CHAPTER IV

Formal-Informal Sector Dichotomy:
Role of Agriculture and the Government

4.1. Introduction

In this fourth chapter, we divide our industrial sector into formal and informal segments. Formal – informal dichotomy will be found to generate certain interesting insights that are beyond the scope of traditional dual economy analysis. This will enrich our investigation with simultaneous interactions among the four sectors: formal industry, informal sector, agriculture and the government. This extension will also bring in the issue of formal – informal sector relation, their conflict and complementariness.

4.1.1. Role of Informal Sector in Economic Development

In less developed countries the non-agricultural ‘informal’ sector traditionally played a significant role in the economy, though mostly as a buffer sector or as a source of residual employment. It had expanded due to ‘push’ and ‘pull’ originating from interactions between other sectors of the economy. Moreover, it was argued that this sector would gradually wither away with the course of ‘development’.

However, in LDCs, over-crowding of agriculture, inability of formal industry to absorb surplus labour, gradual ‘prosperity-induced’ movement of labour force towards non-farm informal sector and striking revelations by several studies about wide-ranging potentials of this informal sector have induced a paradigm shift.
Many researchers along with different national and international agencies have expressed the need for promoting informal sector to usher in growth as well as development. On the other hand, at present, we are witnessing a deliberate process of 'informalisation' through reorganization of production structure in formal sector. This process can extend the reach of formal production through 'informal linkages'. Moreover, governments as well as international institutions have endorsed and even actively been helping this 'transformation' out of developmental considerations.

It is argued that informal sector is no more a residual area. It develops due to the 'pull' from other growing sectors with expansions of their real surpluses and purchasing power. This sector is important for wide-scale employment and income generation as well as poverty eradication in LDCs.

4.1.2. General Characteristics of Informal Sector

In the LDCs the broadly defined non-farm informal sector incorporates wide range of activities both urban and rural involving production of various goods and services. This is a heterogeneous sector with different structures of production.

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52 See in this regard, Saith, 1992; Paschimbanga, 2001.
and institutional arrangements. Consequently, in broad literature, informal sector has also been characterised on the basis of varied norms. The diverse categorisations are made depending on the following observations:

(i) Informal sector is supposed to operate with self-employment or small-scale family ownership or even with hired labour. However, there is no formal contract among the agents engaged in production.

(ii) Production in this sector is supposed to be organized with consumption as the sole motive of production.

(iii) There is very little or, in fact, in many cases no use of fixed capital.

(iv) Production takes place mainly with indigenous inputs.

(v) This sector uses simple labour intensive and adapted technology.

(vi) There is significant extent of ‘economies of flexibility’ with ease of entry in presence of excess supply of key inputs, especially, labour.

(vii) Different studies claim that many of these informal activities are economically efficient and having surplus generating potentials.

(viii) Some segments of informal sector are dependent on formal industry for inputs on one hand and for ‘market’ on the other. The example of formal industry engaging informal production units through ‘sub-contracting’ falls under such a category.

(ix) There are significant extent of linkages between informal sector and agriculture. Thus, a large part of this informal economy, such as, rural non-farm

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sector and urban informal activities producing mainly consumer goods are heavily dependent on agriculture for food, agro-inputs and also 'market'.

4.1.3. Our Theme of Analysis

Among all these diverse characteristics of the broadly defined informal sector, in our following analysis, we try to identify certain key factors. Based on those key factors we construct our model-informal-sector. Subsequently, we try to incorporate it within our overall inter-sectoral analysis. This extension would be found to generate some interesting results and policy implications over and above what we have already developed in our earlier chapters from the interactions between formal industry, agriculture and government.

4.2. Basic Features of Our Extended Model-Economy and Notations Incorporating Informal Sector

4.2.1. The Basic Features of Our Extended Model-Economy are assumed as Follows:

(a) There are four sectors of a closed economy: a vertically integrated – capitalistic – formal industrial sector; an agricultural sector; a non-capitalistic – non-farm informal sector and lastly the government sector.

(b) Contrary to formal industry that operates with 'capital-labour' dichotomy and with 'accumulation' as the motive of production, in informal sector the sole
motive of production is ‘consumption’\textsuperscript{54} in absence of any ‘capital-labour’ division\textsuperscript{55,56}.

(c) Informal sector is self-sufficient in both implements and non-food consumption. Moreover, there is excess supply of labour. However, this sector has to depend on agriculture for ‘food’\textsuperscript{57}. Food is obtained with the proceeds received through sale of surplus produced in it to agriculture\textsuperscript{58}.

