The HT description of the rural sector is a little difficult to swallow. Even in the models which do not assume surplus labour in agriculture (e.g. Jorgenson (1961)), the condition for labour release is made dependent on technical progress in agriculture, hence no reduction in rural output can result. This seems to agree with the "stylized facts" of economic development. Be that as it may, HT reaches the conclusion that urban job creation may exacerbate the problem of urban unemployment through induced migration. HT also analysed two policies: first, the policy of a wage subsidy in the urban sector only, and secondly a policy to restrict migration. They conclude that applied individually both policies are capable of increasing welfare which is a function of the total output in the economy. However, according to them to attain the first best optimal solution both policies are necessary. Bhagwati and Srinivasan (1974) pointed out that within the broad framework of HT, it is possible to show that the first best optimal solution can be obtained either through a uniform wage subsidy to both sectors or a wage subsidy to urban sector industries and a production subsidy to agriculture. However, they are doubtful about the applicability of their policies in the face of administrative costs and feasibility.

Strictly speaking, just like HT, Bhagwati and Srinivasan (1974) is a trade model with labour mobility, and a sticky wage in one sector alone. The results arrived at in these papers have been generalized by Basu (1980). However, he points out, like Bhagwati and Srinivasan, that while it is assumed that the subsidies will be financed through taxes, it is doubtful whether one can devise a nondistortionary tax which will be large enough to be able to dole out economy-wide subsidies.

The HT model has been further extended by Corden and Findlay (1975) assuming intersectoral mobility of capital; and the prices are also exogenously determined. This then becomes a trade model with factor movements. Indeed they have applied the Rybczynski theorem to the HT model to analyse the effects of e.g. economic expansion, an increase in labour force, increased capital accumulation and have shown that in all cases urban unemployment would be reduced. They have also shown that in the face of capital mobility while a wage subsidy in urban industries will increase urban unemployment a similar subsidy to the rural sector will reduce it. Thus they are in favour of a subsidy to agriculture.

Among other models on Todaro and HT lines, mention should be made of Calvo (1978) who introduces trade unions in the HT framework to justify the sticky wage in the urban sector. For a discussion on some other models, such as Porter (1973), Fields (1975), see Todaro (1976b). For a model with demand considerations see Gersovitz (1974).

2. 2 An Overall View of the Models

Let us now discuss the overall view one gets from this literature. We begin by noticing that in the literature rural, traditional and agricultural sectors are synonymous while urban, modern or industrial sectors are identical. While one recognises the fact that it is not possible to do justice to the subtle difference between, say, the agricultural and the rural sectors in the context of model building, a researcher must always keep in mind the subtle differences among various definitions. The reason behind this comment is this: in many Third World countries, e.g. China, Cuba, India, etc., a rural industrialisation policy is being pursued to counter the problem of over-urbanization.

In the face of the developments just mentioned, one cannot talk about the role of the 'agricultural' sector alone in combatting rural-urban migration. One is compelled to make this point because experts like Todaro almost seem to argue against the mechanisation of agriculture.¹⁵

We now move on to a discussion of the role of the probability variable used. To do this, we will follow the Sen (1975)¹⁶ discussion. The HT expectations mechanism can be treated as a special case of the von Neumann-Morgenstern theory of utility under uncertainty. Let π^* (however defined) be the probability of finding a job in the urban sector. Let $u(W_U)$ stand for the utility from a job in the urban sector; similarly $u(W_R)$ for the rural sector, and finally $u(0)$ the utility from unemployment. With $u(W_U) > u(W_R) > u(0)$ a labourer will remain indifferent between a certain employment in the rural sector at a low wage and an uncertain job prospect in the urban sector, at higher wage when the following condition is met

$$(17) \quad u(W_R) = \pi^*u(W_U) + (1-\pi^*)u(0)$$

In HT we get a simplified version of (17) with the implicit assumption, of $u(W_R) = W_R$; $u(W_U) = W_U$ and $u(0) = 0$ which gives

$$(18) \quad \pi^* = \frac{W_R}{W_U}$$

Now, if the actual probability of finding a job in the urban sector is $\hat{\pi}$, a person migrates to town if $\hat{\pi} > \pi^*$. Alternatively if $\hat{\pi} < \pi^*$ the person moves back from the urban to the rural sector. We need a stable equilibrium when $\hat{\pi} = \pi^*$.

15 Todaro (1969), page 146

16 See also Blomqvist (1978), particularly page 13.

Looking this way, we simply have a theory of the determination of the subjective probability of finding a job in the urban sector, i.e. $\hat{\pi}$. However, HT is more than this. In their analysis, as we have seen above, the probability is determined by the ratio of the number of urban employed divided by the total urban labour force. This specification makes the equilibrium condition

$$\frac{E}{N_U} = \frac{W_R}{W_U}$$

or

$$(19) \quad W_U = W_R \frac{N_U}{E}$$

Now, from the formulation of the problem for each person employed in the urban sector, N_U/E persons will have to migrate from the rural sector. Hence $W_R N_U/E$ is the earnings foregone in the rural sector for each person employed in the urban sector, which in turn is equal to W_U . Thus we see that in equilibrium labour gets a wage in the urban sector which is equal to its opportunity cost.¹⁷ But clearly in a labour surplus economy this does not reflect opportunity cost from the production point of view. In other words, labour being surplus in the rural sector, the removal of this surplus labour does not reduce output in the rural sector.

The other difficulties regarding this formulation are, first, one does not know whether the migrants maximize their expected utility or expected income. The HT approach suggests the migrants maximize their expected income which need not be the case. Secondly, the probability variable here is time independent. This is surprising, because a migrant must take into account the period of waiting.¹⁸

17 On the question of shadow wage, see for example Mazumder (1976)

18 On this, see Sen (1975), page 58, and references cited therein.

Thus a migrant's expectations of future income must be allowed for through a discounting of future incomes. If the last point is true or if the migrant calculates his expected income using some probability variable other than the ratio E/N_u , then we would not have the opportunity cost explanation implied in the HT analysis.

The next problem with the migration literature, now fashionable, is its treatment of capital.¹⁹ In Todaro's and HT's papers, we can see that the creation of employment opportunities in the urban sector causes migration. But this job creation seems to take place without any reference to capital accumulation. Indeed in HT the capital stock, both in the rural and urban sector, is assumed to be constant. Though one can visualize jobs being created in some service sectors without the need for much capital, in the context of economic development and industrialization, problems of migration will have to be discussed within the context of capital accumulation. The absence of the role of capital is surprising. From another point of view, migration does affect capital accumulation. Indeed, the literature on economic development in the fifties saw the disguised unemployment of labour as a potential source of capital accumulation.²⁰ Again, since an increase in the rural income (through rural industrialization for example) is one of the remedies for the problem of migration one fails to see how the role of capital accumulation can be ignored.

The most important point that we would like to make is that the problem of rural-urban migration is actually a symptom of the problem of unemployment. This does not mean that we are ignoring the sociological factors which have been dubbed in the literature as

¹⁹ One notable exception is Robertson & Wellisz (1975)

²⁰ See, for example, Lewis (1954), Nurkse (1953).

"the attraction of city lights". But no person will migrate to town only for the "amenities" while it is absolutely certain that he will have zero income. We have seen elsewhere²¹ that the inadequate supply of social overhead capital and the desire for rapid industrialization in the Third World countries has resulted in their restricting modernization (or industrialization) and consequently employment generation into a relatively few urban centres. This is what lies behind the problem of rural-urban migration. From a long run point of view the solution lies in economic growth. Planners will have to ask how much unemployment we can socially tolerate today to have full employment in the long run.²²

2. 3 Wage Goods and Unemployment

From the short run point of view, one must recognise that creation of employment in a developing economy is constrained by the availability of wage goods. Since employment creation will increase effective demand, mainly for food and basic consumer goods (keeping Engels' Law in mind), then unless their supply can be increased, the rise in effective demand will have to be met through inflation, which may also result in loss of employment into the bargain.

One must realise that the nature of the unemployment problem in Third World countries is different from that of Keynesian unemployment.²³ In the case of Keynesian unemployment, any job creation, by generating additional effective demand, ensures an increase in the total GDP, but the structural bottlenecks in the developing countries do not guarantee this. We can, following Sen (1975) write the relationship between employment and the supply of wage goods as

21 Chapter 1, section II in particular.

22 See Sen(1960) and (1975), Dobb (1960)

23 See Sen (1975), chapter 9, also Dasgupta (1965)

$$(20) \quad E_t = \frac{WG_t}{cW_t^*}$$

where E_t is the total employment in period t . WG_t is the supply of wage goods and W_t^* is the real wage in the same period, c is the propensity to consume. We can see that, given c and W_t^* any increase in E will come about only if there is an increase in WG_t .

Here we can see an interrelationship between agriculture and the rest of the economy, i.e. urban and non-agricultural rural sector.

Since in the developing countries, the most important wage good is food, any increase in employment will have to be backed by an adequate increase in food supply. For a closed economy or an economy without access to imported food, it is the agricultural sector which holds the key to the problem of unemployment.

Thus increased productivity in agriculture is a pre-condition for economic development.²⁴ But increased productivity in agriculture is only one condition for WG_t to increase. What is the guarantee that the increased output will be marketed? This brings us to the problem of marketed surplus. We will return to a detailed discussion of this later.

One can see that if we could find an alternative to the wage system on which (20) and the related analysis is based, employment generation may take place without an increase in the supply of wage goods, at least in certain sectors of the economy. In a co-operative system where income follows the generation of employment jobs can be created without a prior supply of wage goods. To a certain extent, China has adopted this strategy.

²⁴ This obviously is in keeping with the "stylized facts" discussed in Chapter 1, Section I.

We will come back to this point in Chapter 4, where we will take a detailed look into the relationship between marketable surplus and employment generation.

CHAPTER 3A Model of Internal Migration with Capital Accumulation

In Chapter 2 we have seen that one major drawback of the theoretical models of migration is that they ignore the role of capital accumulation. This does not mean that the authors are unaware of the role of capital accumulation in economic development, but the models which deal with the problem of internal migration find it difficult to incorporate capital in their theoretical modes. On the other hand, models of development, like the ones discussed below, concentrate on the role of capital accumulation and migration, but do not explain the problem of urban unemployment. In this chapter we will try to build a model broadly on the lines suggested by Lewis (1954).

Our model adds an explicit migration function to Lewis's framework and analyses the possibility that the problem of unemployment will arise in the urban sector.

The traditional dual economy models of Lewis (1954), Fei-Ranis (1964) and Jorgenson (1961), do not consider the possibility of urban unemployment and have been criticized by a number of authors for failing to do so.¹ One reason behind these earlier models not considering the problems of unemployment in the urban sector is that these models are interested in long run questions. They are heavily dependent on the historical experience of urbanization in already developed countries like Britain and Japan. The recent internal migration models, which were developed in the wake

1 See, for example, Todaro (1959)

of Todaro (1969), are on the other hand, essentially looking at short run problems. A reading of the population history of, for example, Britain would show that the developed countries themselves faced problems of urban unemployment during their period of industrialization.² With this in mind, can one recast the earlier dual economy models to take account of the problems of urban unemployment? What we will try to do below, is to develop an essentially Lewis-type model with a migration function added to it. There will be a few other modifications of Lewis's story which, however, would not go beyond the spirit of his main argument.

We start with a very simplified sketch of Lewis's model. The economy we are dealing with is a developing one with an effectively unlimited supply of labour in the traditional sector, which is the predominant sector to start with. An initial surplus is used as a wages fund to employ labour in the modern sector at a fixed wage. The modern sector draws some of the surplus labour from the traditional sector to produce industrial goods. The surplus generated from the process is used in the next period to transfer more labour from the traditional sector to the modern sector. This process continues "until the labour surplus disappears".³

The transfer of labour from the traditional sector to the modern sector does not reduce output in the traditional sector, because only the "surplus" labour is being transferred. Finally we reach the situation where removal of any more labour from the traditional

2 See Thomas (1972)

3 Lewis (1954), page 412.

sector reduces the output of this sector. At this point the economy ceases to be a dual economy. Availability of labour becomes a binding constraint and any further study of economic growth will follow the standard economic growth literature. Fei and Ranis (1964) describe the point as the "commercialization" position.

The most common definition of surplus labour one comes across in the literature is associated with zero marginal productivity of labour. Indeed, Lewis's seminal essay (Lewis (1954)) seems to define surplus labour in this way. But in his later writing (Lewis (1972)) Lewis has clarified his idea further. He distinguishes between the marginal product of a man and that of a man hour. For example, a given amount of goods or services which could be produced by, say, ten labourers each working for five hours can also be produced by five labourers each working for ten hours. Removal of five labourers, if the remaining labourers double their work effort, would not reduce the total output, so we would say five labourers had zero marginal productivity. Lewis considers this way of looking at zero marginal productivity since "it is a significant sense and its significance is not diminished by pointing out that the fact that others have to do more work to keep the total product constant proves that the marginal product of man hours is positive."⁴ A similar way of defining surplus labour can also be found in Sen (1968).⁵

In the existence of surplus labour in the traditional sector Lewis (and others like Nurkse (1953)) saw the potentiality of accumulating

4 Lewis (1972), page 79.

5 Sen (1968), pages 3-5

capital for the modern sector without any cost to the society. This view, however, has been challenged in the literature. Assuming surplus labour is employed at a wage rate w (in the modern sector labour receives a positive income) and the marginal productivity of such labour is q ; if $q < w$ and if all wages are consumed, then we can see that the future available surplus for the economy as a whole is reduced. Reduction in the available surplus will of course reduce any further scope for job creation in the modern sector. This is in fact the familiar choice of techniques argument and has been discussed extensively in the literature by Sen (1960, 1968), Dobb (1956), Marglin (1966) and many others. Another way of expressing the same problem will be that if the overall share of investment in the national income is below the optimum level, then even if surplus labour exists in the economy, the shadow price of labour is not zero. This way of looking into the question is generally associated with the literature on project appraisal and has been discussed in UNIDO (1972), Little and Mirrlees (1968).⁶ We, however, would follow Lewis, as our purpose is to see how Lewis's model performs if we introduce an explicit migration function.

Before moving on to our main task, we would like to point out that Lewis's dual economy is divided into traditional and modern sectors and not into rural and urban or agricultural and industrial sectors. This point is worth emphasising. In the dual economy literature that followed this distinction has been blurred. There is nothing in Lewis's writings which suggests that modern sectors must be located in the urban areas alone. However, one may perhaps argue that for

⁶ See also Sen (1975), Chapter 10.

most Third World countries, industrialization (this is synonymous with modernization in the present literature) can take place only in the very few areas where social overhead capital such as adequate transport and communications facilities exist.⁷

Let us now move on to our main task. We have two sectors in our economy - the rural sector, denoted by the subscript R , and the urban sector, denoted by u . Employment in the urban sector depends on the available capital stock in the urban sector. This we will write as

$$(1) \quad E = E(K_u)$$

where E is the urban sector employment and K_u is the total capital in the urban sector. One can write (1) in a specific form such as $E = aK_u$, where a is the employment capital ratio, which is determined by the choice of techniques in the urban sector. We will assume the capital stock in the rural sector is fixed. This is a very strong assumption, but it agrees with Lewis's description.

Equation (1) can be justified following the line of argument suggested by Lewis. We quote from Lewis (1954)

"If unlimited labour is available while capital is scarce, ... capital will be applied only up to the point where the marginal productivity of labour equals the current wage." (Lewis (1954), p.406)

Now, the available capital stock, at any given time, determines the height of the marginal productivity curve for labour; given the marginal productivity curve for a given level of the urban wage, the level of employment gets determined.

⁷ We have discussed this point at length elsewhere. See chapter 1.

Next, the total labour force (or population) N is assumed to be fixed. This assumption has been made to keep our analysis simple. Also, this fits what Lewis calls his "modified classical model". In his own words:

"In the beginning,⁸ the national income consists almost entirely of subsistence income. Abstracting from population growth and assuming that the marginal product of labour is zero, this subsistence income remains constant throughout the expansion, since by definition labour can be yielded up to the expanding capitalist sector without reducing output. The process therefore increases the capitalist surplus ..."⁹

He then goes on to point out that his model says

"in effect, that if unlimited supplies of labour are available at a constant real wage, and if any part of profits is reinvested in productive capacity, profits will grow continuously relatively to the national income, and capital formation will also grow relatively to national income."¹⁰

This is the version of Lewis's model which we are examining here. Lewis himself and others like Fei and Ranis (1964) following him have examined more complicated versions of the story in which technical progress, terms of trade between the sectors, availability of marketed surplus, etc., have been incorporated. These complications are beyond the scope of the present model.¹¹

$$(2) \quad N = N_R + N_U$$

which shows that the total labour force is the sum of the rural and urban labour force. With economic development the proportion of urban labour in the total labour force, ϕ increases. This is one of the stylized facts due to Kuznets (1959) and Chenery and Taylor (1968).¹² We now have

⁸ Which means before the process of modernization begins.

^{9,10} Lewis (1954), p.418.

¹¹ We will however discuss the role of marketed surplus in a dual economy model later

¹² We have discussed these earlier, see chapter 1. In the developed countries, e.g. in the USA and the UK, the proportion of non-agricultural labour force in total labour force is about 96%.

$$(3) \quad \phi = \frac{N_u}{N}$$

The maximum value that ϕ can reach is unity, though in practice it will be lower than that.

The migration rate, m , is defined as the total number of migrants per year (from the rural area) M , as a fraction of the urban population, that is:

$$(4) \quad m = \frac{M}{N_u} = m(\frac{E}{N_u} \bar{W}_u, W_R(\phi)); \quad m_1 > 0, m_2 < 0.$$

This says that migration is a function of the expected urban wage rate and the rural wage rate. The expected wage rate is defined as the probability of finding a job, given by

$$(5) \quad \pi = \frac{E}{N_u}$$

multiplied by the urban wage rate W_u which is assumed to be fixed. The probability variable is taken from a Todaro-type model and has been discussed in detail earlier.¹³ The fixed wage rate assumption is, of course, a simplifying assumption in keeping with Lewis. It is to be pointed out that the urban wage rate is initially higher than the rural wage rate. This assumption by Lewis is based on empirical observations. It has been variously explained by the existence of trade unions, the need for a better satisfied industrial labour force, the operations of multinational firms, etc.¹⁴ We can visualize the rural wage rate as the average rural income available to the rural labour force.

13 See chapter 2 for a discussion of the migration function.

14 For a discussion on this see Sen (1975), p.53-55. See also Little and Mirrlees (1968), chapter 13, Stiglitz (1969, 1972).

With our assumption of constant population as more and more workers emigrate to the urban sector, the rural wage rate should increase. This we write as

$$(6) \quad W_R = W_R(\phi)$$

From the above description of the Lewis model we know that total rural income is constant. Defining the rural wage W_R as the income per head of the rural population, we can write

$$(6)' \quad W_R = \bar{Y}_R / N_R$$

where \bar{Y}_R is the constant rural income (or agricultural output).

From (2) we have

$$N_R + N_U = \bar{N} \quad \text{where } \bar{N} \text{ is the total labour force}$$

which gives us $N_R = (1-\phi)\bar{N}$.

Substituting this for N_R in (6)' one gets

$$W_R = \frac{\bar{Y}_R}{(1-\phi)\bar{N}}$$

which justifies our writing (6) as both \bar{Y}_R and \bar{N} are constants.

Differentiating the last expression for W_R with respect to ϕ one gets

$$\frac{dW_R}{d\phi} = - \frac{\bar{Y}_R}{(1-\phi)^2 \bar{N}} \cdot (-1) = \frac{\bar{Y}_R}{(1-\phi)^2 \bar{N}} > 0$$

which then tells us $W_R'(\phi) > 0$. In other words, as more and more people emigrate from the rural area the per capita available rural output (which is the rural wage) increases.

An increase in W_R acts as a deterrent to migration. On the other hand, an increase in π (or the expected urban wage, i.e. $\bar{W}_U \pi$) attracts migrants to the urban sector.