(d) Aggregate supply of marketable surplus of food-grain is fixed. It is purchased by both formal and informal sectors simultaneously at the single open-market food-price. Earnings from the sale of food to formal and informal sectors are the sole income of the farmers. Moreover, it is fully spent on purchase of both formal and informal sectors’ output.

(e) We have balanced trade between agriculture and informal sector\textsuperscript{59}.

(f) Formal industry, agriculture and the government individually work and also interact with each other in the same fashion as described by the features (b) to (g)

\textsuperscript{54} This type of categorization of the two sectors will be found to be very crucial for our following analysis.

\textsuperscript{55} Simple tools produced in this informal sector itself are used here. However, these means of production cannot be termed as ‘capital’ because of the absence of profit motive (Bhaduri, 1986). Furthermore, as these tools are produced within this informal sector itself, these are not binding on the production of final output.

\textsuperscript{56} Even if hired casual labour is used along with self-employment or family labour (as incorporated in the definition of informal sector in ILO international symposium, 1999) the character of production does not at all change, as the motive of production of both employer and employee is the same, i.e., consumption. So, in absence of the accumulation motive the analysis with hired labour remains essentially the same as that with self-employment.

\textsuperscript{57} Here ‘food’ is a composite commodity, including agro-inputs.

\textsuperscript{58} For the time being we assume away any kind of direct interaction between formal and informal sectors. This is a simplifying assumption.

\textsuperscript{59} Unbalanced trade is unsustainable for both of these sectors.
of section (2.1.1.). The only additional feature is mentioned in feature (d) of this section (4.2.1.).

4.2.2. Notations to be used in this Extended Model are as Follows:

(A) Notations from (i) through (xiv) of the section (2.1.2.) and others used in section (2.2.) remain.

(B) Few additional notations are required for this extended model-economy. Those are:

(i) \( \alpha_a \) : Fraction of aggregate agricultural income or that of aggregate marketable surplus of food used for transaction with informal sector\(^{60}\).

(ii) \( Y_a \) : Level of output produced in informal sector.

(iii) \( P_a \) : Price of informal sector's output.

(iv) \( L_a \) : Aggregate employment in informal sector.

(v) \( I_a \) : Labour-output ratio in informal sector.

\(^{60}\) With the assumption of balanced trade between agriculture and informal sector and that of a single (market) price for food, \( \alpha_a \) represents fraction of both agricultural income and marketable surplus of food used in transaction with informal sector. Apparently it may seem that agriculture itself distributes food in \( \alpha_a \) and \( 1-\alpha_a \) proportions between informal and formal sectors respectively, earning incomes from the two sectors separately and then, spending these incomes on the two non-agricultural sectors’ output. But, essentially, this process has to be the other way round. Instead of being a supply-driven one, this happens rather as a demand-driven outcome. Let us assume that the total agricultural income is Rs.100, given a single market price of a given amount of aggregate marketed surplus of food sold to both the non-agricultural sectors. Now, say, half of it (Rs.50) is spent on informal sector’s output (i.e., \( \alpha_a = \frac{1}{2} \)). Consequently, informal sector gets back Rs.50 in exchange of its products with agriculture. However, under balanced trade between informal sector and agriculture this Rs.50 itself will be fully spent back on food by the former sector. Hence, informal sector purchases food of the value Rs.50 which is nothing but the amount of agricultural income spent on it. Thus, given the single food price, informal sector obtains half (the \( \alpha_a \) fraction) of aggregate marketable surplus of food and also the same fraction of aggregate agricultural income is spent on the products of this informal sector.
4.3. Working of our Extended Model

4.3.1. Interaction between Agriculture and Informal Sector

According to the literature, agricultural sector is found to play a very crucial role for non-farm informal sector. Agriculture acts as the provider of food and raw materials to informal sector. It also acts as a purchaser of intermediate as well as final goods and services produced in this sector. There are close interactions between these two sectors through both consumption as well as production linkages\(^6\). Furthermore, there is positive correlation between agricultural progress and volume of informal sector’s output and employment. Expansion of informal sector is argued to be an outcome of growth or ‘prosperity’ in agriculture rather

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\(^6\) Lanjouw and Lanjouw, 1995; Mitra, 2001; Radhakrishna, 2002; Rani and Shylendra, 2002.
than that of 'distress'. Agrarian transformation and its consequences, such as growth of agricultural surplus and also that of purchasing power, 'pull' the surplus labour out of agriculture and employ it in informal economy.

We shall try to explore these dimensions of linkages between agriculture and informal sector in our following analysis.

The features (b) to (e) of section (4.2.1.) imply the following formulations:

First, from the condition of excess supply of labour we can specify constancy of per capita food requirement in informal sector. Hence,

\[ a_{f_n} = a_{f_n}^0 \]

where \( a_{f_n}^0 \) is a constant.\(^63\)

Moreover, absence of fixed or limiting capital implies fixity of labour-output ratio. Hence,

\[ l_a = l_a^0, \text{ a constant}. \]

For simplicity, we also assume that the fraction of each unit of output used for self-consumption and reproduction in informal sector itself is constant. Hence,

\[ \beta_u = \beta_u^0 \]

\( \beta_u^0 \) is a constant.

All these combined together indicate that the real average cost of production in informal sector incurred for food and non-food consumption and for tools as well is constant. On the other hand, using these constants \( a_{f_n}^0, l_a^0, \) and \( \beta_u^0 \), price formulation (determination) for informal sector could be expressed as:


\(^63\) Food grain usually determines the subsistence, as it accounts for four-fifth of calorie intake of the poor (Radhakrishna, 2002). And, this \( a_{f_n}^0 \) is set at the minimum subsistence level.
\[ p_u = p_r \cdot a_{fn} \cdot l_u^0 + p_a \cdot \beta_u^0 \]

Rearranging the above equation we get:

\[ (1 - \beta_u^0) \cdot p_u = p_r \cdot a_{fn} \cdot l_u^0 \]

That is, the value of net output or that of net supply to agriculture from informal sector is determined only by the food-cost.

Now for simplicity we assume, \( l_u^0 = 1 \).

With this simplifying assumption the last equation is modified as,

\[ (1 - \beta_u^0) \cdot p_u = p_r \cdot a_{fn} \]

Rearranging, we get,

\[ p_u / p_r = a_{fn} / (1 - \beta_u^0) \quad \ldots \ldots (I) \]

Thus, absence of fixed capital and existence of surplus labour along with fixity of fraction of intra-sectoral utilization of output in informal sector jointly imply a given terms of trade between informal sector and agriculture for all levels of exchange. Moreover, at this given terms of trade supply of net output of informal sector, \( S_u \) will be perfectly elastic\(^{64} \). The \( S_u \) curve will be horizontal on the ‘\( S_u - p_u/p_r \)’ plane. Consequently, demand for food from informal sector is also perfectly elastic. Agriculture is not facing any demand problem so far as informal sector is concerned, even if the terms of trade is given and there is no direct government

\(^{64}\) This result is also consistent with the observations developed from empirical studies (Saith, 1992; Lanjouw and Lanjouw, 1995).
intervention. On the other hand, given the perfectly elastic $S_u$, output produced in informal sector, $Y_u$ is also perfectly elastic. This means demand-determined output in this informal sector.

Now, through sale of aggregate marketable surplus of food in common food-market farmers earn income of the value $(p_f \cdot F)$. Out of this $\alpha_u$ fraction, i.e., the amount $(\alpha_u \cdot p_f \cdot F)$ is spent on informal sector's output. Thus, the value of aggregate demand for informal sector's output is,

$$p_u \cdot D_u = \alpha_u \cdot p_f \cdot F$$

Under the condition of balanced trade income of informal sector $(= \alpha_u \cdot p_f \cdot F)$ is fully spent back on food. The value of this food-demand is $(p_f \cdot \alpha_u \cdot F)$. Thus, informal sector purchases $\alpha_u$ fraction of $F$.

Implicitly, all these indicate that market forces establish the interaction between informal sector and agriculture. Hence, the equilibrium levels of output and employment in informal sector are determined through the interaction of demand and supply. The determinant of this demand is the part of agricultural income spent

65 See in this regard, Rakshit, 1982 and 1989. Interaction between formal industry and agriculture can be 'closed' given the terms of trade by active government intervention either through Kaleckian 'domestic exports' or through a policy of food procurement or both. In absence of these options agricultural sector may face 'realization problem' (Chakrabarti, 2001) along with a possibility of excess capacity and unemployment in industrial sector. However, agriculture is free from this 'realization crisis' as far as its interaction with informal sector is concerned. Marketable surplus of food is absorbed easily by informal sector and for that neither the variation of terms of trade nor the intervention by government is necessary. As an extension, we can propose that in absence of government intervention and that of flexibility of all terms of trades 'exports' to informal sector could act as a 'vent for surplus' for agricultural sector. This is considered to be an important emerging policy option.