The growth of the urban population is given by

$$(7) \quad \dot{N}_U / N_U = m$$

Total output in the urban sector is determined by capital, K_U , and labour employed, E . Since employment E depends on K_U we can write

$$(8) \quad Y_U = f(K_U, E(K_U))$$

All the profits in the urban sector are assumed to be re-invested.

A part of the urban wage income, W , is also invested. W is given by total employment multiplied by the urban wage rate. Thus,

$$(9) \quad W = w_U E(K_U).$$

We will assume, in keeping with Lewis, that part of the increase in rural earnings due to emigration is invested in the urban sector.

This can be seen as a function of rural savings, S_R , which we will write as

$$(10) \quad S_R = \psi(\phi)^{15}$$

One can approach rural savings in the following way. Let savings per capita be a function of income per capita. This gives us

$$\frac{S_R}{N_R} = g\left(\frac{Y_R}{N_R}\right)$$

$$\text{or} \quad S_R = g\left(\frac{Y_R}{N_R}\right) N_R$$

where S_R denotes total rural savings.

Using (2) we have $N_R = (1-\phi)\bar{N}$. Hence S_R can be written as

$$S_R = g\left(\frac{Y_R}{(1-\phi)\bar{N}}\right) \cdot (1-\phi)\bar{N}$$

15 It is not clear, as in Lewis, what is happening to that part of the savings which the rural sector does not invest in the urban sector, since it is not invested in the rural sector either. This question can be tackled in the context of Jorgenson (1961, 1966) or Kelly Williamson and Cheetham (1972)-type models.

Differentiating the expression above with respect to ϕ we get

$$\begin{aligned} \frac{dS_R}{d\phi} &= -g' \frac{Y_R}{(1-\phi)^2 \cdot N} \cdot (1-\phi)N - g \cdot N \\ &= -g' \frac{Y_R}{(1-\phi)} - gN \\ &= g \cdot N \left[\frac{g'}{g} \frac{Y_R}{N(1-\phi)} - 1 \right] \\ &= g \cdot N \left[\frac{g'}{g} \frac{Y_R}{N_R} - 1 \right] \end{aligned}$$

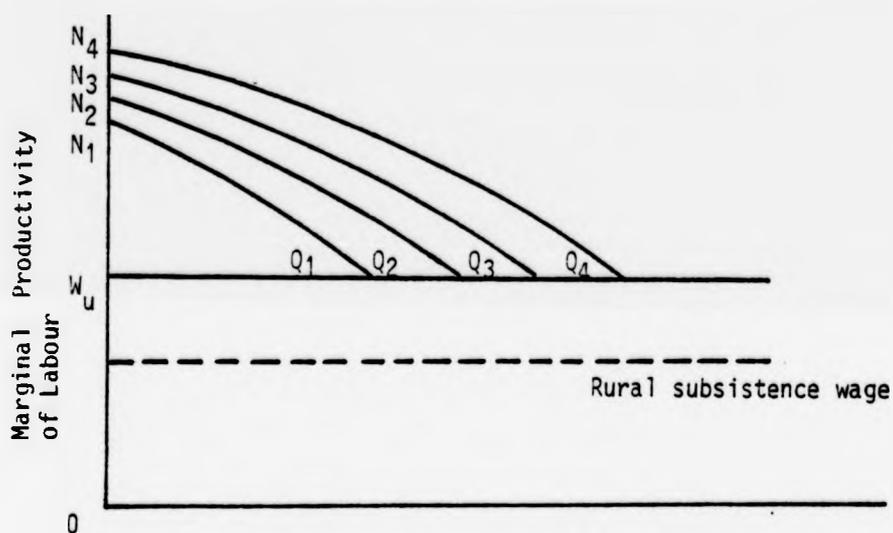
Writing this in full, we have

$$\frac{dS_R}{d\phi} = g \left(\frac{Y_R}{N_R} \right) \cdot N \left[\frac{g' \left(\frac{Y_R}{N_R} \right)}{g \left(\frac{Y_R}{N_R} \right)} \cdot \frac{Y_R}{N_R} - 1 \right]$$

The expression inside the bracket can be written as $(\epsilon_{y,s} - 1)$ where $\epsilon_{y,s}$ is the income elasticity of savings. The sign of $dS_R/d\phi$ will thus depend on the magnitude of the elasticity $\epsilon_{y,s}$, i.e. whether it is greater than, equal to or less than one. In short, one can now write

$$S_R = \psi(\phi) \text{ where } \psi'(\phi) \begin{cases} \geq 0 \\ < 0 \end{cases} \text{ depending on } \epsilon_{y,s} \begin{cases} \geq 1 \\ < 1 \end{cases}$$

So far we have introduced a migration function (4) in Lewis's model. Now, insofar as migration does not have any adverse effect on any of the variables in the system, through urban unemployment and consequent problems, one need not go beyond this. Indeed in Lewis's world, there is no urban unemployment. To understand this, we will reproduce Lewis's diagram.¹⁶



Quantity of labour
Fig. 3.1

W_u is the urban wage. Given the initial capital available, the demand curve for labour is N_1Q_1 (the marginal productivity curve). For a given W_u , an amount of labour Q_1 will be employed. This generates a surplus of $W_uQ_1N_1$ which is re-invested, thus pushing the demand curve for labour to N_2Q_2 . So in the next period an amount of labour Q_2 is employed. This process carries on "until the labour surplus disappears."¹⁷

¹⁶ Lewis (1954), Figure 3, p.412 (notation altered)
¹⁷ Ibid., p.412.

There is no urban unemployment in Lewis. When there is a demand for an amount of labour Q_1 only that much labour is transferred from the rural sector. But there is no logical reason why more than Q_1 labourers would not migrate when only Q_1 jobs are created. If more labour comes to the urban sector, then the labour over and above Q_1 will remain unemployed. This is the main burden of argument in the migration literature of the seventies. As jobs are created, this increases the expected urban income through an increase in π , and more people than can be employed migrate to the urban areas.

One could ignore the problem of urban unemployment if it did not have any adverse social consequences. But we have seen that this is not the case.¹⁸ We would argue that the cost of over-urbanization is positive and depends on the dimension of the problem. These costs come in the form of law and order problems, extra amenities to be provided for unemployed people, etc. We will write it as

$$(11) \quad C_u = \gamma(\phi) \quad \gamma'(\phi) > 0$$

where C_u stands for the cost of urbanization to the whole economy.

Equation (11) has been written in this particular form, since as more and more workers move into the urban sector the proportion of urban unemployment will also increase, thereby increasing the social cost of urbanization. The literature on over-urbanization suggests that this is the case in almost all Third World countries at present.¹⁹

18 See chapter 1 for a discussion on the problems associated with over-urbanization.

19 We have discussed the nature of these 'costs' in chapter 1. Also see Neutze (1965), for some indications of such costs in the context of Australian urbanization.

We must point out here that Lewis assumed that the rural wage rate would remain unchanged, at the subsistence level, until surplus labour is eliminated from the rural sector. To bring the analysis a little closer to the migration literature we have altered this assumption.

We are now in a position to write the capital accumulation relation for the urban sector.

$$(12) \quad \dot{K}_U = Y_U - (1-s_U)W + \mu\psi(\phi) - \gamma(\phi)$$

where s_U is the savings propensity of the urban labour force and μ is the proportion of rural savings which is invested in the urban sector.

Let us write down the model in full.

$$(1) \quad E = E(K_U) \quad E'(K_U) > 0$$

$$(2) \quad N = N_R + N_U \quad N = \bar{N}$$

$$(3) \quad \phi = N_U/N$$

$$(4) \quad m = M/N_U = m(\pi W_U, W_R(\phi)) \quad m_1 > 0, m_2 < 0$$

$$(5) \quad \pi = E/N_U$$

$$(6) \quad W_R = W_R(\phi) \quad W_R'(\phi) > 0$$

$$(7) \quad \dot{N}_U/N_U = m$$

$$(8) \quad Y_U = f(K_U, E) \quad f_1 > 0, f_2 > 0$$

$$(9) \quad W = \bar{W}_U E$$

$$(10) \quad S_R = \psi(\phi) \quad \psi'(\phi) > 0 \quad \epsilon_{y,s} > 1$$

$$(11) \quad C_U = \gamma(\phi) \quad \gamma'(\phi) > 0$$

$$(12) \quad \dot{K}_U = Y_U - (1-s_U)W + \mu\psi(\phi) - \gamma(\phi)$$

So, we have twelve variables, $E, K_U, \phi, N_U, W_R, m, M, \pi, Y_U, W, S_R, C_U$, and four parameters, $\bar{N}, \bar{W}_U, s_U, \mu$.

For the sake of simplicity we would assume that equation (4) is homogeneous of degree zero.

We will now try to look at the stability property of our model. One must point out, however, that we are not interested in the steady state solution as has been examined elsewhere.²⁰ The steady state solution is not very interesting here since, hopefully, the dual nature of the economy will eventually change.²¹

We start with equation (3)

$$\phi = N_U / \bar{N}$$

From this we get

$$\dot{\phi} / \phi = \dot{N}_U / N_U \quad (\text{since } \bar{N} \text{ is a constant})$$

Using (4), (5), (6) and (7) we can write, with reference to the relationship above,

$$\dot{\phi} / \phi = m \left(\frac{E(K_U)}{N_U} \right) \bar{W}_U, W_R(\phi)$$

Multiplying inside the bracket on the right hand side of the last expression and remembering that (4) is homogeneous of degree zero, we get, after simplification, the following equation:

$$(13) \quad \dot{\phi} / \phi = m(E(K_U) \frac{\bar{W}_U}{N_U} W_R(\phi) \phi)$$

For $\dot{\phi} = 0$, differentiating ϕ totally we get

$$m_1 E'(K_U) dK_U \bar{W}_U (1/\bar{N}) + m_2 (W_R'(\phi) \phi d\phi + W_R(\phi) d\phi) = 0$$

This gives us the slope of the curve $\dot{\phi} = 0$ in the (K_U, ϕ) plane as

20 See for example Jorgenson (1966)

21 On this point see Dixit (1973), p.344

$$(14) \quad \left. \frac{dK_U}{d\phi} \right|_{\dot{\phi}=0} = \frac{-m_2(W_R'(\phi)\phi + W_R(\phi))}{m_1 E'(K_U) \bar{W}_U (1/\bar{N})}$$

Since $m_1 > 0$, $m_2 < 0$, expression (14) > 0 . We also have

$$\frac{\partial \dot{\phi}}{\partial \phi} = m_2(W_R'(\phi)\phi + W_R(\phi)) < 0$$

which gives the directional arrows in diagrams 2 and 3.

Moving to the next dynamic path we want to examine, we have substituting (8), (9), (10) and (11) in (12):

$$(15) \quad \dot{K}_U = f(K_U, E(K_U)) - (1 - s_U) \bar{W}_U E(K_U) + \mu \psi(\phi) - \gamma(\phi)$$

For $\dot{K}_U = 0$ differentiating (15) totally, we get

$$f_1 dK_U + f_2 E'(K_U) dK_U - (1 - s_U) \bar{W}_U E'(K_U) dK_U + \mu \psi'(\phi) d\phi - \gamma'(\phi) d\phi = 0$$

In the (K_U, ϕ) plane, this gives us the slope of $\dot{K}_U = 0$ as ²²

$$(16) \quad \left. \frac{dK_U}{d\phi} \right|_{\dot{K}_U=0} = \frac{\gamma'(\phi) - \mu \psi'(\phi)}{f_1 + s_U \bar{W}_U E'(K_U)}$$

Now the sign of (16) is not unambiguous. The denominator of the expression is, of course, positive. The numerator, however, can be either positive or negative, depending on the absolute values of $\gamma'(\phi)$ and $\mu \psi'(\phi)$.

First of all we will have to decide on the sign of $\psi'(\phi)$. If the income elasticity of savings is less than or equal to unity, $\dot{K}_U = 0$ function is positively sloped which gives similar results to

22 We have $f_2 E'(K_U) = \bar{W}_U E'(K_U)$

that discussed as case I below. Let us assume here that $\epsilon_{y,s} > 1$, so that $\dot{K}_U = 0$ has a negative slope.

In case I, where $|\gamma'(\phi)| > |\mu\psi'(\phi)|$ the system is not stable. In case II (diagram 2), $|\gamma'(\phi)| < |\mu\psi'(\phi)|$ we have a possibility of stability. We will discuss case II in detail in a moment. Before that we should take note that

$$\frac{\partial \dot{K}_U}{\partial K_U} = f_1 + s_U \bar{W}_U E(K_U) > 0$$

giving the directions of the set of arrows in our diagrams.

Let us now discuss Case II. We have represented the possibility in the following phase diagram:

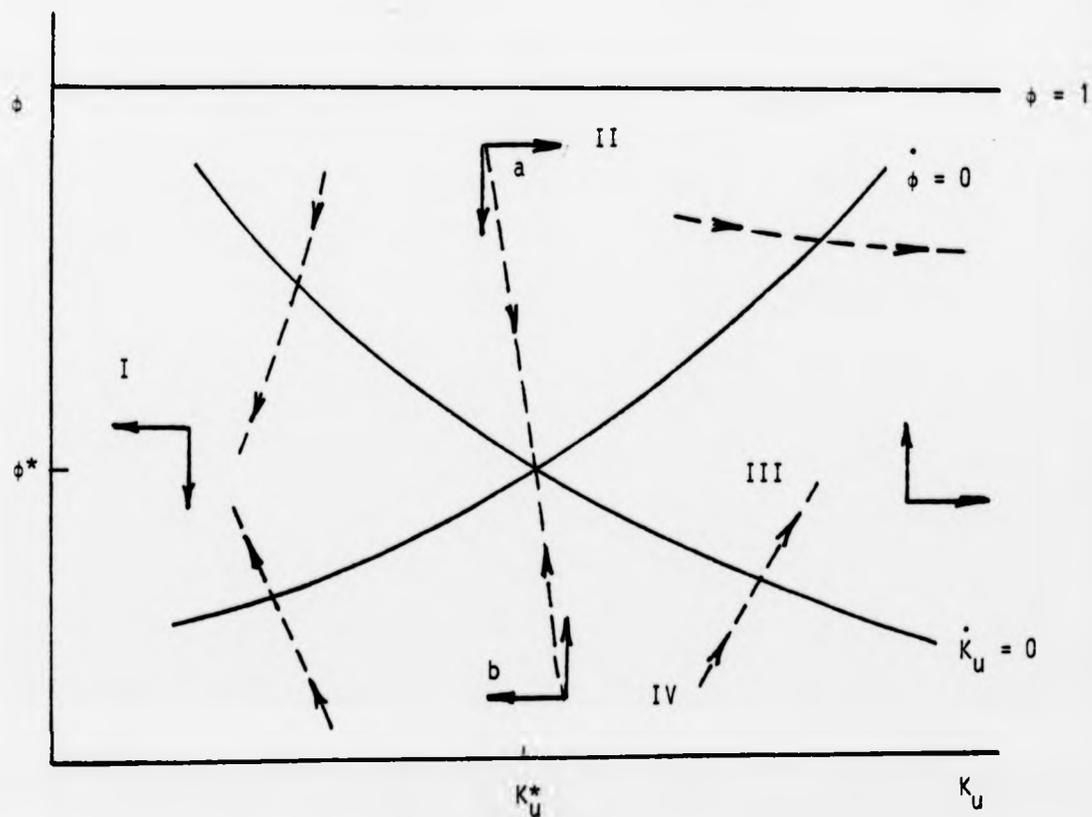


Figure 3.2

In case I, where there is no possibility of a stable solution, we have the additional cost of urbanization exceeding the amount of additional savings coming from the rural sector as a result of urbanization. Since in Lewis's world capital accumulation in the urban sector and urbanization are interdependent, if as a result of urban unemployment (the source of the social cost) capital accumulation is reduced the economy has no escape from its rural or traditional nature.

Case II is, however, more promising. It says that if the expenditure on social services can be outweighed by the flow of surplus savings from the rural sector, then it is possible, within a certain range, to have a stable urban population in the Lewisian world. We must remind ourselves once again that this result depends crucially not only upon the flow of incremental rural savings into the urban sector being greater than the incremental social cost due to urbanization, but also on the proportionate change in rural savings due to a unit proportionate change in per capita rural income being greater than unity. If the initial capital stock is large enough to take the urban sector to quadrant I or III there is a possibility for the system to converge towards the equilibrium. The reason behind this is that too small an initial capital stock will not produce enough capital stock in the successive periods to create more employment and hence, more capital accumulation. This can be seen as support for the "critical minimum effort" argument of the Rosenstein-Rodan (1943, 1961) type.

If the initial capital stock is too large to bring the economy to quadrant IV, then we can see that the economy will become completely urbanized or modernized, a state of affairs which no one need worry about. However, if the economy finds itself in quadrants I or III, it will probably move towards the equilibrium. We have the equilibrium values of $K_U = K_U^*$ and $\phi = \phi^*$. One can solve for E^* and N_U^* from these using (1) and (3) and $N_U^* - E^*$ will give us the equilibrium urban unemployment.

There is no guarantee that the economy, even when it finds itself in quadrants I or III will automatically follow the stable path (as in our diagram) to the equilibrium. If the economy has enough capital stock to bring it into the range of quadrants I or III, the planning authority should choose an appropriate value for ϕ to nudge the economy onto ab , the stable path. Looking at the problem in this way, we have a control problem. The planners can achieve the appropriate value for ϕ by manipulating the expected urban wage. This can be done either by manipulating π or \bar{W}_U or both. The value of π can be manipulated through the choice of E given K_U . In other words, the planners will have to decide on the appropriate technique of production, thus determining the capital-employment ratio. This can be done through licensing policies, policy on the importation of technology and the choice of techniques in the public sector. The planners' other option will be to manipulate the urban wage rate. This can be done in conjunction with the choice of techniques suggested above.

What have we achieved so far? We can see that given the basic Lewis

model one can at least in theory build a model with a Todaro-type migration function which shows a possibility of stable urban unemployment. What one has to decide, empirically, is whether the flow of migrants, as a result of urban job creation, is too large or not. If it is too large, in the sense that it makes the social cost consume the surplus produced in the urban sector, then the transition from a predominantly rural to a predominantly urban society is not possible within the above framework.

CHAPTER 4

Nature of the Problem

In chapter 1, we have seen urbanization is a logical consequence of industrialization. The history of already developed countries has shown that urbanization and industrialization are complementary to each other. This is in the sense that either the areas, in which industrialization started, grew into urban areas or industries grew in and around established urban centres. In the second part of the same chapter, where we examined the process of urbanization and policies being tried to control urbanization in some of the Third World countries, we observed that in countries like China, Cuba, India, where a programme of rural industrialization is being tried, albeit with different degrees of intensity, the industrialized rural areas are losing their rural character and are turning into urban areas. We also noticed that rural industrialization programmes are becoming successful only in the areas which are not far away from the existing urban centres.

We also examined the factors which are responsible for urbanization or over-urbanization in the developing countries. These factors are economic, demographic and sociological. The economic factors are the rural-urban income differential, rural unemployment, etc. The demographic factor is mainly the lowering of death rate and the sociological factors are the spread of education, the attraction of 'city lights', changing social values, etc.

In the developed countries, where the process of industrialization was very gradual and followed a steady course, the urbanization process was

also relatively smooth and gradual.¹ Also, the high death rates (compared to that in the Third World countries today) in the cities, the slow spread of secondary and post-secondary education, the high rate of emigration during periods of recession all helped to ease the problems of over-urbanization and unemployment in general. Keeping this in mind we will review the nature of the problem we are trying to examine.

Our main task is not so much to examine the problems of rural-urban migration, since rural-urban migration as such would not be a major problem were it not for its adverse consequences for urban unemployment. If the problems of urbanization were only social and sociological such as bad housing, over-crowding, bad transport system, etc., but no unemployment, then one could suggest that since the planners have sufficient means to provide jobs for everybody, they must redistribute the urban population, say, by creating new urban centres or by reducing the flow of rural people emigrating to urban areas by providing medical and other social facilities in the rural areas. One could suggest a solution like this to, say, pre-revolution Iran.