66 Definitionally, $S_u = Y_u - \beta_u \cdot Y_u = \beta_u \cdot Y_u$. Now, given $\beta_u = \beta_u^o$, $S_u = (1 - \beta_u^o) \cdot Y_u$. Hence, $Y_u = S_u / (1 - \beta_u^o)$. 

75
on informal sector's output. On the other hand, agriculture also provides the complementary supply-side support through provision of food\textsuperscript{67}.

Before going into further details we take a digression here to discuss the basic difference between agriculture—informal sector interaction and agriculture—formal industry inter-linkage:

Agricultural sector acts as the marketing outlet as well as the supplier of food in the first case, which is in sharp contrast to its role vis-à-vis formal industry. This dichotomy could be explained with the help of our proceeding analyses of chapter 2 and the earlier sections of the present chapter.

In formal industry we have class division with distinct class-characteristics. Moreover, there is no scope for redistribution of income involving farmers, industrial capitalists and industrial workers. Under such conditions, aggregate supply of food to formal sector is absorbed only in presence of aggregate real demand of an appropriate size for this formal industry. An appropriate level of real domestic exports generates this demand.

On the contrary, if we look at the interaction between agriculture and informal sector it will be seen that whatever be the supply of food to the latter sector it will be absorbed at the given terms of trade simply through ‘exchange’ with informal

\textsuperscript{67} Food-supply induces production in informal economy (Mellor, 1976) and is exchanged against the surplus produced in this sector. Thus, food-supply as well as marketing outlet both are provided by agriculture for the informal sector. However, this process is not feasible in case of interaction between formal sector and agriculture, because of distinctly different motive of production driving the formal industry.
sector's output$^{68}$. Thus, simple exchange completes informal sector – agriculture interaction and informal sector can act as a 'vent for surplus' for agricultural sector as a whole. This happens as the former sector’s supply is perfectly elastic and as production in this informal sector takes place for consumption only.

Agricultural surplus is supplied to aggregate food-market with the intention of realization of potential income and subsequently to purchase non-agricultural (formal and informal both) products. A portion of this supply implies potential demand for informal sector’s output. This potential demand is realized through exchange as production in informal sector is boosted by the increased food-supply$^{69}$. Thus, as indicated above, agriculture acts as both supply-side support as well as marketing outlet for non-farm informal sector.

On the other hand, the interaction between agriculture and formal industry and hence, the method of absorption of the other portion of food-supply by this formal

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$^{68}$ Retaining the two basic assumptions for informal sector, i.e., the absence of fixed capital and the consumption motive, leaves the analysis fundamentally the same, even though we relax other assumptions like existence of surplus labour and fixity of $a$. The corresponding modification can be that the $S_e$ curve is no longer perfectly elastic and its slope is determined by the elasticity of labour supply in informal sector. However, interaction between agriculture and informal sector is still 'closed' through simple exchange, with the only departure that now, the terms of trade is flexible. We will be dealing with such a situation below.

$^{69}$ Agriculture is 'offering' (supplying) food and simultaneously demanding informal sector's output. On the other hand, informal sector is 'offering' its surplus output and also simultaneously demanding food from agriculture. Now the two 'offers' coincide and we get the equilibrium between the two sectors. When agriculture expands the informal economy also expands being 'pushed' as well as 'pulled' by the former. These push and pull operate through a simultaneous process of providing supply-side 'incentives' and demand-side 'pressures'.

77
capitalistic industrial sector (over and above the portion absorbed in the informal sector) is not so smooth and that occurs through a distinctly different process

**Proposition VI:** The mechanism for agriculture-informal sector interaction is distinctly different from that of agriculture – formal industry inter-linkage. The latter interaction crucially depends on real domestic exports, absence of which creates effective demand problem for both these sectors. On the other hand, former interaction operates through simple (market) exchange where this effective demand problem does not at all emerge.

Now we come back to our formal representation of interaction between informal sector and agriculture:

From our preceding analyses we know that the value of aggregate demand for informal sector’s output is equal to the part of agricultural income spent on it or the value of marketable surplus of food used by this informal sector. Hence,

\[ p_u \cdot D_u = \alpha_u \cdot p_r \cdot F \]  

\( \ldots \ldots \ldots \)\( \text{(II)} \)

Now, we can define the parameter \( \alpha_u \) in the following way:

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70 The above mentioned dichotomy could be explained only if the specificity of the capitalistic production, i.e., the presence of ‘capital’, the profit motive of the capitalist class and the dependence of the working class on that, are accepted. This is different from the simplest form of production free from class-division with solely consumption motive and hence generating surplus for exchange of ‘use values’ only. This occurs within the agriculture-informal sector ‘complex’. Here, in this case, ‘the simple circulation of commodities – selling in order to buy – is a means of carrying out a purpose……..namely, the appropriation of use values, the satisfaction of wants’ (K. Marx, Capital, vol. I). On the contrary, ‘the possession of other goods is not the immediate aim of capitalist production, but the appropriation of value, of money, of abstract wealth’ (K. Marx, Theories of Surplus Value). Thus, while the rise in agricultural productivity raises output and employment in informal sector through (mutual) exchange, it fails to do so for the formal industry. This is because, while in formal production with capitalistic mode we have ‘separation and opposition’ of production and consumption, in case of informal sector we have their ‘unity’ (this
\[ \alpha_n = \alpha_n \left( \frac{p_f}{p_n}, \frac{p_f}{p_l}, n \right) \]  

\[ \alpha_{n1} > 0, \; \alpha_{n2} < 0 \; \text{and} \; \alpha_{n3} > 0, \]  

where \( p_f, p_n \) and \( p_l \) have their usual meaning and the exogenous factor \( n \) signifies the land distribution pattern in the agricultural sector. Improvement in this index \( n \) implies redistribution of land in favour of the small farmers from the big landlords. Due to this redistribution of land small farmers' share in both marketable surplus of food and in aggregate agricultural income rises. Moreover, if we assume that the demand for informal sector's output originates mostly from the small farmers\(^{71}\) this redistribution of land implies a rise in the value of \( \alpha_n \) at the given terms-of-trade. However, for the time being, we assume that the historically evolved pattern of land distribution is kept undisturbed and thus \( n \) is fixed, say at,

\[ n = n^0 \]  

Moreover, \( p_f/p_l \) has already been assumed to be fixed at the historically settled (evolved) level, \( \theta \) (equation 3.2).

Hence, using equations (III.1) and (3.2), equation (III) can be written as,

\[ \alpha_n = \alpha_n^0 \left( \frac{p_f}{p_n}, \theta, n^0 \right) = \alpha_n^0 \left( \frac{p_f}{p_n} \right) \]  

Such that \( \alpha_{n1}^0 > 0 \).

Now, rearranging equation (II) and putting equation (III) there, we get,
\[ D_a = \frac{p_t}{p_n} \cdot \alpha_a \left( \frac{p_t}{p_n}, \frac{p_t}{p_a}, n \right) \cdot F \] ... ...(V)\(^72\)

Generalizing this equation we get,

\[ D_n = D_n \left[ \frac{p_n}{p_f}, \alpha_n \left( \frac{p_t}{p_n}, \frac{p_t}{p_i}, n \right), F \right] = D_n \left( \frac{p_n}{p_f}, \alpha_n, F \right) \] ... ...(VI)

Such that, \( D_{a1} < 0, D_{a2} > 0 \) and \( D_{a3} > 0 \).

Using equation (IV) and using the assumption of a given marketable surplus of food grain, \( F = F^0 \) as in equation (11), equation (VI) can be modified as,

\[ D_n = D_n^0 \left[ \frac{p_n}{p_f}, \alpha_n^0 \left( \frac{p_t}{p_n}, F^0 \right) \right] = D_n^0 \left( \frac{p_n}{p_f} \right) \] ... ...(VIA)

With \( D_n^0 < 0 \).

This gives a downward sloping \( D_n^0 \) curve on the \('D_u - p_u / p_r'\) plane (see, figure 6 below).

Now, we consider determination of equilibrium values of the variables, \( \frac{p_u}{p_f} \), \( \alpha_u^0 \), \( D_u^0 \) and subsequently, \( S_u, Y_u, L_u \) and \( D_{iu} \) (notations have their specified meaning).

It is to be noted that the equilibrium value of the variable \( \frac{p_u}{p_f} \), i.e., \( \frac{p_u}{p_f}^* \) is effectively determined from supply-side conditions prevailing in informal sector.

Hence from equation (I) we get,

\[ \frac{p_u}{p_f}^* = \frac{\alpha_n^0}{1 - \beta_u^0} \] ... ...(IA)

Effectively, \( \frac{p_u}{p_f}^* \) is a constant.