We have shown in chapter 3 that in theory one can construct a dual economy model which shows that under certain very restrictive conditions, it is possible to achieve zero rural-urban migration by selecting appropriate values for certain variables.

One need not restrict one's analysis to a labour surplus economy only.² Similar models can be constructed on the lines followed by Jorgenson,

¹ See chapter 1

² See Jorgenson (1961, 1966, 1967)

in which though initially there is no surplus labour in agriculture, labour is being made redundant through technical progress³ in agriculture. The labour thus released from agriculture contributes to capital formation for industrialization. In fact, it has been shown that qualitatively Jorgenson's models are not very different from the so-called classical models of dual economy of the Lewis or Fei-Ranis type.⁴ One must remind oneself that in these earlier models of the dual economy the possibility of urban unemployment was not considered.

In the earlier models of the dual economy, the main question asked is how to use the surplus labour (or labour released from agriculture due to technical progress) for capital accumulation which will in turn increase national income via industrialization. When the idea of developmental planning became accepted, the planners' main objective was an increase in national income. This can be seen from the treatment of the question of the choice of technique by economists like Sen (1960) and Dobb (1959), or in the treatment of the development planning problem as a whole by Chakravarty (1968), Mahalanobis (1953) and others. It was thought that the unemployment problem would sort itself out in the wake of successful industrialization. As Blitzer (1975) has pointed out, not only are there very few planning models available which have looked into the employment aspect, but none of those which are available are very satisfactory. The rapid increase in the magnitude of the problem of unemployment, however, has begun to have its impact on the thinking of development economists. The spate of literature on migration and urban unemployment since the late sixties, as well as works like Sen (1975), Chenery et al. (1974) proves the point.

³ The technical progress in Jorgenson is of the 'learning by doing' type as there is no investment in agriculture.

⁴ See on this point Dixit (1973).

Returning to our main problem, that of rural-urban migration and urban unemployment in a developing economy, we can summarize the basic arguments presented in the literature in the following way.

Abstracting from social and sociological considerations, and concentrating on the economic reasons only, labour migrates from rural to urban areas because the expected income in the urban area is greater than the actual income that the labourers receive in the rural area. As discussed above,⁵ the expected urban income is the product of the probability of finding a job in the urban sector and the urban wage rate. Though the specific form of the probability variable considered is different in different models,⁶ the alternative forms are similar in spirit in the sense that in all specifications, the probability of getting a job in the urban sector is positively related to the employment opportunities there. We continue to assume that the urban wage rate is institutionally given. Now, so long as surplus labour exists in the rural sector, any job creation in the urban sector increases expected urban income (wage rate) and so long as this is greater than the rural income, part of the rural labour force will emigrate to the urban sector. There would not have been any urban unemployment problem if the number of labourers emigrating from the rural sector in each period in response to an increase in the expected urban income, matched the number of additional jobs created in the urban sector in the corresponding period. However, the trend in almost all Third World countries following a programme of industrialization, shows that more rural labourers than could find employment in the so-called formal sector are emigrating to the urban sector as a consequence of job creation in the urban sector. Todaro (1976b) introduced the concept of "elasticity" into the migration literature.

5. See chapter 2

6. See chapter 2, also Arellano (1981).

The elasticity for period t is defined as

$$\eta_{pt} = \frac{dm_t}{m_t} / \frac{dP_t}{P_t}$$

where m_t is the rate of rural-urban migration in t , defined as the total number of migrants as a proportion of the total rural labour force. P_t is the probability of finding a job in the urban sector in the same period. Todaro expressed P_t as a function of g_t , the net rate of growth of modern sector³ employment in period t , and U_{t-1} the rate of urban unemployment in the period $t-1$. Todaro, however, goes on to derive

$$\frac{dP_t}{P_t} = \frac{dg_t}{g_t}$$

which makes the rate of change of probability dependent on the rate of growth of urban (modern sector) employment only. He then finds the conditions under which the level and the rate of urban unemployment will increase as a result of urban job creation, through induced migration.

The condition under which the level of urban unemployment will increase is given by

$$\eta_p > g \cdot \frac{E_u}{M^*} \quad (= \hat{\eta}_p)$$

³ In the jargon of the migration literature, a labourer not employed in the modern sector in an urban area is unemployed.

where E_u is the level of urban employment. The term $g.E_u$ is defined as the 'normal' level of employment. This according to Todaro is, "that which would have occurred in the absence of the autonomous job increase".⁹ The variable M^* in the above expression is defined as the 'normal' level of (total) migration where 'normal' is defined in the similar way as in the case of $g.E_u$.

The rate of urban unemployment, on the other hand, will increase if

$$\eta_p > g \frac{L_u}{M^*} \quad (= \hat{\eta}_p^*)$$

where L_u is the total urban population. Todaro calls η_p and $\hat{\eta}_p^*$ the 'threshold' unemployment level and rate elasticities respectively. So if the actual migration elasticity is greater than the threshold elasticities, one gets urban unemployment as a result of creation of jobs in the urban sector. The following table (Table 4.1) taken from Todaro gives the values for the threshold elasticities for different countries.

In sum, it is not possible to cure the problems of urban unemployment by creation of employment opportunities in the urban sector alone, so long as labourers keep migrating to the urban sector. The solutions suggested in the theoretical literature and also the policies being pursued by some of the developing countries to combat the problems of rural-urban migration and urban unemployment include¹⁰ rural employment generation, rural industrialization, creation of new urban centres, etc., along with a host of social and sociological considerations like changing the system of education, making health care and other amenities of urban life available to the rural people, etc.

9 Todaro (1976b), p.217

10 See chapter 1, Section 2.

Table 4.1: Threshold migration elasticity for selected countries

Country & Region	Threshold Elasticity	Threshold Elasticity
	η_p	η_p^*
Africa		
Ghana	0.300	0.45
Kenya	0.348	0.47
Nigeria	0.315	0.47
Uganda	0.106	0.13
Zambia	0.400	0.58
Asia		
South Korea	0.528	0.59
Sri Lanka	0.485	0.71
West Malaysia	0.644	0.82
Latin-America		
Brazil	0.505	0.60
Chile	0.712	0.84
Colombia	0.460	0.59
Guatemala	0.160	0.23
Mexico	0.615	0.76
Peru	0.480	0.62

Source: Todaro (1976b) Table 1, p.221

Let us try to assess the implications of the discussion so far. Can migration be stopped by increasing rural employment? In theory, the answer to this question is Yes. But if the underlying assumption is that of a labour surplus rural sector of the Lewis or Fei-Ranis-type or labour saving technical progress in agriculture of the Jorgenson-type then by definition job creation in agriculture is not possible.

So the rural job creation will have to be through rural industrialization. What is stopping the Third World countries from doing this? As we have seen in chapter I,¹¹ the infra-structure needed to support industrialization in the developing countries being limited, industrialization is concentrated only in those areas where the social overhead capital is available. Given that in most of these countries the process of industrialization on a major scale started after the Second World War, i.e. after these countries achieved their independence, we are talking about a period of thirty-five years or less of experience with developmental planning. The shortage of capital has constrained the choice of location for industrialization. Industrial and consequently administrative centres were built around the location (cities) developed by the colonial administration for the purposes of trade and administration.

Looking into the matter in the way described above presents us with a scenario like this: industrialization starts in location A because A has certain facilities compared to another location B. As industrialization creates direct and indirect (i.e. service sector) employment, surplus labourers flock to A, and since not all of these labourers can be absorbed

¹¹ Section II in particular

in the formal sector, some of them remain unemployed. The solution then is to create job opportunities in B. From this line of argument, the problem ceases to be the problem of only urban unemployment. The problem now becomes the unemployment problem for the economy as a whole. It seems that the recent migration literature has failed to realise this implication of their analysis.

When one approaches the problem of urban unemployment from the point of view expressed above, the whole question boils down to the question of job creation for the economy as a whole. The problem of urbanization, though a serious problem in its own right, becomes the problem of dispersing industrial centres. This will, of course, put an additional burden on the limited investible funds the developing countries can command at any given period and we have seen earlier that this is the case in a number of Third World countries at present. However, in our view the major problem remains that of the creation of employment.

In the context of models of development planning, one can see a choice problem between employment today and employment tomorrow as well as a problem of choice between present and future consumption. One can see that these two problems actually merge into a single one. This is so, because under the wage system, the generation of extra employment increases the demand for consumption goods, which reduces the surplus available for investment to raise output in the future period.

This is why the literature on the choice of technique suggests that the

planners' choice of labour intensity is to be determined by their choice of the future rate of growth. In the simple Mahalanobis's model or its optimizing version due to Chakravarty¹² the production of consumption goods is dependent upon the production of investment goods. But since an increase in the production of investment goods requires an increase in savings, it pays to reduce consumption and by implication employment in the short run. In the dual economy context, however, the problem has a slightly different dimension. Here, given the wage rate any increase in employment increases the demand for consumption goods, but given Engel's Law, most of it will take the form of increased demand for food, which comes from the agricultural sector. It now has two implications: first, the production aspect, which raises the question of the distribution of investment between agriculture and industry. One can see this as a long term planning problem. This, however, requires a complete model of the dual economy in the sense that one must include agricultural capital as well as some rule for investment allocation. But as Dixit has pointed out, such a complete model has so far proved completely intractable.¹³ In dual economy models proposed by Kelley et al. (1972) tractability has been achieved through the assumption of steady state which is not very desirable in the context of the analysis of economic development.

The second implication of our argument is that, even if surplus food is available in the agricultural sector, either through an increase in production or through savings in food consumption as labourers move out of the agricultural sector¹⁴ or both, whether

¹² Chakravarty (1969), chapter 5

¹³ See Dixit (1973), p.342-343, on this point

¹⁴ The savings variable in chapter 3 can be viewed in this manner.

it will be made available outside the agricultural sector or not. This brings us to the marketed surplus question. The rest of our analysis will be devoted to this question.

To understand the role of marketed surplus we recall a relationship introduced earlier in chapter 2.¹⁵ We have

$$(1) \quad E_t = MS_t / cW_t$$

where E_t is the total employment in a given period t , which is determined by the availability of marketed surplus (wage goods) MS_t and the wage rate W_t . Marginal propensity to consume out of wage income is given by c , which is very near to unity in most developing countries. Now differentiating (1) after taking log, with respect to time, we get

$$\dot{E}/E = \dot{MS}/MS - \dot{W}/W$$

which says that employment can only be increased if the rate of increase in the supply of wage goods, i.e. marketed surplus, is greater than the rate of increase in the wage rate. Alternatively, we can look at (1) in the following way. Let W be constant over short run (or W is the constant wage rate), and c equal to unity, which gives us

$$WE = MS$$

Now if the planners want to increase employment by ΔE , no matter whether in the urban sector or in the rural sector, the demand for marketed surplus will increase by $W \cdot \Delta E$. If the supply of marketed surplus cannot be increased then this extra job creation is not possible. In other words, even if an amount of employment ΔE is generated in one part of the economy, under the present situation

15 In chapter 2 we had wage goods (WG_t) in place of marketed surplus MS_t .

the total employment in the economy cannot increase. This implies that given a fixed amount of marketed surplus, any job creation in one part of the economy will be matched by the loss of a number of jobs elsewhere in the economy.

We must point out here that when we look at the interrelationship between the availability of marketed surplus and employment, it is more fruitful to divide the economy into agricultural and non-agricultural sectors rather than into a rural and an urban sector. Lewis (1954) agrees with this view. Though his major division is between subsistence and modern or capitalist sectors, when discussing the question of the food supply he makes the assumption that "the subsistence sector consists of peasants producing food, while the capitalist sector produces everything else".¹⁵

Let us now return to equation (1). Let us give up the assumption that the wage rate is constant. Any creation of jobs now increases the demand for food. If MS_c is fixed or fails to keep pace with the increase in job creation, then increased demand (in the sense of a shift in the demand curve) will increase the price of food which in turn will increase the wage rate thus increasing the denominator in (1). This will again result in a loss of jobs in the economy.

The mechanism through which creation of jobs in one sector in the economy may actually reduce employment in some other sector of the economy when the availability of wage goods cannot be increased, can be viewed in the following way. So far we have assumed, following the

¹⁵ Lewis (1954), p.432

traditional dual economy literature, that the real wage rate for the labour force in the organised sector is constant. In so doing, we did not specify the commodity in terms of which the real wage is measured. Though the traditional dual economy models do not directly specify the commodity in terms of which the real wage is expressed, a reading of Lewis (1954)¹⁷ will make it clear that the real wage is fixed in terms of what he calls "subsistence" goods. Although he did not see the employment aspect of the problem, Lewis wrote:

"Now if the capitalist sector produces no food, its expansion increases the demand for food, raises the price of food in terms of capitalist products, and so reduces profits. This is one of the senses in which industrialization is dependent upon agricultural improvement"¹⁸

He has discussed different implications of increased productivity in agriculture. However, he maintains that

"Nevertheless, when we take rising demand into account, it is not at all unlikely that the price of food will not fall as fast as (agricultural) productivity increases, and this will force the capitalists to pay out a larger part of their product as wages."¹⁹

Thus one can say that the industrial sector real wage is fixed in terms of subsistence goods. In a sense, the real wage in any economy is a function of the price of subsistence goods. As the cost of living everywhere is a major determinant of the wage rate, and as the cost of living in turn is determined by the prices of subsistence goods, the relationship between the prices of subsistence goods and the wage rate is obvious. What one should observe is that what are regarded as subsistence goods in an economy is determined by the stage of economic development achieved by that particular economy. For example, many

¹⁷ Lewis (1954), particularly pages 431-435
^{18, 19} Ibid., page 433.

goods which are regarded as basic necessities in, say, Britain, will be considered as luxuries in all the developing countries. The main determinant of the cost of living in the developing countries is the price of food. In a study on price and output behaviour in the Indian economy for the period 1951 - 73, Ahluwalia (1979) has estimated that the elasticity of the manufacturing sector's wage rate with respect to the price of food grains (lagged one period) is 46 per cent. The relationship she estimated is²⁰

$$\log W_m = 0.963 + 0.459 \log P_f(-1) + 0.955 \log V_m(-1)$$

(4.1) (8.1) (11.6)

$R^2 = 0.979$, $DW = 1.490$

(t values in parentheses, period covered 1951-70=

where W_m is the wage rate in the manufacturing sector;

$P_f(-1)$ is the price of food grains lagged one period;

$V_m(-1)$ is the lagged per capita value added in the manufacturing sector.

We can now see that an increase in the urban sector's demand for food (as a result of increased job creation) will put an upward pressure on the price of food²¹ and hence on the wage rate. Thus the wage rate in the industrial sector must also go up. What is the employment implication of this? We adopt the standard Lewisian diagram²² below, to explain this.

In the vertical axis of Figure 4.1, the real wage rate in terms of industrial sector's product is being measured. This wage rate is constant in terms of food. While along the horizontal axis we are measuring employment. Given the initial demand for labour (D_1) at the initial wage rate (W_1) in a particular branch of the industry, an amount

20 Ahluwalia (1979) equation (11), page 366. Symbols altered.

21 This point will be further dealt with in chapter 6.

22 See chapter 3, Fig. 3.1. Also Lewis (1954), Figure 3, page 412.

Wage rate
(in terms of industrial goods)

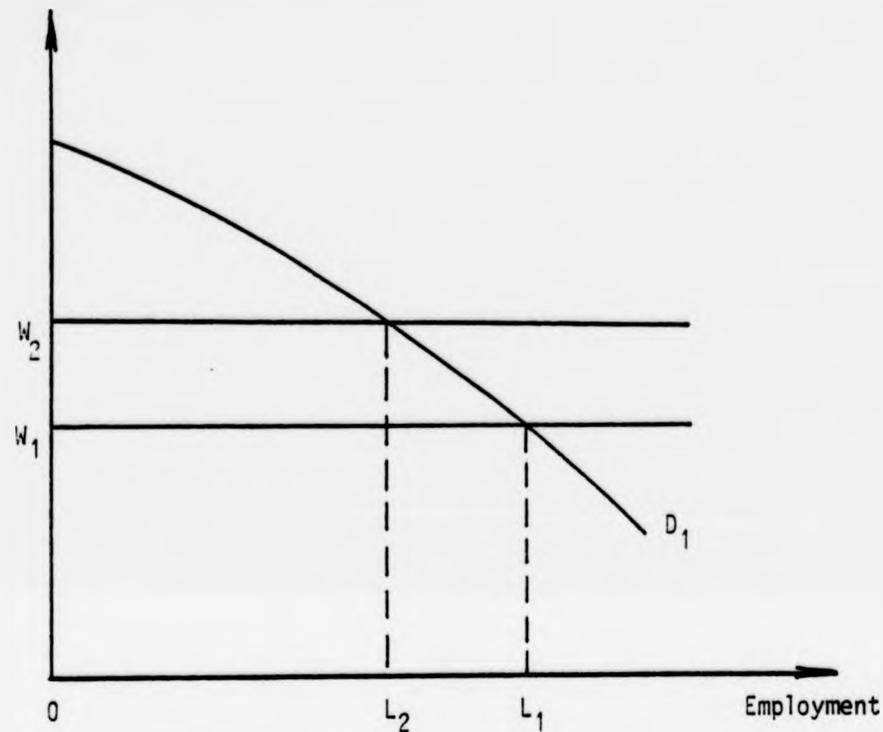


Figure 4.1

of labour L_1 is employed. Now, if the demand for more labour is created in another branch of the economy then given that the supply of food grains is fixed, the wage rate, in terms of the industrial sectors' goods, will rise for the whole of the economy. Thus in the particular branch of industry we are discussing, the wage rate, in terms of that sector's output, will increase to, say, W_2 , thereby reducing the employment in that sector to L_2 .

We can see now that the Keynesian prescription for curing unemployment would not work in a developing country. Keynesian unemployment is caused by lack of effective demand. Creation of jobs will increase

the effective demand on the one hand and generate an increase in supply on the other. In the case of a developing economy it is the supply bottleneck which is the problem.

What is the solution to this problem? Lewis suggested that the government should procure the "extra production" that the farmers have obtained, through increased taxation. He has cited the case of Japan where during the early period of development (1890-1910), a large part of the increase in agricultural productivity was appropriated by the government through an increase in rents and taxes. According to Lewis, a similar strategy was adopted by the Soviet Union during their initial period of capital formation. One must, however, point out that even in the USSR, the mobilisation of marketed surplus was not easy. Marketed surplus in fact declined in 1916-17 and also in 1925-26.²³ It is not clear given the administrative weaknesses and political conditions in most of the Third World countries how far a policy of increased agricultural taxation, for mobilizing marketed surplus, is feasible in these countries. One may ask, whether an increase in the price of food would increase the supply of food, thereby increasing the availability of marketed surplus when demand increases. We will examine this question in detail in chapter 6 and will study the implications of our answer to it in chapter 8.

Before finishing this chapter we will point out that our analysis above is based on a wage economy. If, on the other hand, employment generation is undertaken by forming co-operatives, then since the wages are received after the production process is complete, through increased

23 See Dobb (1966), p.71-72, 214 ff. Also Preobrazhensky (1925), pp.33-41, (1926), p.42-53. [References to Filtzer (1973) translation.]

output, the constraints imposed by the availability of marketed surplus for the generation of employment can be removed to a certain extent. This argument has been put forward by Sen (1975).²⁴

Though this method has been tried with some success in China²⁵, it is not clear whether in the case of co-operatives producing non-food items it will have the desired effect. Concern about unemployment in China expressed recently in the official publications suggest that the answer is probably not.²⁶

24 Sen (1975), p.86-87

25 See Ishikawa (1973)

26 See Lanrui and Lukwan (1982)

CHAPTER 5 Marketed Surplus Problem

5.1 Introduction

All the traditional models of dual economy recognised the importance of the agricultural sector in supplying the growing demand for food and raw materials by the industrial sector. However, all these models Lewis (1954), Jorgenson (1961), Fei-Ranis (1964), stressed the importance of the supply of food most of all.

The following quote from Lewis (1954) catches the sentiment expressed in this matter most succinctly:

"... if the capitalist sector produces no food, its expansion increases the demand for food, raises the price of food in terms of capitalist products, and so reduces profits. This is one of the senses in which industrialization is dependent upon agricultural improvement; it is not profitable to produce a growing volume of manufactures unless agricultural production is growing simultaneously."¹

Lewis advocated that if the agricultural sector's surplus (mainly food grains) is not transferred into the industrial sector through the normal working of the market, then the authorities should force the farmers to sell their surplus produce through imposing heavy taxes and higher land rents as was done in Japan.

Fei and Ranis suggest that the role of transferring the surplus food from the agricultural to the industrial sector falls on the landlords. The landlords in their world will collect the surplus generated in the agricultural sector through the out-migration of labour and increase in the productivity in this sector. Surprisingly, they too

1. Lewis (1954), page 433.

cite Japan as an example.² Jorgenson (1961) assumes that the income elasticity for demand for food in the agricultural sector is zero and thus any additional food income in the farmers' hand generated by out-migration will automatically be sold in the urban market. Jorgenson needed the assumption of zero income elasticity of demand for agricultural output for the agricultural labour, since as per capita income in terms of output (which depends on neutral technical progress in the agricultural sector) rises it will enable this sector to release surplus agricultural output to be purchased by the industrial sector.

Before going on to the next section, we want to make two points clear. First, in Chapter 4, we have discussed the importance of marketed surplus in the development of industrial sector in general and the creation of jobs outside agriculture in particular. The short discussion just above tells us that marketed surplus can be mobilised either through a system of taxation and rents or through the action of dynamic landlords who will invest the surplus generated in the agricultural sector through out-migration of excess labour. However, in a free enterprise or mixed economy, the non-agricultural sector will have to depend to a large extent on the market mechanism for the surplus food grains to be mobilized from the agricultural sector. Though Marketing Boards have been set up in many African countries to procure surplus agricultural produce, their success in so doing is somewhat limited. Even in a centralised economy, judging by the recent experience of Poland, it is neither practicable nor politically or otherwise feasible to mobilise agricultural surplus without at least some reference to the market. This brings us to

2. See Fei-Ranis (1964), chapter 5, in general and section 5 in particular.

the role of the price system. The debate on whether farmers respond to price incentives or not has been going on for at least three decades now. In a market economy, where farmers optimize their profit as in the standard theory of the firm, the supply response of marketed surplus to an increase of price will be positive. This type of behaviour can be expected from farmers in the developed countries, and indeed they behave in the way described above. However, in most developing countries the traditional or the rural sector is not fully monetized (see section 5. 5 below). It is not clear whether the price elasticity of marketed surplus in these economies will be positive or not. Most theoretical literature (discussed in section 5. 3) assumes that it is. The alternative view that the price elasticity of marketed surplus is negative (discussed in section 5. 4) is more popular with empirical economists. It will be obvious to the readers that our sympathy lies with the alternative approach.

The second point we want to mention is that in the literature and also in this dissertation the terms marketable surplus and marketed surplus have been used to mean the same thing. Marketable surplus implies the surplus produce over and above a farmer's consumption and investment needs. However, in a non-monetized economy, where farmers' demand for cash is limited (see sections 5. 4 and 5. 5), farmers retain their savings in kind and hence not all 'marketable surplus' as defined above is marketed. This important distinction was first pointed out by Mathur and Ezekiel (1964). In this dissertation we have used the term marketable surplus only to conform with a certain type of literature. Most of the time, however, we have used the term marketed surplus.

Since the models discussed above were not primarily interested in the behaviour and determinants of the marketed surplus, we must look for this elsewhere.

5.2 The Russian Experience

The country where the role of the marketed surplus in economic development is best documented is the Soviet Union. Though we do not want to go into a long discussion of the agricultural policy followed in the Soviet Union,³ it will be instructive to see the main reasons behind the problem. Although the marketed surplus problem existed in the USSR since the revolution, it became most remarkable in the period 1925-26 when the marketed surplus of agriculture failed to recover to its pre-war level even though the cultivated area and also the gross harvest recovered to its old level.⁴ Stalin reasoned that the root of the marketed surplus problem lies in the nature of the agrarian revolution of 1917. Since 1917 land was distributed in a more egalitarian manner and by 1928 small farmers accounted for 85 per cent of grain production. In the words of Dobb, "The village was eating more of what it grew and selling less, because it was more egalitarian than formerly." The following table (Table 5.1) quoted by Stalin tells its own story.

The policy of price stabilization in 1926 and 1927 though successful in keeping the prices of grains stable, by the end of 1927 the amount of total food grains collected was only half the amount of total food grains procured in the previous period. This grain shortage combined with the so-called "industrial goods famine". It is interesting to

3. Interested readers may refer to Dobb (1966)

4. This follows Dobb (1966), page 214 ff.

Table 5.1: Effect of Land Distribution on Marketed Surplus in USSR

	Total grain production (m.poods)	Per Cent of Total	Grain Placed on market outside village (m.poods)	Per Cent of Total	Percentage of total harvest which is marketed
Before the war:					
Landowners	600	12	281	21.6	47
Kulaks	1,900	38	650	50	34
Poor and middle peasants	<u>2,500</u>	<u>50</u>	<u>369</u>	<u>28.4</u>	<u>14.7</u>
	5,000	100	1,300	100	26
1926-27:					
State and collective farms	80	1.7	37.8	6	47.2
Kulaks	617	13	126	20	20
Poor and middle peasants	<u>4,052</u>	<u>85.3</u>	<u>466.2</u>	<u>74</u>	<u>11.2</u>
T o t a l	<u>4,749</u>	<u>100</u>	<u>630</u>	<u>100</u>	<u>13.3</u>

Source: M Dobb, Soviet Economic Development Since 1917 (3th edn.), page 217.

note that the supply situation for commercial crops (or "technical crops" as they are called in the USSR) was healthy in this period.

In two Economic Notes, in 1925, 1926, Preobrazhensky while analysing the causes the consequences of the "goods famine" touched upon the problems of the marketed surplus of grain.¹⁵ In the first note, he pointed out that the reduction of tax and rental liabilities of the peasants and some reduction in the usurious interest paid to Kulaks after the revolution released a considerable proportion of rural commodity output from forced sales. This he observed increased the rural consumption of foodstuffs.

In the second note, he pointed out that the pressure of inflation in the 1920s had reduced the supply of agricultural produce as the peasants found it more prudent to hold onto their savings in kind rather than in money. Preobrazhensky's own words,

The peasant knows quite well that when prices are rising, it is more profitable to keep your surpluses in commodities rather than in money. ⁶

This halt in paper money accumulation in the rural sector he saw as a contributing factor to the depreciation of the currency in the future.

The above discussion helps us to isolate the two major causes behind the reduction in marketed surplus. In the Soviet Union these were the increased income of the farmers and their tendency to keep their savings in kind rather than in cash. The Soviet Union solved this problem by resorting to the method of compulsory procurement of grains, a solution which may not be available to most developing countries today for political and social reasons. So these countries must use

5 Preobrazhensky (1925, 1926) Filtzer (ed.) (1980), pages 33-41 and pages 42-53 respectively.

6 Ibid., page 44

market forces to mobilise surplus food from agriculture for the industrial sector.

5.3 Traditional Theoretical Literature

The treatment of the problem of marketable surplus in the theoretical literature has not received much detailed examination. From the handful of studies published, one can find general agreement among researchers about the role of marketable surplus in the process of economic development as has been seen by Lewis (1954), Fei-Ranis (1964) and others. Everybody agrees that for industrial development the agricultural sector must also develop as well. With the industrial sector developing and absorbing labour from the rural sector, agriculture must provide raw materials and food for the industrial sector. This is the basic argument in all dual economy models. Where the models differ is in specifying the mechanism through which the marketable surplus is transferred from the agricultural to the industrial sector.⁷

The theoretical literature on marketable surplus, however, starts from the assumption that the supply curve for food is always positively sloped. Thus Dixit (1969, 1973) seems to have made the assumption of positive price elasticity of supply of marketed surplus for theoretical convenience. For example, Dixit (1969) writes:

"... the marketed surplus (of food) may be a decreasing function of it (price)... No sensible maximization is possible in this case, however, and it is ruled out locally if we assume local stability of a competitive equilibrium in the food market. I shall in fact rule it out globally by assumption."⁸

7 See Dixit (1973), pp.346-7, on this.

8 Dixit (1969), pp.207-8

Dixit then goes on to find that the relative price between the industrial and agricultural sectors "depends very crucially on the supply and demand functions for food."⁹ He also emphasises the importance of investment in agriculture in the development of a dual economy.

Taylor (1979) also is aware of the possibility that price elasticity of marketable surplus can be negative but then goes on to say:

"However, assume for the sake of discussion that the elasticity of marketed surplus ... with respect to price is positive ... Then it is reasonable to ask how prices ought to be manipulated to make crops flow toward the city."¹⁰

Hornby (1968) has analysed investment and trade policy in a dual economy. He assumes the existence of Lewis-type surplus labour in the agricultural sector. In his model all investment in the industrial sector is undertaken by the government out of its own savings and taxation. To employ labour in the industrial sector, surplus food must be mobilized; also the manufacture of industrial consumer goods must be undertaken. If the government invests too much in the production of consumer goods, it has less investible funds for the next period.¹¹ On the other hand, if the government produces too little consumption goods, then their relative price will go up, worsening the terms of trade between industrial and agricultural sectors. A sales tax on agricultural products or an excise tax on consumption goods to increase government's savings will also have a similar effect. Worsening of the terms of trade against agriculture will reduce the supply of agricultural products coming into the industrial sector. If the government keeps consumer goods prices low, to ensure a larger supply of agricultural goods, then they have

⁹ Dixit (1969), pp.216-7

¹⁰ Taylor (1979), pp.173

¹¹ This logic is similar to the traditional choice of technique argument.

to invest more to produce consumer goods, thereby reducing investment in the capital goods industry. Also they can generate less savings by taxing consumer goods at a lower rate or by not taxing them at all.

Hornby sees that the answer to this dilemma lies in the "price elasticities of the supply and demand for food",¹² which is, in other words, the elasticity of the agricultural sector's offer curve. If the elasticity of the agricultural sector's offer curve is large, the government can extract surplus from the agricultural sector only by keeping the price of the consumer goods, hence the terms of trade, low. This compels the government to invest heavily in the consumer goods industry. If, on the other hand, the offer curve elasticity is low, the surplus cannot be extracted by price policy alone and the government must take other measures. In this case, however, the government can keep prices for non-agricultural consumption goods higher.

Hornby's article can be seen as an exception in the usual dual economy literature, in the sense that it is the only one which recognises the fact that one cannot take the supply elasticity of the agricultural surplus for granted. Also, it recognises that the role of the agricultural sector is not a passive one of only supplying labour to the other sector. The importance of the demand by the agricultural sector for the industrial sector's goods also has a crucial role to play.

12 Hornby (196²), page 107

5.4 Alternative Approaches

Narain (1961) studied the distribution of marketed surplus of agricultural produce in India, for the period 1950-51, by the size of agricultural holdings. The main conclusion reached by Narain can be summarised as follows. In India, half of the marketed surplus came from the small holdings (up to 5 acres in size) and this part of the surplus can be called distress surplus, in the sense that selling of this amount of "surplus" is forced on the small farmers by their need for cash. In no sense is this part of marketed surplus the excess of the farmers' production over their consumption need. The supply function of this part of the marketed surplus for agricultural product is backward bending. The supply function of the other part of the marketed surplus is expected to have positive slope.

One should take note of the fact that Narain's study looks at the pattern of marketed surplus of agricultural products. Keeping in mind that most of the commercial crops (i.e. non-food grains) in India are produced by the big farmers, the implications one gets is that, ceteris paribus price elasticity of supply of food in India is more likely to be negative. When discussing the role of price incentives in stimulating agricultural production in a developing economy, Thamarajakshi (1977) makes a similar point, contrasting the price response to marketed surplus for agricultural output in general with that of the food output in particular.¹³

Mathur and Ezekiel (1964) have added a new dimension to the discussion on the possibility of the existence of a backward bending supply curve for marketable surplus of food in developing countries. They also found that a considerable part of the food sold by the farmers is

¹³ Thamarajakshi (1977), pp.385-386.

forced on them by their requirement for cash to pay taxes, buy inputs like chemical fertilizers, etc., or to buy consumption goods such as fuel, clothing, etc. from the industrial sector. As the price of food crops goes up, farmers' income in terms of the value of the food crops in hand also goes up, and given a positive income elasticity of demand for food, the farmers' demand for their own produce also goes up. The relatively high price of food crops on the other hand enables the farmers to sell relatively lower amounts of crops to meet their cash requirements. Similarly, when the price of food goes down, the farmer is compelled to sell more of his produce, even at the cost of his own consumption needs. The authors then draw on Mathur (1959) to advance another fundamental reason behind the possible existence of the backward bending supply curve for food in many Third World countries. The agricultural or rural sector in most developing countries, not being monetized, leads to the farmers holding their savings in kind, i.e. stocks of food grains. The authors point out that

"... this stock holding on the part of the producer is not speculative in character, for the essence of speculative holding of stocks would be the realisation of gains at the highest price levels reached and this does not occur at all." 14

This holding of stocks is to safeguard against future crop failure.

We should point out here, that in the face of lack of security in the Third World countries, the farmers attitude towards risk is completely different from that of their counterparts in the developed countries. The role of uncertainty has been described by Lipton (1968) very graphically. After pointing out the high risk associated with the prospect of an uncertain harvest, he goes on to write,

14 Mathur and Ezekiel (1964), page 403, emphasis added.

"... The risk of harvest failure, associated ... with any uninsured risk, assumes immense proportions. Arguments about optimal policies, based on false analogies with humane, rich and risk-cushioned agricultures of the West, do not impress the subsistence farmer. A bad year or two, in an optimal policy sequence, will not prevent the Western farmer from retaining land and other assets sufficient to follow through the sequence; they will ruin the Indian farmer. His first duty to his family is to prevent such ruin."¹⁵

When Mathur and Ezekiel talk about uncertainty they are talking about uncertainty and its effects as mentioned above.

The authors' main contention is that this type of behaviour by the farmers makes food prices unstable in the developing countries. This is because, on the eve of a good harvest, the farmers do not see any need to hold on to their savings in terms of stocks of food grains; they start destocking, thereby bringing down the price of food grains. On the other hand, as the price of good grains comes down, the farmers are compelled to sell more of their produce to meet a target amount of cash requirements, bringing down the price still more. Similarly, the farmers hold on to their stocks if the next harvest is expected to be bad, and consequently have to sell less of their produce after the harvest to meet their cash requirements. This then increases the prices due to a shortage of supply.

Mathur and Ezekiel stress the importance of monetization in dealing with this instability problem. They also see that anything which reduces the uncertainty about the condition of the crop from year to year like irrigation facilities or minimum assured harvest prices will contribute towards price stability in the developing countries.

¹⁵ Lipton (1968), pages 334-335.

5.5 Non-Monetized Sector

We have indicated above that one reason behind the marketed surplus for food grains being negatively correlated with food grain prices in developing economies is the non-monetized nature of these economies. Of course, none of these economies is totally non-monetized. In most, if not all developing economies one finds a non-monetized sector existing side by side with a completely monetized sector. (See Sen (1952).) It is, however, not easy to find any comprehensive index of monetization. In the literature on monetization of developing economies, one finds much conceptual confusion about the appropriate indicator of monetization. Many authors have used commercialization as synonymous with monetization. However, an economy may be highly monetized (measured by the proportion of the aggregate value of goods and services that is paid for in money by the purchaser) without being commercialized (measured by proportion of total production sold, i.e. the marketed surplus).¹⁶ Thus monetization is a necessary but not a sufficient condition for commercialization. Economic anthropologists like Neale (1971) have defined commercialization as the "dependence" on markets rather than "interest" in them. However in the literature non-monetized sector is treated as subsistence (and barter) sector.

It is to be pointed out that a pure subsistence sector, i.e. a sector where goods are produced and consumed at home without any reference to a market, will be difficult to find in real life. Fisk (1975) defines the subsistence sector as "a set of non-monetary economic activities undertaken by people most of whom also have some monetary activities".¹⁷ In the context of a theoretical model Borpujari (1980)

¹⁶ See Chandravarkar (1977), page 668-669

¹⁷ Fisk (1975), page 139.

has also defined the subsistence sector in a similar vein. In his words,

"In what is usually called the subsistence sector, production for sale is limited by the existence of needs that cannot be met without trade and by availability of a marketable surplus in excess of the sector's consumption requirements.... By contrast in the so-called monetized sector producers derive their sustenance from exchanging most or all of their products for money and a person's productive effort depends primarily on his contractual expectation of a reciprocal payment in money out of the economy's total output. Unlike in the monetized sector where it plays a vital role, money is only of marginal significance in the subsistence sector."¹⁸

Borpujari (1980) then goes on to build a model which shows that the subsistence sector can gradually be monetized as their need for the monetized (modern) sector's products increase and compel them to produce more and more surplus for the market.

This role of the non-monetized sector's demand for other sector's product is important. Abercrombie (1961) has observed, when analysing the subsistence sector in Africa (south of the Sahara) that:

"When there is little deliberate production for sale, plantings (of crops) will be enlarged only as the number of people to be fed increases, and the size of any marketable surplus will depend almost entirely on the weather and hardly at all on the price. Even where the production of a small surplus is specifically aimed at, the reaction to price changes may sometimes be abnormal. For one thing, the 'involuntary' element looms large in the small total surplus. In addition, where money is little used the demand for it appears to be mainly a 'target demand' for the quantity needed to purchase certain specific goods and services not produced within the community. Thus, when prices are high producers may need to sell less in order to obtain their target holding of cash and will be able to retain more for their own subsistence. Conversely, when prices are low they may actually have to sell more, at the expense of their own consumption levels, to satisfy their minimum need for cash."¹⁹

¹⁸ Borpujari (1980), pages 85-86.

¹⁹ Abercrombie (1961), page 3

This is similar to the rationale behind Mathur and Ezekiel's (1964) analysis above.

The non-monetized sector in the developing countries typifies their dualism, as it combines the characteristics of both a subsistence and a commercialized economy. The explanation for the existence and continuation of such a non-monetized sector has been various. Poverty, isolation, tradition and inflationary pressure are just a few of the reasons mentioned. However, as Chandravarkar (1977) points out the most important rationale is the condition of uncertainty in these economies. This is again an argument similar to Mathur and Ezekiel (1964). Lipton (1968) has found that in a village in India, "most farmer-borrowers prefer to pay interest in grain rather than in cash, though the standard grain rate, in a year of normal harvest, is almost double the cash rate: higher interest rate buys the borrower an insurance against low crop prices."²⁰

It is not that the non-monetized sector has no problem of uncertainty, but the system has found its own ways of coping with them. We give one such example below.

Bardhan (1980) has pointed out that interlinked personalized transactions serve a special role in an inadequately monetized rural economy. Since in a barter economy, the absence of a universally acceptable medium of exchange, money, introduces uncertainties about the means of exchange used, interlinked personalized transactions help to reduce this uncertainty. The following quote from Bardhan (1980) will make this point clear.

20 Lipton (1968), pages 341-342.

"A labourer may be looking for a credit transaction in which he can make his interest payments (or hypothecate) in the form of commitment to provide labor service, but this may not be acceptable to all creditors. An interlinked credit and wage contract between the employer-creditor and the employee and borrower is thus a way of insuring the "double coincidence of wants" without which non-monetized²¹ economies tend to be infeasible or inefficient."

A study of villages of Haryana (see Bhalla (1976)) provides us with a typical example of three-cornered interlinked exchange. The labourer obtains his supplies of consumer goods on credit from the village shopkeeper or grain dealer. This debt is repaid by the labourer giving his services (at underpaid wages) to the cultivator-employer, who in turn repays the original creditor (on behalf of the labourer) with grain. Needless to say, if the price of grain goes up (down) at the time of repayment from what it was at the time of borrowing, the landlord-employer will have to part with less (more) grain.