Putting this equation (IA) in equation (IV) we get the equilibrium value of \( \alpha_u^0 \) as,

\[ \alpha_u^0 = \alpha_u^0 \left( \frac{p_t}{p_u} \right)^* \] ... ...(VII)

Now, using equations (IA), (VII) and (11), equation (V) can be written as,

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\(^72\) We should mention here that essentially, \( F = F (n, T) \), with \( F_t < 0 \) in very short-run as there is the possibility of a shock to the agricultural sector due to the sudden structural change captured as a rise in \( n \). However, in the medium-run, as supportive institutional changes are initiated along with land redistribution agricultural productivity is enhanced. Hence, in medium-run, \( F_t > 0 \). Furthermore, \( F_F > 0 \); where improvement in \( T \) signifies technological progress in agriculture. However, for the time being, \( n \) and \( T \) are kept unchanged.
From our characterization of demand-determined $S_u$ and that of $D_u$ as deduced from equation (VIA), we can find out the equilibrium value of $S_u$ as $S_u^*$ by solving the following equation:

$$S_u^* = D_u^0$$  \hspace{1cm} (VIII)

Substituting equation (VA) in the equilibrium condition (VIII) we get the equilibrium value of $S_u$ as,

$$S_u^* = D_u^0 = \left[ \frac{1 - \beta_u^0}{\alpha_u^0} \right] \cdot F^0$$  \hspace{1cm} (IX)

This solution could be shown graphically by using the $S_u$ and $D_u^0$ curves, as in figure 6. Thus, the demand-supply equilibrium for informal sector is represented as:

Figure 6: Informal sector equilibrium with perfectly elastic labour-supply.
Point E (figure 6) represents the solution (IX).

We know, definitionally, $S_u = (1 - \beta_u) \cdot Y_u$

Hence, with $\beta_u = \beta_u^0$, at equilibrium we have,

$Y_u^* = \left[ S_u / (1 - \beta_u^0) \right]$

Furthermore, using $l_u^0 = 1$ we have,

$Y_u^* = L_u^* = \left[ S_u^* / (1 - \beta_u^0) \right]$

Now, substituting in it the value of $S_u^*$ from equation (IX), we get,

$Y_u^* = L_u^* = \left[ (\alpha^0 \cdot F^0) / a_{\alpha}^0 \right] \quad \ldots \ldots (X)$

From this equation (X) we can also derive:

$D_{\alpha}^* = a_{\alpha}^0 \cdot L_u^* = \alpha^0 \cdot F^0 \quad \ldots \ldots (XI)$

This whole analysis will be found to be essential for the interaction between formal industry and agriculture, to which we turn now.

4.3.2. Interaction between Formal Industry, Agriculture and the Government

As in chapter 2, interaction between formal industry and agriculture is intermediated by the government through endogenously determined real domestic exports. Moreover, the equations (1) to (12A) and the propositions I, II and III, all of sections (2.2) and (2.3), in essence remain unchanged. The only revision that we have here is: instead of the whole amount of marketable surplus of food only a positive fraction $(1 - \alpha)$ is directed to formal sector. Thus equation (12) of chapter 2 capturing the interaction between formal industry and agriculture is modified to the general form:

$(1 - \alpha) \cdot F = D_f = a_r^0 \cdot \left[ I_r^0 + \theta \cdot (G_r^0 / p_0) \right] / (1 - \alpha) \quad \ldots \ldots (XII)$
Now, substituting from equations (11) and (VII) equation (XII) can be written as,

\[(1 - \alpha_0^a) \cdot F^\theta = D_f = \alpha_0^a \cdot \frac{[I^\theta + \theta(G^\theta/p_\theta)]}{(1 - \alpha)}\] .... ... (XIII)\[73\]

We can compare the two equilibrium conditions (12) and (XIII) pertaining to agriculture – formal industry interaction. This comparison can be done through an appropriate modification of figure 1. Thus, we get the following figure 7:

Figure 7: Food-market equilibria in the context of agriculture-formal industry interaction with and without the presence of informal sector.