Unfortunately, there is no good index for measuring the degree of monetization of an economy.²² For our purpose, let us take a look at the basic characteristic of the non-monetized sector. The distinguishing characteristic of the non-monetary sector's activity is that the bulk of its output is either consumed, saved or invested by its producers without reference to any market transactions. Thus one appropriate measure of monetization will be the proportion of total savings in a sector held in terms of money. Alternatively, one could suggest the proportion of cash expenditure in total expenditure within a particular sector in an economy as an index of monetization for that sector.

²¹ Bardhan (1980), page 86.

²² See Chandravarkar (1977), pages 673-77.

Of these two indices of monetization, we would prefer the first one, namely the proportion of total savings held in money. Our reason for doing so is as follows. In any economy savers and investors do not necessarily belong to the same set. In a completely monetized economy, financial institutions, like banks, insurance companies, etc., bring these two groups together. In other words, their existence helps savings to be translated into investment. In a partially monetized economy, financial institutions can help to translate only that part of savings into investment, which is generated into the monetized sector.²³ Hence monetization of a hitherto non-monetized sector implies availability of larger volumes of savings for the purpose of investment. We do not imply here that the savings which the farmers in the non-monetized sector hold in kind are not invested. A part of it may be invested to hire labourers, who are paid in kind, to build houses, etc. However, some of it is lost due to inadequate facilities for storage. Also, given that the farmers sell their savings when food prices are low, the money value of savings thus gets reduced.

From the point of view of economic development in general, as the rural sector keeps more and more of its savings in terms of cash, the economy can mobilize more and more of it for investment. Looking at the issue this way, monetization of an economy is an important step towards capital accumulation and mobilization of unutilized financial resources.

23 It is interesting to note that in most of the developing countries even in the urban sector a large part of the savings of the household sector is held in physical assets. Gold is a common example for Asian countries. See Khatkhate (1980), page 143.

Unfortunately, however, we have very little information on these. What little information we have is from Indian data. A recent sample survey²⁴ of 1,663 farming households in the agriculturally prosperous state of Punjab in India suggests that the cash expenditure as a percentage of total expenditure (both consumption and investment) by the farmers is only 40.80 per cent. What is interesting is that even in the richest farmers' case this percentage is found to be only 47.40. This perhaps suggests that a non-monetized economy need not be a subsistence economy populated only by poor people.

The other information we have gives us some indications about savings in terms of money.

Table 5.2: Relative Position of Various Population Groups in Total Bank Deposits (Percentage)

	1969	1970	1976	1977
Rural	6.4	7.3	8.9	9.7
Semi-Urban	21.8	22.8	22.4	22.0
Urban	26.5	25.6	24.3	24.7
Metropolitan	45.3	44.4	43.9	43.6

Source: Shetty (1978), page 1415, quoted from RBI Basic Statistical Returns

Note: Data on total bank deposits relate to December of each year.

From Table 5.2 we can see what a tiny proportion of total bank deposits comes from the rural area. Admittedly these figures may have excluded the deposits of big farmers who may deal with banks in the semi-urban or urban area. Nevertheless the non-monetized character of rural India

²⁴ Bhalla and Chadha (1982), Table 9, Page 872.

should be clear from the table above (Table 5.2).

5.5 Basic Points

What have we got so far? We can start by pointing out that improved productivity in the agricultural sector is a precondition for the supply of food generated by the increased demand for it through the process of industrialization. Yet as the discussion above suggests, increased agricultural productivity is a necessary but not a sufficient condition for the surplus food to flow into the industrial or, in our case, the urban sector. The reasons for this are, first, that the increased income in the hands of the farmers, given a positive income elasticity of demand for food, will induce the farmers to consume more of their own produce, leaving less for the market. Secondly, a price incentive may not always work, when the farmers' demand for cash is limited. In this case, the farmers can meet their cash requirements by selling a relatively lower amount of their produce after a price rise than before. The cash requirements of the farmers are determined by their liabilities to pay taxes and rents and also by their demand for the organised sector's produce, i.e. industrial inputs and consumption goods. Thirdly, in an economy where the rural sector is not monetized, the practice of the farmers to keep their savings in kind as an insurance against bad harvest and their tendency to sell these stocks just before a good harvest can actually help to bring prices down in a good year. Alternatively, in a bad year, when prices are naturally high, the farmers holding on to their stocks can intensify it.

We thus see, other things remaining the same, the price elasticity of food supply may not be positive. What do empirical studies suggest?

5.7 Empirical Studies

We will report three empirical studies in this area. All three models are related to the Indian economy. Empirical works on the marketed surplus problem for a developing country are hard to come by. It is not so much due to lack of interest in the problem as to the lack of time series data on marketed surplus. (Some authors like Behrman (1966) and Krishna (1962) have tried to estimate the relevant elasticity in an indirect way. For problems associated with this type of method, see Krishna (1967), pages 509-512.) Thamarajakshi (1977) has observed that during the period 1951-52 to 1973-74 the marketed surplus for all agricultural products rose at a compound rate of 3.1 per cent per annum where terms of trade (agricultural to industrial goods) improved at a rate of 1.4 per cent per annum. The short-run correlation which was found between the (trend free) series of marketed surplus and the terms of trade is -0.33 and is not statistically significant. She also pointed out that the marketed surplus is significantly and positively related to the trend rate of growth of output. (We point out that Thamarajakshi did not report her regression results in full.) It is to be noted that while Thamarajakshi has studied the marketed surplus of agricultural output as a whole, she expects the supply elasticity for food grains to be different from the elasticity for agricultural output as a whole.

Next we move on to Bardhan and Bardhan (1971). The authors have an estimated series for the marketed surplus of cereals from 1952-53 to 1964-65. After making adjustments for autocorrelation, they reported the following regression result

$$\log Y = 4.221 + 0.870 \log X_1^{**} - 0.347 \log X_2^* - 1.610 X_3^{**}$$

(0.460) (0.220) (0.140) (0.320)

$$R^2 = 0.881$$

$$d = 2.127$$

[** significant at 1% level

* significant at 5% level

Figures underneath the coefficients are standard errors.]

Here Y is the marketed surplus for cereals. $X_1 = p_x/p_y$ where p_x is the price of food and p_y is that of manufactured consumption goods consumed by the farmers. $X_2 = p_2/p_x$ where p_2 is the price of non-food agricultural produce. X_3 is per capita income in agriculture which the authors have used as proxy for a technical progress parameter. All the variables used - Y, p_x , p_y , p_2 and X_3 - are in the form of indexes.

Though at first glance it seems that the own-price elasticity of the marketed surplus in India in the period is positive, closer inspection of their result raises some doubts. Elasticity of marketed surplus can become negative when an increase in the farmers' income, due to a rise in the price of food, enables them to reduce sales and consume more of their own produce. If we look at the variable X_3 , whose coefficient is negative and statistically significant and dominates the coefficient of X_1 , then we are not sure about the authors' claim. Since in India a very large part of agricultural income (55 - 60%) comes from the production of food, a rise in food prices will raise agricultural income. Thus the negative coefficient of X_3 is not inconsistent with our hypothesis

of a negative price elasticity of marketed surplus as it implies that, as the farmers' income increases, the demand for their own product also increases. For this reason, they sell less of their output.²⁵ In econometric terms one can say that the equation above suffers from a simultaneity bias. Had the authors used some other proxy for the technical progress variable, like investment in agriculture, data on which is readily available, we would have got a different picture.

The final econometric result we will refer to is due to Ahluwalia (1979). She has obtained the following result for marketed surplus, as part of a huge econometric model for India. The period covered is 1951-1973.

$$S_f = -4442.7 + 0.406 O_{fn} + 0.259 O_{fn-1} - 68.1 p_f/p_m - 119.163 (p_c/p_m) (O_c^I/100)$$

(1.2) (8.2) (4.5) (2.9) (4.1)

(t-ratios in parentheses; $R^2 = 0.901$; $d = 1.400$)

where

- S_f : marketed surplus for food ('000 tons)
- O_{fn} : net output of food ('000 tons) current period
- O_{fn-1} : as above, lagged one period
- O_c^I : output of commercial crops (Index)
- p_f : wholesale price of food (Index)
- p_m : wholesale price of manufactures (Index)
- p_c : wholesale price of commercial crops (Index)

All coefficients except for the constant are significant at 5% level or below.

25 In fact the authors themselves are aware of this possibility. See Bardhan and Bardhan (1971), pages 262-263.

Here we have a negative sign on the price coefficient. What is interesting is that when the price of commercial crops multiplied by output, i.e. the income from non-food agricultural activities increases, then marketed surplus for food decreases. This shows that whatever the source of increase of the farmers' income, it will have a negative effect on marketed surplus. It is to be noted that the value of the Durbin-Watson statistic d in the above estimation tells us that the test for autocorrelation is inconclusive at both 5% and 1% levels of significance.

CHAPTER 6 Marketed Surplus in a Dual Economy - a theoretical model

In chapter 5 we have reported on a number of theoretical models on marketed surplus problems. However, as yet we have not come across a general model built on the lines suggested by Mathur and Ezekiel (1964). In this chapter we will try to build such a model. Our analysis is based essentially on Mathur and Ezekiel (1964) and Mathur and Prakash (1980). In what follows, we will try to derive results obtained by Mathur and Prakash (1980), in a more generalised context and also to extend them to a certain extent.

6.1 The Basic Model

Let us now try to examine formally the relationship between the economic activities in the 'formal' sector and the price of food grains on the one hand and the effect of a change in the price of food grains on marketed surplus on the other. To keep matters simple, we will introduce some new notation which is duly explained below.

We start by making our assumptions clear. First, we start with a dual economy in which the 'agricultural sector', denoted by subscript 1, produces food grains only and the 'industrial sector', denoted by subscript 2, produces non-food items. One can include the non-food producing part of the agricultural sector's activities in the industrial sector's activities for the time being. This assumption will be relaxed later.

Secondly, we are examining the short-run (one period) behaviour of the economy. Thirdly, in the economy we are discussing the agricultural sector is not monetized in the sense that the producers of food

grains keep their savings in kind rather than in cash. Fourthly, we assume the absence of imports or exports of food grains. Fifthly, we assume that the agricultural sector has a target level of demand for the output produced by the industrial sector.¹

Let, q_{ij} denote the demand for the j th sector's output by the i th sector, Y_i the income of the i th sector, P_i the prices of the goods produced by the i th sector. To simplify our analysis we assume the price of food grains, i.e. P_1 is expressed in terms of the price of sector 2's output. In other words, P_2 is assumed to be unity.

Now q_{11} the demand for food grains by the agricultural sector depends on the price of food grains, and the income generated in this sector. The income generated in this sector Y_1 can be written as

$$(1) \quad Y_1 = P_1 O_f$$

where O_f is the total output of food grains. In our one period model, the output of food grains is fixed, hence we can write

$$(2) \quad O_f = \bar{O}_f$$

We now express the agricultural sector's demand for food grains in the following form

$$(3) \quad q_{11} = F(P_1, Y_1)$$

$$\text{or} \quad = F(P_1, P_1 \bar{O}_f)$$

$$(4) \quad q_{11} = f(P_1).$$

1. See Section 3. 5) for justification.

The industrial sector's demand for food can be written as

$$(5) \quad q_{21} = g(P_1, Y_2)$$

The total demand for food plus any stock of food grains in any one period, must equal the total supply. This gives us the balance equation

$$(6) \quad q_{11} + q_{21} + S = \bar{O}_f$$

where S denotes the total stock and is a function of P_1 ,

i.e. $S = S(P_1)$. Relationship (6) above can be written fully as

$$(6) \quad f(P_1) + g(P_1, Y_2) + S(P_1) = \bar{O}_f$$

Any opening stocks in our model can be absorbed in \bar{O}_f . Equation (6)

(or (6)') can be seen as the equilibrium condition between demand

for and supply of food. The income generated in the industrial

sector Y_2 is an exogenous variable in the system. Given Y_2 and

\bar{O}_f , P_1 is determined, which in turn determines the allocation of

demand for food on the left hand side of equation (6). The

relationship between the price of food (P_1) and stocks (S) is

explained below. (See equation (15) and the explanation that follows).

Differentiating (4) and (5) totally we get (7) and (8) respectively,

$$(7) \quad dq_{11} = \frac{\partial f}{\partial P_1} dP_1$$

$$(8) \quad dq_{21} = \frac{\partial g}{\partial P_1} dP_1 + \frac{\partial g}{\partial Y_2} dY_2$$

From the balance equation (6), differentiating with respect to P_1 ,

we have

$$(9) \quad \frac{dq_{11}}{dP_1} + \frac{dq_{21}}{dP_1} + \frac{dS}{dP_1} = 0$$

from (7) we have

$$\frac{dq_{11}}{dP_1} = \frac{\partial f}{\partial P_1}$$

and from (8)

$$\frac{dq_{21}}{dP_1} = \frac{\partial g}{\partial P_1} + \frac{\partial g}{\partial Y_2} \frac{dY_2}{dP_1}$$

Substituting these in to equation (9) we get

$$(10) \quad \frac{\partial g}{\partial P_1} + \frac{\partial g}{\partial Y_2} \frac{dY_2}{dP_1} + \frac{\partial f}{\partial P_1} + \frac{dS}{dP_1} = 0$$

Rearranging this we can obtain

$$(11) \quad \frac{dP_1}{dY_2} = \frac{-\partial g / \partial Y_2}{\frac{\partial g}{\partial P_1} + \frac{\partial f}{\partial P_1} + \frac{dS}{dP_1}}$$

We denote the industrial sector's income elasticity of demand for food grains by η_{Y_2} and it can be expressed as

$$\eta_{Y_2} = \frac{\partial \log q_{21}}{\partial \log Y_2} = \frac{\partial g}{\partial Y_2} \cdot \frac{Y_2}{q_{21}}$$

From the above expression one can write

$$(12) \quad \frac{\partial g}{\partial Y_2} = \eta_{Y_2} \cdot \frac{q_{21}}{Y_2}$$

Similarly, denoting the industrial sector's price elasticity of demand for food grains as ${}^2\eta_{P_1}$ one can write

$$(13) \quad \frac{\partial g}{\partial P_1} = - {}^2\eta_{P_1} \frac{q_{21}}{P_1}$$

Next we turn to $\frac{\partial f}{\partial P_1}$. Denoting $\eta_{P_1}^f$ as the agricultural sector's elasticity of demand for food with respect to price, we can write

$$(14) \quad \frac{\partial f}{\partial P_1} = \eta_{P_1}^f \cdot \frac{q_{11}}{P_1}$$

We must point out here that $\eta_{P_1}^f$ is composed of both income and price elasticity of demand. Since the agricultural sector's income

in the short run is defined as P_1 times a fixed amount of food output (equation (1)), any change in P_1 will affect the agricultural sector's demand for food through the change in its income as well as through the direct change in the level of food prices. To put it another way, a rise (fall) in P_1 will decrease (increase) the agricultural sector's demand for food on the one hand, but on the other hand, since a rise (fall) in P_1 implies a rise (fall) in this sector's income there will be an increase (decrease) in the demand for food following a rise (fall) in P_1 .

Now, what is the sign of η_p^f ? The demand function for food for the agricultural sector is given by equation (3) above as

$$q_{11} = F(P_1, Y_1)$$

We have pointed out that P_1 is measured in terms of the price of industrial goods, P_2 . Keeping this in mind the demand function q_{11} can be rewritten as

$$q_{11} = D(P_1, P_2, Y_1)$$

We will now refer to a theorem on elasticities due to Wold and Jureen (1953).² The theorem tells us that for an individual demand for any (non-inferior) commodity the sum of own price elasticity, cross price elasticities and income elasticity is equal to zero. In symbols one can write,

$$\eta_{P_1} + \eta_{P_2} + \eta_Y = 0$$

where η_{P_1} is the own price elasticity of demand and is negative.

2. See Wold and Jureen (1953) chapter 6 page 11.

η_{P_2} is the cross price elasticity of demand. In our case since the farmers are assumed to have a target demand for the other sector's goods, any increase in the price of this sector's goods (P_2) will increase the farmers' expenditure on them, thereby reducing their expenditure on food.³ From this one can conclude that η_{P_2} above is also negative. The income elasticity η_Y is of course positive. We can now write the elasticity relation as

$$\eta_{P_1} + \eta_Y = -\eta_{P_2}$$

Since we have argued above $\eta_{P_2} < 0$ we can conclude that the combined own price and income elasticities is positive in sign. Thus $\eta_{P_1}^f$, the combined income and price elasticities of demand for food is positive in sign.

Turning now to $\frac{\partial S}{\partial P_1}$, let us define γ as the price elasticity of stock

$$\text{i.e. } \gamma = \frac{\partial S}{\partial P_1} \frac{P_1}{S}$$

From this

$$(15) \quad \frac{\partial S}{\partial P_1} = \gamma \frac{S}{P_1}$$

where γ is the elasticity of stock with respect to price. What can we say about the sign of γ ? We have discussed in chapter 5⁴ that in an economy where the agricultural sector is virtually non-monetized, the farmers' savings behaviour is such that they tend to save in kind rather than in cash. This type of savings behaviour is prompted

3. We must keep in mind that the elasticities we are talking about are all partial elasticities.

4. Particularly, 5.5 .

through uncertainty about future harvests. Farmers in these economies save not to take advantage of any expected rise in the prices of their produce in the future, but to guard against a possible lack of food supply, even starvation, in case the next harvest fails. Also, given that the farmers' demand for the industrial sector's output is limited, when prices of food grains are high, the farmers can meet their target demand for the industrial sector's output by selling a limited amount of food grains, thus enabling themselves to consume and save more of their own produce. The discussion so far, along with the materials already considered in chapter 5 suggests that the stock elasticity γ , (i.e. percentage change in S with respect to a percentage change in P_1) will be positive.

Let us now refer back to equation (11). Taking (12), (13), (14), and (15) into account, (11) becomes

$$\begin{aligned} \frac{dP_1}{dY_2} &= \frac{\eta_{Y_2} \cdot \frac{q_{21}}{Y_2}}{(-\eta_{P_1}^2 q_{21} + \eta_{P_1}^f q_{11} + \gamma S) \frac{1}{P_1}} \\ &= \frac{\eta_{Y_2} \frac{P_1}{Y_2}}{\eta_{P_1}^2 - \eta_{P_1}^f \frac{q_{11}}{q_{21}} - \gamma \frac{S}{q_{21}}} \end{aligned}$$

or,

$$(16) \quad \frac{Y_2}{P_1} \cdot \frac{dP_1}{dY_2} = \frac{\eta_{Y_2}}{\eta_{P_1}^2 - \eta_{P_1}^f \frac{q_{11}}{q_{21}} - \gamma \frac{S}{q_{21}}}$$

The relationship above gives us the elasticity of the food grains price (P_1) with respect to income in the industrial sector (Y_2). The denominator of (16) is positive if condition (17) below is satisfied.

$$(17) \quad \eta_{P_1}^2 > \eta_{P_1}^f \frac{q_{11}}{q_{21}} + \gamma \frac{S}{q_{21}}$$

We will assume that this condition is satisfied. Empirically, were this condition (17) not satisfied (16) would not have been valid, in the sense that we would experience an explosive situation without any finite solution as in that case no stable price for food exists.

Equation (16) then implies that an increase in economic activity in the non-agricultural sector will put an upwards pressure on the equilibrium price of food grains. Condition (17) can be interpreted in the following way. From (17) we have,

$$\eta_{P_1}^2 q_{21} > \eta_{P_1}^f q_{11} + \gamma S$$

The last expression, taking into account (13), (14) and (15) can be re-written as

$$-\frac{\partial g}{\partial P_1} P_1 > \left(\frac{\partial f}{\partial P_1} + \frac{\partial S}{\partial P_1} \right) P_1$$

or,
$$-\frac{\partial g}{\partial P_1} > \frac{\partial f}{\partial P_1} + \frac{\partial S}{\partial P_1}$$

Thus condition (17) requires that the absolute value of the slope of the demand function for food in the non-food producing sector (at a given level of Y_2) must be greater than the combined slopes of the food producing sector's demand function for food and the stock function.