When there is no informal sector the given amount of marketable surplus of food \((F^\theta)\) is directed only to formal industry. However, in presence of informal sector

\[73\] If we consider all the four sectors together aggregate food-market equilibrium could be derived through the combination of the equations (10.2), (11) and (XI) as, \(F^\theta = D_f + D_{fu}^* = \frac{\alpha_0^a \cdot (I^\theta + \theta(G^\theta/p_\theta))}{(1 - \alpha)} + [\alpha_0^a \cdot F^\theta].\) This equation could be rearranged to arrive at the equation (XIII) above.
formal industry faces shrinkage of food-supply to \([(1 - \alpha_0^0) \cdot F^0]\). As the supply-constraint becomes more stringent for formal sector, its potential employment and output reduce to \([(1 - \alpha_0^0) \cdot F^0 / a_0^0]\) from \([F^0 / a^0]\). This squeezing of the supply-side support is endogenously adjusted on the demand-side by the shrinkage in the size of real domestic exports or that of home market. This shrinkage occurs either through price-wage inflation given the initial \(G = G^0\), or through a proper reduction in this \(G\) (from \(G^0\) to \(G^1\), say) to avoid general inflation. Hence, in both these cases equilibrium size of real domestic exports, \(g^*\), derived in absence of informal sector (as in equation, 12A) is reduced unambiguously. Thus, there is simultaneous squeezing of both demand-side as well as supply-side supports for formal industry. Consequently, equilibrium levels of output and employment fall in this sector. Thus, ultimately, \(Y^*\) and \(L^*\) as derived in absence of informal sector (as in chapter 2), are reduced. Consequently, \(D_f^*\) also falls. Moreover, for \(G = G^0\), \(p_f^*\), \(w_m^*\) and \(p_l^*\) are increased accordingly from their initial levels due to the incorporation of informal sector.

First of all, increase in \(p_f^*\) can be determined by comparing the solutions of equations (12) and (XIII). This rise can also be visualised with the help of figure 7 as movement of equilibrium food-price from \(p_f^*\) to \(p_f^{*1}\), given \(G = G^0\). The consequent changes in \(w_m^*\) and \(p_l^*\) can be derived from equations (3) and (3.2) respectively. Subsequently, fall in \(g^*\) can also be derived by using equation (12A). Furthermore, given this \(p_f^{*1}\), i.e., given the equilibrium food-price in presence of
informal sector, and given equation (IA), we can derive the equilibrium value of $p_a$ as well\(^74\).

Summarising the above analysis we can say that the incorporation of informal sector into our overall analysis of agriculture-industry-government interlinkage squeezes down the equilibrium levels of output and employment in formal sector.

Proposition VII: Thus we have a basic conflict between formal and informal sectors in terms of employment and output in presence of the agricultural (supply) constraint.

4.4. Rise in Agricultural Productivity through Technical Progress

It is found in several surveys that there is a positive correlation between technological progress in agriculture (e.g., green revolution) and expansion of informal sector\(^75\). Increase in land-productivity in agriculture has been found to induce positively non-agricultural (specifically rural non-agricultural) activities. Rise in agricultural productivity can act as a boost for informal sector, especially, for the rural non-farm sector through backward and forward linkages\(^76\). Eventually, this rise in productivity initiates a 'virtuous cycle' through multiple linkages between these two sectors\(^77\). Thus, the growth of agricultural productivity creates surplus which helps the expansion of informal sector from supply-side. On the

\(^{74}\) In the 'market' for food only one price can exist given the mobility of output. Thus the formal as well as informal sectors purchase food at the same price.

\(^{75}\) See for example, Westergaard and Hossain, 1996.

other hand, productivity induced increase in rural incomes lead to the expansion of ‘market’ for informal sector’s output.  

Let us start with a rise in agricultural productivity through the improvement in technical efficiency without affecting the existing agrarian land distribution. Consequently, the aggregate supply of marketable surplus of food rises from $F = F^0$ (see equation, 11) to, say,

$$F = F^1$$  

(11.1)

However, land-distribution parameter, ‘$n$’ is unchanged at $n^0$ keeping equation (IV) unaltered. Now, for $F = F^1$ (as in equation, 11.1), equation (VIA) is modified accordingly as,

$$D_u = D_u^1 \left( \frac{p_u}{p_d}, \alpha_u^0 \left( \frac{p_u}{p_d} \right) \right) = D_u^1 \left( \frac{p_u}{p_d} \right)$$  

(VIB)

with $D_u^1 < 0$.

As $F^1 > F^0$, comparing equations (VIA) and (VIB) we can find, $D_u^1 > D_u^0$ for each $(p_u / p_d)$. That is, $D_u^0$ curve (of figure 6) shifts accordingly to $D_u^1$ as shown in figure 8. Consequently, equilibrium values of the relevant variables will change.