Next, we turn our attention to the marketed surplus. From our balance equation (6) we have

$$q_{11} + q_{21} + S = \bar{O}_f$$

So far we have not made any distinction between the stock held by the farmers and that by the traders. The traders' motive behind holding stocks is completely different from that of the farmers. The traders hold stocks for speculative purposes and would sell food grains when prices are high, thus moderating the influence of a rise in Y_2 on P_1 in (16). However, let us write

$$S = S_F + S_T$$

where S_F is the stocks held by the farmers and S_T is the same for the traders. So we can re-write (6) as

$$(6)' \quad q_{11} + q_{21} + S_F + S_T = \bar{O}_f.$$

Remembering that the total demand for food in the non-agricultural sector, both for consumption and traders' stock, in the absence of any foreign trade in food, can only be met through what surplus the farmers have actually marketed. This gives us the following relationship

$$(18) \quad q_{21} = MS - S_T \text{ where MS stands for marketed surplus.}$$

Substituting (18) into (6)¹⁴ we get

$$(19) \quad q_{11} + MS + S_F = \bar{O}_f$$

Differentiating (19) with respect to price, we have

$$(20) \quad \frac{dq_{11}}{dP_1} + \frac{dMS}{dP_1} + \frac{dS_F}{dP_1} = 0$$

Translating them in terms of elasticities we get

$$(21) \quad \eta_{P_1}^f \frac{q_{11}}{P_1} + \eta_{P_1}^M \frac{MS}{P_1} + \gamma \frac{S_F}{P_1} = 0$$

We have already argued that $\eta_{P_1}^f$ a combination of income and price elasticity of demand for food by the farmers, is positive. Also γ the stock elasticity is positive. Hence $\eta_{P_1}^M$ the elasticity of marketed surplus with respect to price must be negative. In other words, price of food grains and marketed surplus of it are negatively related to each other.

Before going any further we will dwell a little on the elasticity $\eta_{P_1}^M$. One may point out that this elasticity, as it was derived from the equilibrium condition it implies that this elasticity states what the behaviour pattern of the farmers ought to be if equilibrium in the food market is maintained; but what about the price elasticity of marketed surplus without reference to this equilibrium condition? In a way, we already have that. In our one period model, where supply is given, market is cleared through adjustments in the

consumption and stocks. This adjustment is done here through changes in P_1 and Y_2 . We have seen that P_1 will be affected through a change in Y_2 . So the elasticity is saying that whatever the source of change in price, price elasticity of marketed surplus will be negative. However, we demonstrate that the partial price elasticity of marketed surplus is also negative. Consider the definition of marketed surplus, it is given by

$$MS = \bar{O}_f - q_{11} - S_F$$

i.e., marketed surplus is total output minus farmers' consumption and stocks. Now, differentiating the function above partially, with respect to P_1 we get

$$\frac{\partial MS}{\partial P_1} = -\frac{\partial q_{11}}{\partial P_1} - \frac{\partial S_F}{\partial P_1}$$

Translating these into elasticities, we get

$$\eta_{P_1}^M = -\frac{1}{MS}(q_{11}\eta_{P_1}^f + S_F\gamma)$$

We have already shown that $\eta_{P_1}^f$ and γ are positive.⁵ Thus the partial elasticity of marketed surplus with respect to price is negative.

Tying this last result with the result from (16), we can see that in response to increased economic activities in the industrial sector, food prices will go up, which in turn will reduce the marketed surplus of food grains, thereby, in the short-run, exacerbating the inflationary situation in the economy. We will come back to this point again in chapter 8.

We will now relax our assumption that the agricultural sector produces only food grains. Let us assume that the agricultural sector produces both food and non-food (e.g. commercial crops). Let O_n stand for

⁵ Since both farmers' consumption and stocks are functions of price alone, partial and total elasticities in these cases are the same.

non-food agricultural output. In our one period model $O_n = \bar{O}_n$, is constant. Let P_n be the price of the non-food output measured in terms of P_2 as before. The agricultural sector now has two sources of income. This sector's demand for food can now be written as

$$q_{11} = \alpha(P_1, Y_R)$$

where $Y_R = P_1 \bar{O}^f + P_n \bar{O}_n$

Hence we can re-write the demand function for food, for the agricultural sector as

$$(22) \quad q_{11} = \alpha(P_1, P_n)$$

We retain (3) and (6) as nothing has changed there.

From (22) we have

$$(23) \quad dq_{11} = \frac{\partial q_{11}}{\partial P_1} dP_1 + \frac{\partial q_{11}}{\partial P_n} dP_n$$

Combining (23) with (8) and (9) above, and solving for $\frac{dP_1}{dY_2}$ we

get,

$$(24) \quad \frac{dP_1}{dY_2} = \frac{\eta_{Y_2} \frac{q_{21}}{Y_2} + \eta_{P_n} \frac{q_{11}}{P_n} \frac{dP_n}{dY_2} + \frac{dS}{dY_2}}{\eta_{P_1}^2 \frac{q_{21}}{P_1} - \eta_{P_1}^f \frac{q_{11}}{P_1}}$$

$$= \frac{\eta_{Y_2} \frac{P_1}{Y_2} + \eta_{P_n} \frac{q_{11}}{q_{21}} \frac{P_1}{P_n} \cdot \frac{dP_n}{dY_2} + \frac{dS}{dY_2} \frac{P_1}{q_{21}}}{\eta_{P_1}^2 - \eta_{P_1}^f \frac{q_{11}}{q_{21}}}$$

The new symbol introduced in (24) is η_{P_n} which is the elasticity of the demand for food with respect to the price of the non-food agricultural product. As has been argued in case of (16), the denominator is positive. In the numerator, η_{P_n} is positive since any increase in the price of the non-food agricultural product will increase the income of the farmers, resulting in an increase in their

demand for food. $\frac{dP_n}{dY_2}$ is also expected to be positive as an increase in the economic activities in the industrial sector is expected to give rise to an increase in the demand for commercial crops thereby causing their prices to increase. We have seen that the stock elasticity with respect to P_1 is positive. We can combine these two to conclude that $\frac{dS}{dY_2} > 0$. Thus we can see that $\frac{dP_1}{dY_2}$ is positive, which confirms our previous result.

6.2 Some Extensions

In this section we will bring in the rural sector's demand for the other sector's output explicitly. We stress the assumption that our model is a short run (one period) model. We have already pointed out above (as well as in chapter 5), that the farmer's sales of food grains depend on farmers' income, the price of food and also the farmers' expenditure on the other sector's goods. However, farmers' expenditure on the other sector's goods depends in turn on farmers' income. Let us now assume that the farmers' plan one year in advance of their output for the next year. (This is more a reality than an assumption). We further assume that the farmers plan their future output on the basis of the price of their product in the current period. In symbols, we can write

$$(25) \quad \hat{O}_{t+1} = E(P_{1t})$$

where \hat{O}_{t+1} is the planned output of food grains in period $t+1$, where P_{1t} is the price of food in the current period.⁶ Let a constant θ represent the input coefficient for urban goods like chemical fertilizers, tractors, tube wells etc. (for the time being, we have

⁶ To keep matters simple, we are going back to our earlier assumption, that the farmers only produce food grains.

excluded the demand for urban consumption goods). In other words, to produce \hat{O}_{t+1} food grains in period (t+1), the farmers have to purchase an amount $\hat{\theta}\hat{O}_{t+1}$ of urban goods in period t. To pay for these goods, the farmers will have to sell part of the food grains produced in the current period. We can now write marketed surplus (MS) as a function of the current period's income (Y_{1t}) and planned output \hat{O}_{t+1} . Since $Y_{1t} = P_1 \bar{O}_t^f$, where \bar{O}_t^f is the output of food grains in period t, we can write

$$(26) \quad MS = M(P_1, \hat{O}_{t+1})$$

Differentiating (26) with respect to P_1 , we get

$$(27) \quad \frac{dMS}{dP_1} = \frac{\partial M}{\partial P_1} + \frac{\partial M}{\partial \hat{O}} \cdot \frac{d\hat{O}}{dP_1}$$

Re-writing (27) in terms of elasticities, we have

$$\frac{dMS}{dP_1} = \eta_{P_1}^m \frac{MS}{P_1} + \eta_{\hat{O}}^m \cdot \eta_{P_1}^{\hat{O}} \cdot \frac{MS}{P_1}$$

or,

$$(28) \quad \frac{P_1}{MS} \cdot \frac{dMS}{dP_1} = \eta_{P_1}^m + \eta_{\hat{O}}^m \cdot \eta_{P_1}^{\hat{O}}$$

where $\eta_{P_1}^m$ is the elasticity of marketed surplus with respect to P_1 as in Section I. $\eta_{\hat{O}}^m$ is the elasticity of marketed surplus with respect to planned output. Given the level of planned output, and a positive value of the input coefficient θ (i.e. how much the food producing sector uses other sectors' output as an input), one can work out the value of $\eta_{\hat{O}}^m$. For example if θ is zero, i.e. if the sector producing food does not use any sophisticated urban inputs, then $\eta_{\hat{O}}^m$ will be equal to zero. Excluding this extreme case, $\eta_{\hat{O}}^m$ will always be positive. The other elasticity $\eta_{P_1}^{\hat{O}}$ is the elasticity of planned future output with respect to the price of food grains, P_1 . From the assumption made above regarding the

relationship between P_1 and $\hat{O}_1 n_{P_1}^0$ is also positive. However, the precise value of this elasticity will depend on how much room there is for output to expand. This will depend on availability of land and also on the socio-economic structure of the economy such as land tenure system etc.

So, the left hand side of equation (28) can be seen as the "modified" elasticity of marketed surplus with respect to price. From section I, $n_{P_1}^m$ is negative, but when the joint role of $n_{\hat{O}}^m$ and $n_{P_1}^0$ is taken into account, we can see that, depending on the strength of the second term, the modified elasticity of marketed surplus can be either positive or negative. In an economy if $n_{\hat{O}}^m$ is zero (for reasons specified above) or if $n_{P_1}^0$ is zero due to prevailing socio economic considerations, such as the pattern of land holdings, availability of cultivable land, competition from commercial crops etc., then the response of marketed surplus to any increase in the price of food grains will always be negative. Obviously the sign and magnitude of the modified elasticity will depend to a very large extent on $n_{\hat{O}}^m$ and $n_{P_1}^0$. The more modernised the agricultural sector is, in the sense of using chemical fertilizers, tractors etc., the bigger will be the value of $n_{\hat{O}}^m$. On the other hand, if the farmers have sufficient incentive to produce more for a higher price, then $n_{P_1}^0$ will be large. As observed earlier, this will depend on certain socio economic conditions like distribution of land, availability of cultivable land, tax incentives etc.

From this one can conclude that the precise nature of the responsiveness of marketed surplus to changes in price will vary

from economy to economy. At a different stage of development, when the two sectors become more and more integrated, the change in marketed surplus due to a change in price will tend to become positive.

We can generalise the relationship between marketed surplus and the price of food grains at this point. Remembering our assumption, based on Mathur and Ezikiel (1964), that farmers' demand for the other sector's goods is, in any given period, constant, we can write

$$(29) \quad P_1 \cdot MS = P_2 q_{12}$$

where q_{12} is the demand for the non agricultural sectors' goods by the agricultural sector; and P_1 price of food grains, MS, marketed surplus, P_2 , price of the other sectors' goods, as before. We retain the assumption that $P_2 = 1$. So, at any period t , given q_{12} the amount of marketed surplus will depend on the level of P_1 . Writing (29) as

$$MS = \frac{q_{12}}{P_1} \quad \text{since } P_2 = 1$$

taking logarithm and differentiating with respect to time, we get

$$(30) \quad \frac{\dot{MS}}{MS} = \frac{\dot{q}_{12}}{q_{12}} - \frac{\dot{P}_1}{P_1}$$

The relationship (20) tells us that if the farmers' demand for the non-agricultural sector's goods increases over time, then the marketed surplus will also increase over time, provided that the rate of change of the price of food grains is smaller than the rate of growth of the agricultural sector's demand for the other sector's goods. If, however, $\frac{\dot{P}_1}{P_1}$ is higher than $\frac{\dot{q}_{12}}{q_{12}}$ then we can see that the rate of growth of marketed surplus will be negative.

We can see q_{12} as composed of input demand and also demands for manufactured consumption goods. (To this one can add rents and taxes which the farmers have to pay in cash). The demand for inputs like fertilizer, tractors etc. will depend on the nature of the agricultural sector in an economy. The more modernized the agriculture is and greater the rate of modernization of the agricultural sector, the higher will be the farmers' demand for cash, hence the higher will be the flow of marketed surplus and its rate of change, at a given price. The demand for consumption goods produced in the organised sector will depend on the ability of the organised sector to penetrate the agricultural sector to create demand for their product, as well as on the distribution of income in this sector. We will come back to this point in chapter 8, where we will be discussing a number of policy alternatives open to the planners.

6. 3 Medium Run

We now try to extend our analysis to the medium run. We can write the marketed surplus for the year $t+1$ as

$$(31) \quad MS(t+1) = MS(t) + \Delta MS$$

where $\Delta MS = MS(t+1) - MS(t)$

From equation (19) above, we have

$$MS(t) = \bar{O}^f(t) - q_{11}(t) - S(t)$$

using a similar relationship for period $t+1$ and taking the difference we get

$$(32) \quad \Delta MS = \Delta O^f - \Delta q_{11} - \Delta S_F$$

This tells us that if the output of food grains is growing positively and the rate of growth is big enough, given that there is no perverse

change in the agricultural sectors' demand for food and in their stock holding behaviour, then given that the price of food grains has not changed, marketed surplus in an economy will grow positively. What will happen in (t+1) if the price of food grains changes?

From (19) we have

$$(33) \quad MS(t+1) = \bar{O}^f(t+1) - q_{11}(t+1) - S_f(t+1)$$

Differentiating the above with respect to the price P_1 , we get (remembering that all variables in equation (33) above refer to period t+1, and also that the output of food grain \bar{O}^f is given),

$$\frac{dMS}{dP_1} = \frac{dq_{11}}{dP_1} - \frac{dS}{dP_1}$$

Translating the right hand side in terms of elasticities we get

$$\frac{dMS}{dP_1} = -\eta_{P_1}^f \frac{q_{11}}{P_1} - \gamma \frac{S}{P_1}$$

We have argued above that $\eta_{P_1}^f$ and γ are positive. So we can see that any increase in food prices will reduce the marketed surplus. Of course, the extent of this reduction will depend on the agricultural sector's demand for the other sector's goods, as we have seen above.

So far we have seen that in an economy where the agricultural (rural) sector is virtually non monetized, and the producers of food grains are uncertain about the prospect of the next harvest, price responsiveness of marketed surplus will be negative. However, the magnitude of the price elasticity of marketed surplus will depend on the stage of economic development at which a country finds itself. In other words, the more integrated is the food producing sector of the economy with the industrial sector, in the sense of using the latter sector's goods, the lower will be the absolute value of the

elasticity of marketed surplus with respect to price. One can sum up this chapter by saying that marketed surplus depends negatively on the price of food grains and positively on the rural sector's demand for urban sector's goods and also (positively) on the growth of output of food. We will come back to the implications of this analysis for the problem of employment creation in chapter 8. Before that in chapter 7 we will try to examine some empirical findings on the relationship between marketed surplus and the price of food grain and will also present our own estimates of the relationship.

CHAPTER 7 Data and Empirical Estimations

7.1 Data

Empirical verification of the relationship between the marketed surplus of food and the price of food, the demand for goods produced in the urban sector and the change in food production is very difficult, because of the lack of existing time series data on marketed surplus. Thamarajakshi (1977) has supplied an index of the marketed surplus of agricultural products for the years 1951-52 to 1974-75, which has been quoted rather extensively in the literature. However, since our interest lies in the examination of the marketed surplus of food in particular and not that of agriculture as a whole, we cannot use Thamarajakshi's series. Indeed, it is not possible to use the index of marketed surplus of agriculture as a proxy for the marketed surplus of food, since the behaviour pattern of the farmers producing commercial crops is different from that of the farmers producing food grains. Commercial crops as well as a part of food grains in India are produced by big farmers who are organized in the same way as their counterparts in the developed countries. These farmers' stock holding behaviour is speculative in the sense that they hold stocks when prices are low to sell them at higher prices later. This part of Indian agriculture, as in any other country, is fully commercialized. On the other hand, the small and medium farmers hold their stock to guard against crop failure in future. Most of their selling of food grains is distress selling or sales forced upon them through cash requirements. The total availability of marketed surplus for food grains in a developing country depends crucially on the behaviour of this latter group of farmers. In sum if we use the marketed surplus

of agriculture as a proxy for that of food grains, we would be making a mistake. The logic of the commercialized side of agriculture implies that the marketed surplus from this part will be positively related to price changes while the logic of the non-commercialized side implies that marketed surplus may be negatively related to prices. Thus we need a time series for marketed surplus of food.

Bardhan and Bardhan (1971) have provided an estimate of the marketed surplus of food grains. A less serious criticism of their estimate is that they have given the estimate for cereals only. In the Indian context, food grains include cereals and pulses.¹ Let us now turn to a more serious criticism of Bardhan's estimate. To estimate the marketed surplus of cereals, they used per capita consumption of cereals in urban (and non-agricultural rural and urban population for their alternative estimate) consumption on the basis of information provided by the N.S.S. for different years. They have then multiplied the relevant annual population figures by the aforementioned per capita consumption figures to get the estimate of total urban consumption. Next, they subtracted change in government stocks, net of imports from the total urban consumption figure to estimate marketed surplus. Finally, they express marketed surplus as proportion of total output. The main weakness of their estimates is, and the authors themselves are aware of this, that in constructing their data on marketed surplus as a proportion of total output, they have combined N.S.S. data on consumption with the official output figures. These two sets of data, however, are not always compatible.

In view of the lack of existing data, we decided to estimate our own series.

We made use of the estimates of price and income elasticities of demand

1. Cereals include rice, wheat, jowar, bajra, maize and barley, while gram is the most important among the pulses in terms of total production.

for food both in the rural and the urban sector in India. These estimates were taken from Krishnan (1964) and are reported below. Though these estimates are rather old, these are the most reliable estimates one can get. A study carried out as late as 1980, e.g. Mathur and Prakash (1980) has used them for want of any better estimates.

Table 7.1 : . Income and Price Elasticities for Demand for Food in India

	Rural	Urban
Price elasticity	-0.355	-0.665
Income elasticity	0.522	0.335

Source: Krishnan (1964)

[Krishnan did not mention standard errors.]

The demand functions estimated are of the log linear form

$$\log Q_i = \log A_i + \alpha_i \log P_i + \beta_i \log Y_i$$

where Q = demand for food

A = constant

P = price of food

Y = income expressed in terms of prices of urban goods

α, β = respective elasticities for P and Y

i = rural, urban.

In estimating these elasticities Krishnan made use of the sample survey data provided by the National Sample Survey (N.S.S.) . He did not however report the value of the constants. We have estimated the values of the constants as 7.125 and 24.500 for the rural

and urban sectors respectively. To see whether these values are reasonable or not we needed to know the time series for the farmers' stocks of food. Unfortunately, no reliable estimates of either farmers' or traders' stocks is available for India (or for any other developing country). So we had to make an estimate of that. We will report on that in due course.

To estimate the time series for the marketed surplus of food grains, we needed to measure total rural and urban consumption. For this we needed estimates for rural and urban income. No information is available on rural income in India except for the year 1952-53 provided by Chakravarty et al. (1960). Thus we first needed to estimate this series. Economic activities in Indian national income accounts, from which the estimates of rural and urban incomes were made, are broken down into the following nineteen activities:

1. Agriculture
2. Livestock
3. Hunting and trapping
4. Forestry and logging
5. Fishing
6. Rural dwellings
7. Public administration
8. Manufacturing - organised
9. Manufacturing - unorganised
10. Mining and quarrying
11. Electricity
12. Construction

13. Railways
14. Other transport
15. Communications
16. Trade, hotel and restaurants
17. Banking and insurance
18. Urban dwellings, real estate, etc.
19. Other services.

Chakravarty et al. (1960) found that most of the activities recorded above take place both in urban and rural areas. However, in the absence of any clearer information, we have taken the activities falling under the first six categories listed above, plus a share in total construction (based on the proportion of rural capital formation) and Public Administration (based on the proportion of public employees in the rural sector) as an indicator of economic activity in the rural sector. The remaining economic activities are assumed to take place in the urban sector. On average this should provide us with a rough approximation to rural and urban income. To obtain the income figures, net value added (in 1960-61 prices) from the relevant sectors were added together for each year. The annual income series thus obtained was divided by $12 N_{Uj}$ and $12 N_{Rj}$ where N_{Uj} and N_{Rj} are the population for urban and rural sectors at the i^{th} year. The per capita income figure was necessary because Krishnan's elasticity measures are based on these. As we have pointed out above (see reference to Chakravarty et al. (1960)), most of the activities recorded under the National Income Accounts take place in both the sectors. There are also the possibilities

that activities which take place predominantly in the rural sector may generate income for people in the urban sector, e.g. for absentee landlords. Since we do not have any information about rural income,² this is the best possible estimate we can obtain under the present circumstances. Other researchers, e.g. Mathur and Prakash (1980), Prakash (1979) have followed a procedure similar to ours.

To accommodate the terms of trade effect (between the rural and urban sectors) the rural income was multiplied by the agricultural price index and then divided by the wholesale price index for relevant years. The population figures are taken from the Demographic Yearbook. We then estimated the total rural and urban consumption of food grains using the elasticities mentioned above. These were then used to estimate the farmers' stocks of food grains, and also their marketed surplus.

One objection to the procedure detailed above can be that we have incorporated the terms of trade between the rural and urban sector in an indirect way. However, on reflection this objection should not stand. In chapter 5, we have seen that the farmers have a fixed requirement for cash to pay for rents, buy certain essential urban goods like kerosene, oil, salt, fertilizer, etc. If the prices of the urban sector goods go up, the proportion of income in terms of food grains required to buy these goods will also go up. This is the rationale behind our expressing the rural sector income in terms of urban sector goods. (We used the wholesale price index

2 To the best of our knowledge this information is not available for any of the developing countries.

as an index of the price of urban sector goods.) It will be quite inappropriate to think in terms of a farmer's utility function dependent on the food and urban goods which the farmer wants to optimize subject to his income and the relative prices. The amount of urban goods that the farmer wants to purchase is fixed in the short run (it has been pointed out from the outset, also in chapter 6, that we are essentially dealing with the short run nature of the problem). Also if the price of urban goods in terms of food grains goes down the farmer simply either consumes the surplus food grains or stores them to insure against a poor harvest in the coming season. (This has been discussed in chapter 5.) In certain parts of India, especially in the Punjab and the western districts of Uttar Pradesh, it has been observed that the farmers tend to feed surplus food grains to cattle.⁴

In measuring farmers' stocks we have the handicap that no information is available on the opening stock.⁵

This we assumed to be negligible. Given the condition of Indian agriculture in the early fifties, this assumption does not seem to be wide of the mark.⁶ The farmers' stocks were estimated as output available minus total rural and urban consumption minus the change in government stocks plus net imports. Calculated in this way, we found there was a huge drain on the farmers' stock (worth Rs.2966.95-million in 1960-61 prices) in the year 1955-56. One can safely assume that whatever initial stock there was was wiped out in this year. From then on we adjusted total rural consumption for the effect of the

4 Mathur and Ezekiel (1964), page 398, footnote 7

5 See table 7.2 for price indices, table 7.3 for income figures, table 7.3 for population figures.

6 Similar assumption has been made by Krishnan (1964), Mathur and Prakash (1980).

cumulative stocks held by the farmers. The rationale for doing this is that the existing stocks in food grains have a wealth effect on the farmers and an increase in their wealth will increase their demand for food as well.⁷

The figures for output, net imports and changes in government stocks were taken from various issues of Economic Survey, published by the Government of India. A constant proportion of 12.5% of each year's output was then deducted from the same year's output to take account of wastage, seed and animal feed. The National Commission on Agriculture in India has adopted the following break-down of this allowance: seed - 5%; livestock feed - 5%; and wastage 2.5%. Vyas and Bandyopadhyay (1975), in connection with a discussion on the National Food Policy give similar figures. Their breakdown is, however, different from that quoted above. It is : seed - 5.2%; livestock feed - 2.3%; and wastage - 5%.⁸

Each year's available output is not the calendar year's reported output (after deducting for wastage, etc.). It is half of the output of the previous year and half of the output of the current year. The timing of India's two main harvesting seasons is the reason for making this distinction between a year's reported output and the available output (Table 7.6). The two farming seasons in India are called Rabi and Khariff. Rabi crops are sown at the beginning of the cold weather between October and December and harvested between February and May. The Khariff crop season begins at the onset of the

7 See Table 7.5 for an estimate of farmers' stocks.

8 See also Sarma and Roy (1979), page 39.

south-west monsoon between May and July, ending between September and October. The Indian agricultural year is from July to June⁹ and the official production figures relate to this year. Since all other variables we have relate to the calendar year this necessitated the adjustments made above.

The total marketed surplus was estimated using the following relationship.

$$\text{Marketed Surplus} = \text{Total Urban Consumption} + \text{Change in Government Stocks} - \text{Net Imports}^{10}$$

Before we move on to report the findings of our empirical work, we must point out the limitations of our data. The price and income elasticities used for the two sectors were estimated using the 1950s sample survey data; the relationships may very well have changed now though there is no reason to believe that the relative position vis-a-vis rural and urban consumption has changed dramatically. We could not get any estimate for traders' stock, nor did we have the information to construct an estimate ourselves. Another limitation of the data on marketed surplus is that in estimating these, we did not treat the non-farm rural population's consumption separately. There is very little information available, at this moment, to enable us to do so. Since most of the rural non-farm population grow at least part of their own food, this may not be a very serious limitation. However, as rural industrialization progresses, in future work one will have to make allowance for the consumption of the non-farm rural population to estimate marketed surplus.

⁹ Ibid., page 38.

¹⁰ In Table 7.6

7.2 Empirical Estimation

In view of the limitations of the data, no sophisticated econometric work was undertaken. We will now report on the two main econometric estimates which are most promising.

The model developed in chapter 6 suggests that the marketable surplus of food grains may be negatively related to the price of food grains. In chapter 5 we have argued that farmers are forced to sell some of their output to buy certain goods produced in the urban sector. Also, we have mentioned in chapter 5 that a certain increase in the marketable surplus is dependent on the growth of output. In estimating our econometric model we try to examine the relationship between the marketed surplus for food grains on the one hand and the price of food grains, the demand for urban goods, and changes in output on the other.

Ideally, one would like to estimate the relationship of the marketed surplus for food grains with the price of food grains, available output, and the farmers' demand for goods produced in the urban sector. However, the lack of information about the farmers' demand for urban sector produce prompted us to use the amount of chemical fertilizers purchased as a proxy for this. Chemical fertilizers, in turn, gave rise to a multicollinearity problem as their use is highly correlated with the output variable. As we have pointed out earlier, the urban sector goods bought by the farmers include basic necessities like kerosene, cooking oil, salt, inputs like chemical fertilizers, cement and a few luxury goods like bicycles and radios. It is,

however, not possible to get any time series on the goods bought by farmers from the urban sector, except for chemical fertilizers. In the case of chemical fertilizers we can be sure of their destination, and for this reason this commodity was used as a proxy variable for the farmers' demand for urban sector goods.

The period covered in our econometric estimation is 1951-52 to 1975-76 but we have left out the year 1965-66 as this year's price for food grains was a totally administered price imposed by the government in the face of successive years of crop failure. Initially, we found the following relationship

$$MS = 8042.1325 - 57.7533P + 1.3712F + 0.3611\Delta Y$$

$$(3.3448) \quad (-2.6449) \quad (7.1819) \quad (3.7568)$$

where MS = marketed surplus $R^2 = 0.7730$, DW = 1.2739

P = price of food grains No of observations = 23

F = fertilizer

ΔY = change in available output

t-values are in parentheses; all coefficients are significant at the level of 5% or less.

We can see that the DW statistic of the relationship estimated above indicates the presence of autocorrelation in the residuals. The relationship was re-estimated using the familiar Cochrane-Orcutt procedure. The result obtained is reported below:

$$MS = 4602.3972 - 50.5295P + 1.4338F + 0.2955\Delta Y$$

$$(2.5630) \quad (1.9520) \quad (5.0335) \quad (3.1412)$$

$$R^2 = 0.6685, DW = 1.7587$$

t-values are in parentheses; all coefficients are significant at a level of 5% or less.

The value of the Durbin-Watson statistic in the above estimation permits us not to reject the null hypothesis of non-autocorrelated error terms.

One criticism that can be levelled against the relationship mentioned above is that using the absolute price level as one of the explanatory variables may not be appropriate. A change in price by one unit from a very high level will not affect the farmers in the same way as a similar change from a very low level of price. To ward off this possible criticism we wanted to estimate another set of relationships.

$$MS = f(\Delta P\%, F)$$

where $\Delta P\%$ is the percentage change in price. In estimating this, we have left out the available output figure, as in a number of regressions it did not perform well. The reason for this might be that while the available output is, as pointed out above, highly correlated with output, the change in available output (ΔY) used before becomes correlated with the percentage change in price ($\Delta\%$). Be that as it may, we decided to leave out ΔY from any further regression analysis. The presence of serial correlation in the first estimated equation listed above might have been caused by misspecification of the actual relationship in terms of changes in the economic structure in India. Also the effect of the war with China in 1962 and with Pakistan in 1965 and bad weather, etc., found the Indian economy in general and Indian agriculture in particular in disarray during the period 1963-64 to 1968-69. We have already left out the year 1965-66 from our estimation. Now, we decided

to use dummy variables for the years 1963-64, 1965-66 and 1966-67 to 1967-68, their values being one for these years and zero for the rest of the period. As preliminary results suggested the possibility of heteroscedasticity, we ran two separate regressions, one for the period 1952-53 to 1963-64 and another for the period 1965-66 to 1975-76. The choice of period is based on the fact that from 1965-66 Indian agriculture entered the true phase of modernization through the introduction of high yielding varieties of seed, widespread use of chemical fertilizers, etc. The result showed that we were correct in suspecting heteroscedasticity in the error terms. The standard error of estimation for the estimated equation for 1952-53 to 1963-64 was $\sigma_u = 244.8074$ whereas that for the period 1966-67 to 1975-76 was found to be $\sigma_u = 1394.1129$. We then found the generalized least squares (GLS) estimator of the relationship for the whole period (excluding 1965-66). The result is reported below

$$MS = 2355.0592 - 27.7048\Delta P\% + 1.1330F - 954.9165D$$

$$(28.4813) \quad (3.4330) \quad (6.0532) \quad (4.8112)$$

$$R^2 = 0.9513, \quad DW = 1.5957$$

where MS = marketed surplus

No. of observations 23

$\Delta P\%$ = percentage change in food price

F = fertilizer

D = dummy, as explained above.

t-values are in parentheses; all coefficients are significant at a level of significance of 1% or less.

The Durbin-Watson statistic suggests that the test for autocorrelation is insignificant. However, the method due to Theil and Nagar (1961) shows that there is no autocorrelation in the disturbance term.

As we pointed out earlier, though our estimate for marketed surplus is the best we could obtain, given the information available, more accurate data is needed to do any more involved econometric estimation. Nonetheless, we have proved our main point. In all our estimation, the price of food (P) or the percentage change in price ($\Delta P\%$) has a negative and significant coefficient. The demand for urban goods, fertilizer (F) used as a proxy, has a positive and significant coefficient and in the first two equations the change in available output (ΔY) also has a positive and significant coefficient.

One reason for the presence of heteroscedasticity in the above regression may very well be due to a change in the structure of the relationship during the period 1965-66 - 1975-76. This change in structure may have been caused by the success of the Green Revolution and improved agricultural conditions in general. However, the usual method of trying to identify a structural change by means of the introduction of a dummy variable did not work in this case. In view of the very rough nature of our data, we could not undertake any sophisticated econometric analysis. It may be pointed out here that the Indian Council of Social Science Research is now considering proposals for estimating relationships similar to the ones developed here. It is hoped in a few years' time that we will have enough refined data to understand the interaction between rural and urban sectors' economic relationship more fully.

Thus we see that while an increase in food prices reduces the marketed

surplus, a conclusion which agrees with the model developed in the last chapter, the increased demand for urban sector goods by the farmers increases it. Of course, any increase in total output will also increase the marketed surplus. What are the implications of our findings? We will discuss these in the next chapter, where we try to bring together the ingredients developed so far.

Table 7.2 General Price Index

Years	All Commodities	1961-1962 = 100
		Agriculture
1950-51	89.6	101
94	94.5	94
53	80.1	96
54	81.1	78
55	71.7	81
56	74.0	95
57	84.4	95
58	86.9	95
59	90.4	101
60	93.8	102
1960-61	100.0	100
62	100.2	102
63	104.0	107
64	110.4	121
65	122.5	136
66	131.9	155
67	150.2	189
68	167.6	203
69	165.4	196
70	171.9	203
1970-71	181.5	201
72	188.8	210
73	207.5	248
74	254.7	310
75	313.6	350
76	303.3	287

Source: Basic Statistics Relating to the Indian economy; Commerce Research Bureau (1976). Also Economic Survey, Government of India (various years).

Table 7.3Price of food grains (Index)

1961-1962 = 100

Years		Years		Years	
1950-51	108.06	1960-61	102.51	1970-71	114.74
52	107.95	62	100.00	72	114.60
53	125.16	63	101.54	73	120.23
54	119.53	64	105.35	74	116.44
55	106.42	65	117.74	75	129.62
56	98.92	66	117.48	76	118.99
57	111.05	67	122.55		
58	112.46	68	136.82		
59	117.85	69	122.00		
60	109.29	70	121.68		

Source: For the years 1950-52 to 1972-73 from National Accounts Statistics (1975) CSO, Department of Statistics, Ministry of Planning, Government of India. For the years 1973-74 to 1975-76 Economic Survey 1979-80 (1981), Government of India.

Table 7.4

Per Capita Monthly Rural and Urban Income in Rs. (1960-61 prices)

Years	Rural Income	Urban Income
1950-51	18.46	46.41
52	16.15	47.02
53	19.92	46.68
54	16.81	47.69
55	19.56	49.53
56	22.03	51.89
57	19.91	53.83
58	18.08	54.10
59	20.00	55.39
60	18.94	57.65
1960-61	18.11	61.11
62	18.30	63.26
63	17.80	65.72
64	19.21	68.77
65	20.71	71.09
66	19.04	70.84
67	19.92	70.60
68	21.54	70.88
69	21.00	72.32
70	21.71	73.93
1970-71	21.09	74.25
72	20.69	74.74
73	20.69	74.07
74	21.93	74.16
75	19.34	73.73
76	17.78	75.68

Rural Per Capita Income is expressed in urban prices.

Source: As in Table 7.3.

Table 7.5

Rural and Urban Population in India (in millions)

Years	Rural Population	Urban Population
1950-51	298.116	62.834
52	303.691	64.401
53	309.371	66.004
54	315.156	67.646
55	321.050	69.326
56	327.054	71.046
57	333.171	72.805
58	339.402	74.607
59	345.749	76.452
60	352.215	78.339
1960-61	359.285	79.788
62	366.496	82.330
63	373.853	84.943
64	381.357	87.631
65	389.011	90.394
66	396.820	93.235
67	404.785	96.155
68	412.910	99.158
69	421.197	102.246
70	429.652	105.418
1970-71	438.276	108.680
72	447.873	111.887
73	456.047	116.817
74	465.200	121.095
75	474.538	125.462
76	484.063	129.983

Constructed from U.N. Demographic Year Book (various years).

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Constructed from U.N. Demographic Year Book (various years).

Table 7.6

Estimated Farmers Stock (Rs.000,000) 1960-61 prices.

Years	Initial Estimate of Yearly Change in Stock	Adjustment in the Consumption	Adjusted Cumulative Stock
1953-54	2410.66	NA	NA
55	221.45	NA	NA
56	-2966.95	NA	NA
57	12.33	NA	NA
58	555.77	95.01	460.76
59	418.01	140.66	738.11
60	1945.95	450.59	2233.47
1960-61	1796.23	704.18	3325.52
62	2110.05	950.10	4485.47
63	1879.13	1118.08	5246.52
64	1433.41	1117.56	5562.37
65	2596.68	1262.94	6896.12
66	2758.12	878.74	8775.50
67	-2042.02	896.22	5837.19
68	-885.41	719.00	4232.78
69	1428.30	865.57	5098.35
70	1611.80	1011.97	5698.18
1970-71	1364.22	1098.92	5963.48
72	4284.36	1599.65	8648.18
73	2163.04	1657.57	9153.65
74	18.91	1389.28	7783.28
75	2303.82	1556.19	8530.90
76	2336.27	1794.25	9072.93

Source: Author's own estimate.

Table 7.7

Marketed Surplus (Rs. '000,000)		1960-61 prices:	
Years		Years	
1950-51	1342.054	1960-61	2857.589
52	1781.123	62	2950.091
53	1830.039	63	2891.585
54	2789.531	64	1786.373
55	2864.768	65	2102.818
56	2930.936	66	742.480
57	2486.228	67	1241.597
58	2252.868	68	3199.482
59	2316.056	69	3912.040
60	2492.957	70	4384.753
		1970-71	6000.215
		72	4242.453
		73	4429.223
		74	4205.996
		75	5395.475
		76	8350.182

Source: Author's own estimate.

Table 7.8

Production of food (grains and pulses) (In 1960-61 prices,
- net of seed feed and wastage Rs. million)

Years	Annual Production (Q_t)	Output Available (Q_t+Q_{t-1})/2	Change in Government Stock	Net Import
1950-51	21361.025	-	228.266	1857.082
52	21535.587	21448.306	239.588	1518.670
53	24474.100	23004.844	-191.588	814.247
54	28179.900	26327.000	75.179	324.443
55	27057.100	27618.500	-288.565	230.852
56	26965.575	27011.338	-231.285	535.809
57	28167.037	27566.306	331.045	1397.317
58	25799.200	26993.119	-105.473	1257.859
59	30720.550	28259.875	189.647	1493.956
60	30091.950	30406.250	548.034	2008.152
1960-61	32170.687	31131.319	-66.269	1360.457
62	32746.962	32458.825	-143.674	1452.700
63	31588.987	32167.975	-7.929	1803.751
64	32249.437	31919.212	-499.434	2521.338
65	35663.337	33956.387	423.692	2977.834
66	28501.562	32086.950	55.756	4117.971
67	28702.187	28606.375	-104.079	3466.614
68	35998.550	32350.369	791.956	2211.724
69	37357.687	36678.119	191.179	1600.084
70	39237.012	38297.350	454.662	1453.294
1970-71	42662.649	40949.830	1051.369	830.459
72	42380.154	42521.402	-1926.811	-201.309
73	38854.667	40617.411	-126.224	1461.753
74	41978.445	40416.556	-165.844	2002.570
75	39956.937	40967.691	2267.304	3009.569
76	48404.360	44180.649	4182.444	2622.682

Source: Constructed from National Accounts Statistics 1960-61
- 1972-73 (1975) and Economic Survey 1979-80

Table 7.9

Fertilizer Nutrient Consumption

('000 tons)

Years

1950-51	NA
52	NA
53	65.7
54	105.1
55	120.9
56	130.8
57	153.8
58	183.6
59	223.9
60	304.6
1960-61	293.8
62	338.3
63	452.2
64	543.9
65	773.2
66	784.6
67	1100.6
68	1685.0
69	1760.7
70	1982.0
1970-71	2256.0
72	2656.2
73	2767.8
74	2838.5
75	2573.3
76	2893.7

Note: From 1952-53 to 1960-61 figures are for distribution.

Source: A Survey of the Fertilizer Sector in India, World Bank Staff Working Paper No. 331 (1979).

CHAPTER 8 Conclusions and Policy ImplicationsSection I: Concluding Remarks

8.1.1 The Problem Defined

In chapter 1 we started by analyzing the problem of over-urbanization. From the point of view of long term economic development, as the 'stylized facts' suggest, urbanization or industrialization or modernization is a logical requirement of economic development. Indeed the traditional dual economy models saw the transfer of labour (surplus or not) from the traditional to the modern sector as one of the preconditions for economic development. However, the recent problem of over-urbanization in most Third World countries has prompted a plethora of literature analyzing the effect of over-urbanization in these countries. The consensus reached in this branch of the literature (summarized in Todaro (1976a)) seems to be suggesting that rural-urban migration must be stopped or at least reduced to a considerable extent to combat the problem of urban unemployment and over crowding etc. We stop here to ask ourselves, are these two views contradictory to each other? Not necessarily so. When one looks at the set of stylized facts due to Kuznets (1959) for example, one must keep in mind that in so doing we are essentially comparing experiences of already developed countries at two widely separated points in time. We study the structure of a given economy before industrialization started and compare it with the changed economic structure at a much later date, when the process of industrialization has been completed. Looking from this point of view urbanization is a must for industrialization. The recent migration literature, however, looks at the problem from the short run point of view. When we took a closer look at the

process of urbanization we have seen (from the experience of Japan and USSR) that, when the process of industrialization starts in an economy as a result of the fact that the state or planning authorities wants to modernise the economy within a shorter time period, (i.e., without repeating each and every experience of the industrial revolution) the problem of over-urbanization and urban unemployment cannot be avoided. This is even more true in the case of many Third World countries today.

The reason why this is so has already been discussed in chapter 1 and also in chapter 4, and we need not go into it in great detail here. Suffice it to say that given the fact that after most of these countries gained their political and, to a certain extent, economic freedom from their colonial rulers, they inherited an infrastructure which grew out of the needs of their colonial ruler. Thus when the process of industrialization started after independence, industries could be located, from the point of view of the available infrastructure, only in a few existing urban centres, thereby exacerbating the problem of over-urbanization.

We must also remind ourselves, that at the comparable stage of economic development the already developed countries suffered less from the problems of over-urbanization compared to the developing countries at the present time. The reasons, as we have seen in chapter 1, can variously be sought in demographic, sociological, and economic factors. For example, the rate of mortality in the cities in both UK and USA during their early phase of development was much higher than it was in the rural areas. This is generally

no longer true for the developing countries of today. But most importantly, in the developed countries the processes of industrialization and urbanization complemented each other and developed over a long time.

What is the solution to the problems of over-urbanization and urban unemployment? In section II of chapter 1 we have examined the strategies followed by a few of the developing countries to combat the problems mentioned above. Though some authors seem to have gone a bit overboard to suggest a reduction of investment in education,¹ from a more humane point of view, the solutions which seem to be more appropriate are rural industrialization, dispersion of industries and creation of new urban centres. In other words, creation of alternative employment opportunities away from the existing urban centre. It has also been suggested that bringing some attraction of city life e.g. electricity, medical facilities, cinemas etc. to the rural areas can also help to reduce the problem of rural-urban migration.

However, so long as rural-urban migration is the main cause of over-urbanization, we should ask ourselves what is the prime reason for labour moving from the rural to the urban sector? To us it seems to be the lack of employment opportunities or the low level of income in the rural sector. Looking from this point of view, this then becomes a more general problem of unemployment. In the Third World countries, labour moves out of the rural sector because of unemployment. In the urban sector, as the rate of growth of employment opportunities is not high enough to absorb all the

¹ See Edwards and Todaro (1973).

migrant labour force plus the existing urban labour force, urban unemployment is a logical consequence. It must be noted that, if there was no problem of urban unemployment, the problem of over urbanization could be solved by dispersion of industries and urban centres. From this point of view, it is a problem of location only, which, however, is beyond the scope of our discussion.

Now, to solve the problem of urban unemployment, a planner has to find jobs for the urban unemployed and also, to stem the flow of prospective rural migrants, he will have to find employment for them. In the traditional dual economy models of Lewis (1954) type, as we have seen in chapter 3, there is no possibility of urban unemployment as only those labourers who can be gainfully occupied in the urban sector, migrate out of the rural sector. The labour force remaining in the traditional sector, whatever their productivity, are assured of a positive income. However, the agrarian scene in reality is slightly different to say the least. In countries like India, Egypt, Mexico there exists a vast reserve army of partially employed labour in the form of land less labourers.² Any attraction for employment in the organised sector will obviously work as a magnet for this part of the rural labour force.

Thus we may conclude that the real problem behind the problem of rural-urban migration is the problem of unemployment. Also, the generation of employment will have to be in the non-agricultural sector. In a labour surplus economy, by definition we cannot

2 See Bagchi (1982) chapter 6 for a historical perspective.

argue in terms of the creation of jobs in agriculture. In some mainly African countries, however, there is still scope for the creation of more jobs in agriculture, at present, but with improved productivity in agriculture sooner or later these countries will have to find alternative employment for their growing labour force. Thus, job opportunities to combat the problem of unemployment will have to be created in the non-agricultural sector i.e. either in the industrial or in the service sector.

8.1.2. Planning for Employment

In the section above we came to the conclusion that the real problem facing developing countries is not rural-urban migration as such. The problem the planners should address themselves to is the problem of unemployment. Surprisingly, as we have mentioned in chapter 4, the traditional planning models did not pay enough attention to the problem of unemployment. The planners hoped that with an increase in the GNP the problem of unemployment would be solved by itself. However, recent experience shows how over-optimistic this assumption really is. The so-called, three choice problem approach to planning³ did not consider unemployment to be a major problem.

Though the literature on choice of techniques is related to the employment implication for department II (the department producing consumption goods, with machinery produced in department I) its main concern is with maximization of surplus in department II in each period so that more labour can be hired during the next period

³ These are choice of optimal rate of savings (first choice), choice of sectors, Mahalanobis (1953) type of models, second choice and choice of techniques, Sen (1968) and Dobb (1960), third choice.

to generate more surplus and hence to achieve a higher rate of growth of GNP. However, it is to be noted that the supply of 'wage goods' in the context of these models is related to the production in department II. The relevance of this last comment will soon be made clear.

In chapter 4, we have seen that generations of employment in an economy depends on the availability of wage goods. Also in the case of the developing countries, the most important wage good is food grains. Thus the availability of food grains acts as a constraint on employment generation. Even if we identify department II of the choice of technique literature, with the sector producing food, the problems of marketed surplus remains. This point has been recognised in the literature. Dobb (1960) writes

"Without an expansion of this marketed portion of agricultural output no attempt to expand industrial employment (and with it urban food consumption)... can meet with any ultimate success."⁴

Dobb has also recognised that the perverse price elasticity of marketed surplus can actually impose restrictions on the path of employment generation and economic development. As he goes on to write

"Nor will a rise in total agricultural output, even if it is a rise in output per head, necessarily make any contribution to the problem, since it may be absorbed in higher consumption by the peasant producers themselves - a fact that was very much in the forefront of discussion and policy making in the USSR in the '20s. In such circumstances a price-policy, however favourable to agriculture, may not suffice to attract a large flow of village products on to the urban market, since the peasant may be content to take out the benefit of improved terms of trade in getting more industrial products for the same total quantity of agricultural exports as formerly (possibly for even less)"⁵

4,5 Dobb (1960) Pages 29-30, emphasis in text.

Dobb cites the experience of Japan and suggests a policy of taxation to mobilise agricultural surplus to the urban sector. Be that as it may, for most of his analysis Dobb treats the agricultural sector as separate from the two departments producing machinery and consumption goods, and assumes that favourable terms of trade to agriculture will see that agricultural surplus flows smoothly to the urban sector.⁶

For our purpose, it is important to note that a surplus generated in department II may not by itself be enough to generate employment and hence more surplus for the future if the supply of food grains does not keep pace with the increase in the rate of employment. This brings us to our next section.

8.1.3 Marketed Surplus and Inflation

We have seen in chapter 4, that so long as food grains are the main constituents of wage goods in an economy, which in developing countries they are, then the price of food grains becomes the most important determinant of the money wage rate in the industrial sector. Putting it differently, given that the urban wage is determined mainly in terms of food grains price, so if the price of food grains goes up, the employers in the industrial sectors will have to pay higher wages in terms of industrial goods. This in turn will increase the cost of production of the industrial sector's output unless the increase in the wage rate (in terms of industrial goods) is completely offset by an increase in labour productivity. Why would the price of food increase in the first place? We have seen in chapter 6 that an increase in economic activity in the non-food

6 See for example, *ibid*, pages 65 and 71.

producing sector will increase the price of food. Thus any attempt to increase employment opportunities anywhere in the economy, whether in the rural or the urban sector, so long as it is not directly related to the production of food grains, will increase the price of food. Also in chapter 6 we have seen that the price responsiveness of marketed surplus can be expected to be negative. Thus, an increase in economic activity in the non-food producing sector, will increase the price of food through a reduction in marketed surplus. The link between inflation and employment generation has been recognised by Kalecki (1960). In his words:

"Any increase in employment implies generation of additional incomes and thus, if no adequate increase in agricultural output is forthcoming, an inflationary increase in the prices of necessities will be unavoidable."⁷

Kalecki, however, assumes that the problem can be resolved through an increase in food production alone.

Let us now come back to the employment implications of this wage inflation via the food price. What are its employment implications? First, as the increase in the wage rate in the manufacturing sector is reduced, the surplus available for reinvestment decreases, and this will reduce employment opportunities in this sector. Secondly, if we assume that the employers in the manufacturing sector (or planners) try to maintain the level of surplus through an increase in labour productivity by adopting labour saving technical progress, then also the ultimate result will mean a reduction in employment opportunities. Thirdly, inflation generated in the manufacturing sector will reduce the demand for this sectors' output both in the home and overseas markets with, again, negative effects on employment.

7. Kalecki (1964), pages 59-60.

We can summarise the arguments of this section in the following way. Any attempt to create jobs in the urban sector, without any provision for meeting the increased demand for food generated by the process, will increase the cost of living in the urban sector. As a result of this, the wage rate in terms of manufactured goods will rise giving rise to inflation. Which in the end may defeat the purpose of employment creation either wholly or partly depending on the intensity of the rate of inflation.

8.1.4 Fix Price and Flex Price System

Discussion in the section above implies that while the price of food grains is determined by the forces of supply and demand, the prices of manufactured goods are determined by changes in the cost of production (wage cost, in our case). This description of the process of price determination fits neatly into Hicks' (1965, 1975) description of fix price and flex price systems. As Hicks has pointed out, modern capitalist systems have a combination of two types of markets - the flex price markets and the fix price markets.

'Fix price' systems does not mean prices which never change. In a market characterised by fix price, prices will not have to change whenever there is excess demand or excess supply in the market. In such a price system, prices change only in response to changes in real costs, which depend upon changes in technology, wages, the prices of raw materials etc. In these markets prices are rigid, in the face of an excess of demand or supply because of the existence of stocks. Current output is not the only source of supply, it can be adjusted with changes in the existing stocks. If demand exceeds supply, stocks

fill the gap as a result of which changes in stocks become a substitute for changes in prices. Thus in the presence of stocks, the adjustment of current output to flow demand is a necessary but not a sufficient condition of equilibrium. The market will be in equilibrium only if stocks and flows are simultaneously in equilibrium. But in a fix price market desired and actual stocks need not be equal, i.e., there need not be a position of equilibrium always.⁸

The role of stocks in a flex price market is different from that in a fix price market. Here there is only one stock-flow equilibrium because actual stock is always equal to desired stock. In other words, equilibrium in a flex price market is a stock equilibrium and not a flow equilibrium.⁹ Another distinguishing feature of flex price markets is the presence of intermediate traders who keep some minimum level of stocks so as to keep themselves in business. When current supply exceeds flow demand, these intermediaries absorb the surplus which tends to moderate the fall in prices. If the flow demand exceeds current supply, the traders may release some of the stocks which tends to moderate the rise in prices.

The markets for most agricultural goods, where a large number of buyers and sellers compete with each other, products are fairly homogenous, the traders constitute an essential link between producers and consumers and prices are determined mainly by the forces of demand and supply, correspond largely to the flex price market. Markets for food grains are, thus, flex price markets. (We must emphasise that supply in this market is determined apart from production, by the stock behaviour of the farmers. This

8, 9 Hicks (1965) Pages 85-86, Hicks (1975) Page 25.
See also Kalecki (1954) for similar views.

stock holding by farmers should not be confused with the stock behaviour of the traders in a flex price market described above. (Chapters 5 (5.4, 5.5) describes the nature and consequences of such behaviour). On the other hand, the markets for most manufactured goods where monopolistic or oligopolistic competition prevails, products are highly differentiated, by and large only highly specialised firms hold stocks, correspond mainly to fix price markets.

In our analysis, we have fluctuations in food prices, which are determined by the forces of supply and demand (flex price market) affects the price of manufacture goods, through changes in wage cost (fix price system). This description of the system of price determination in an economy describes the interaction between the two sectors in our dual-economy very succinctly.

Section II Policy Implications

8.2.1 Policy in the Short Run

For the creation of employment opportunities in the rural or in the urban sector, we can see that a choice of appropriate techniques by itself is not enough. Creation of jobs in the service sector to provide jobs for the unemployed labour force in the urban sector, a policy which is being followed at different levels of intensity in most of the developing countries, can only exacerbate the problem, unless provisions are made for an adequate supply of wage goods to match the increased demand for them, as a result of the increase in employment. It is not that the planners traditionally were ignorant about this. For example, during the period 1955-65, covering the first two five year plans in India, it was recognised that the availability of food surplus is a major constraint on the path of economic development.¹⁰ It was also assumed that an increase in agricultural productivity by itself would solve this problem. However, our arguments will tell us that an increase in agricultural productivity on its own is no guarantee that agricultural surplus will flow into the industrial sector. Increased productivity in agriculture is a necessary but not a sufficient condition for surplus food to flow into the non-food producing sector. So before any job creation takes place, i.e., before deciding on the appropriate choice of technique from the point of view of employment generation, the planners will have to make provision for enough food to sustain these additional jobs, so as to avoid any pressure of inflation being created in the economy.

In the short run, the stability of food prices should be maintained

10 See Chakravarty (1979) page 1229.

through the operation of a buffer stock in food. Government should buy food in a good year of harvest, when prices are low and should use this stock to keep food prices from going up in the bad years. Of course a programme of food imports can be of great help. But given the balance of payments situation of most Third World countries, one should not think that this option is a very practical one for most of them. Countries without any balance of payments constraints, which are just a handful of the oil producing countries may adopt this option. Increased taxation on the big farmers may also be useful. But for many countries it may not be politically feasible. So in the short run the planners can only afford to create as many jobs as are permitted by the 'natural increase' in the marketed surplus (i.e. ΔMS of chapter 6 section II) assuming that prices are kept stable. During a 'bad' year, which sees a fall in food production, the planners should use the buffer stock of food, built up in the good years, to keep prices from going up too high, not only to create new employment but to protect the existing jobs as well.

How would the planners know how much food to release from their buffer stock during a bad year? Or how many jobs to be created during a good year? In chapter 6 we have indicated that depending on the degree of food producing sector's need for the non-food producing sector's product and also on the degree of monetization, each country will have different values of the price elasticity of marketed surplus ($\eta_{P_1}^M$).

Now, at the beginning of each harvesting season¹¹ the planners

¹¹ In India there are two in each year; see chapter 7.

should prepare a forecast of expected marketed surplus. They should also prepare a forecast of the total demand for food by the non-food producing sector. From these the future price for food can be forecasted.¹² After forecasting this base price, the planners should find out by how much this price may be increased for generation of employment at different levels. (Through estimating $\frac{dP_1}{dY_2}$ as in chapter 6). It is then the task of the planners to calculate values of $n_{P_1}^M$ for each level of the price of food associated with different levels of planned employment and see which one of them will be consistent with stable food prices. In other words, the level of final price (calculated from initial supply and demand plus the change in it due to the creation of jobs through increased economic activity in the urban sector) which will not affect the marketed surplus in a perverse way. In a bad year of course, the planners will have to decide, on the basis of price information how much food to release from stock to keep the supply of marketed surplus unaffected.

Looking from this point of view the task of economic planning becomes a continuous affair. In spite of declaring a target for employment generation and other economic goals every five years or so, which is done at present in Indian Five Year Plans, the planners have to decide on their target during the beginning of each harvesting season. This does not imply, however, that in planning there should not be any long term goal. All we are suggesting is that unless we solve the problem of inflation in the short run, the long run goal will probably continue to elude us.

¹² For an application of this type see Mathur (1975).

8.2.2 Policy in the Long Run

A strategy of maintaining a terms of trade which is disadvantageous to the food producers, is not a very sound one from a long run point of view. This is because, such a terms of trade will probably act as a disincentive to that part of the rural sector which is monetized, and farmers belonging to this part of the rural sector may, depending on the situation, move out from production of food or reduce their output of food. Thus, from a long run point of view, a policy of continually low food price may prove to be counter productive in the sense that it may actually reduce available marketed surplus through reduction in total output.

In the context of long run the task of the planners will be to change the economic structure in a sense, which is different from that implied in the traditional analysis of dual economy. Structural change should not mean changes from an essentially agricultural (or traditional) to industrial (or modern) society. It should mean changes in the economic and social structure of the existing economic institutions. We have seen in chapter 5 that the largely non-monetized nature of the rural sector in the developing economies is the root cause behind the perverse behaviour of marketed surplus in these economies. What causes the non-monetized sectors to continue in these economies is uncertainty.¹³ So the task of the planners will be to remove this uncertainty. This is easier said than done. In many of these countries, if not all, the political structure depends on the type of rural society they have. Vested interest would like to see that the structure continues without any change. However, a system of land reform, provision for cheap and assured

13 The nature of this has been discussed in chapter 5.

credit for the small and medium farmers and a change in the land tenure system can help to remove the uncertainty and hence hasten monetization of this sector. However, less controversial strategies like better irrigation facilities, provision for regularly advising the farmers about crop diseases etc. will go a long way to reduce the farmers' uncertainty about the future.

Monetization (or commercialization) implies that its members start to produce for the market. They also keep their savings in money. For this reason any holding of stocks in a monetized economy is only for speculative purposes. The higher the price of food grains, the greater will be the supply of marketed surplus. In a non-monetized economy, where farmers keep their savings in kind, savings will not necessarily be translated into investment. Though part of savings may be invested in capital formation, in the form of hiring labourers, to be paid in kind, to build houses etc. part of it suffers from wastage and loss of various form during storage.¹⁴ Thus monetization of the economy, by encouraging the farmers to save in money will increase the farmers' as well as the country's welfare.

We have seen in chapter 6 that the supply of marketed surplus is positively related to the farmers' need for the non-farming sector's goods. The planners can take advantage of this. One way to increase the farmers' demand for the urban sector's goods is through modernization of agriculture. If the farmers' need for commercial inputs like tractors, chemical fertilizers etc. increase, they will have to pay for them in cash compelling them to sell more of their produce. Since the modern method of cultivation requires better

14. See Mathur and Ezekiel (1964) Page 404.

irrigation facilities to support it, this method of increasing the supply of marketed surplus will help to reduce the farmers' uncertainty about failure of monsoon as well.

To increase farmers' demand for consumption goods produced in the manufacturing sector, the planners should see that the goods produced in the industrial sector meet the needs of the farmers. Also, they should see that the farmers themselves are made aware of the usefulness of such goods. In so far as the rate of growth of effective demand is a constraint on economic development, opening up the rural market for consumption goods will surely alleviate this problem to some extent at least for countries with sizeable population. Recent emphasis in India on the concept of "export led growth" is believed to be prompted by the lack of effective demand in the home market.¹⁵ In situations like this our recommendation of opening the rural market will solve both the supply and the demand problem in the economy.

We must remind ourselves that the effect of modernization of agriculture may have some adverse effect on income distribution.¹⁶ However, as Sen (1975), Bell and Duloy (1974) and Rao (1974) has pointed out, one way to redress the problems of income distribution is through the generation of employment both in the rural and the urban sector.

15 See Chakravarty (1979).

16 See Bagchi (1982), chapter 6 in particular.

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