From the determination of equilibrium values $(p_u / p_d)^*$ and $\alpha_u^0^*$, as expressed in equations (IA) and (VII) respectively it is quite clear that these values do not change in the present case. However, equilibrium values of other relevant variables, such as, $D_u^1$, $S_u$, $Y_u$, $L_u$ and $D_d^0$ change accordingly.

Now, given equation (VIB), the equilibrium condition for the market for informal sector’s output, i.e., equation (VIII) is modified accordingly as,

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77 Mellor, 1976; Lanjouw and Lanjouw, 1995; Rani and Shylendra, 2002.

78 However, in this context, we should keep in mind that technical progress is not ‘scale – neutral’ and has redistributive effects. Though, for the time being, we assume away these consequences for the sake of simplicity of analysis.
Furthermore, using equations (IA) and (VII) and using the assumption $F = F_1$ (from equation, 11.1), equation (V) can be written as,

$$D_u^1* = [(1 - \beta_u^0) / \alpha_{n_0}^0] \cdot \alpha_u^0 \cdot F_1$$  

... ... ... (VB)

Substituting equation (VB) in equilibrium condition (VIIA), we get a modification of equation (IX) and accordingly the modified $S_u^*$ as:

$$S_u^{*1} = D_u^{*1} = [(1 - \beta_u^0) / \alpha_{n_0}^0] \cdot \alpha_u^0 \cdot F_1$$  

... ... ... (IXA)

This solution could be shown graphically by using the $S_u$ and $D_u^1$ curves as in figure 8 below:

![Figure 8: Effect of rise in agricultural productivity through technical progress on informal sector.](image)

Figure 8: Effect of rise in agricultural productivity through technical progress on informal sector.
Thus, demand-supply equilibrium for informal sector as expressed in equation (IXA) is represented by point E1 in figure 8. Furthermore, figure 8 also shows the initial demand-supply equilibrium for informal sector as point E. This point is identical to the equilibrium position of figure 6 above. Thus, the movement of equilibrium position from E to E1 and hence, that of the equilibrium value of $S_u$ from $S_u^*$ to $S_u^1$ in figure 8 are due to technical progress in agriculture.

Consequently, modifying equation (X) with $F = F^1$, we have,

$$Y_u^* = L_u^* = \frac{[\alpha_u^0 \cdot F^1]}{a_{fu}^0} \quad \text{... ... ...(XA)}$$

As $F^1 > F^0$, comparing equations (X) and (XA) we can say that $Y_u^* > Y_u^*$ and $L_u^* > L_u^*$. Thus, it is clear that due to rise in agricultural productivity through technical progress equilibrium values of output and employment in informal sector rise unambiguously.

Furthermore, the initial equilibrium value of aggregate food-demand from informal sector as expressed by equation (XI) is also modified in the present situation as:

$$D_{fu}^* = a_{fu}^0 \cdot L_u^* = a_{fu}^0 \cdot F^1 \quad \text{... ... ...(XIA)}$$

It is clear that $D_{fu}^* > D_{fu}^*$

Now we turn to the analysis of formal sector-agriculture interactions. As a consequence of changes in agriculture, formal sector activities also change accordingly. Given equation (VII) and condition (11.1) as $F = F^1$, the food-market equilibrium condition representing formal sector-agriculture interaction, i.e., equation (XII) can be rewritten as:

$$(1 - \alpha_u^0) \cdot F^1 = a_r^0 \cdot [I^0 + \theta \cdot (G^0 / p_d)] / (1 - \alpha) \quad \text{... ... ...(XIII A)}$$

This is clearly different from the equation (XIII) - the initial food-market equilibrium condition. Now following figure 3 and proposition III both of chapter
2, figure 7 will be accordingly modified as figure 9 below, to show the effects on formal sector for this increase in $F$.

By solving equation (XIII) we get the point, $E^1$ as the initial food-market equilibrium for formal industry-agriculture interaction in presence of informal sector. This point, $E^1$ is identical to that of figure 7. Consequently, we get $p^*_1$ (as in figure 7) and other equilibrium values as well. Now for $F = F^1 (> F^0)$, supply of food to formal industry rises from \([(1-\alpha_{a}^{0*}) \cdot F^0]\) to \([(1-\alpha_{a}^{0*}) \cdot F^1]\). Due to this relaxation of supply-constraint for formal sector the new equilibrium is at $E^3$ (figure 9) as the condition, $G = G^0$ remains unaltered. Consequently, we have $p^*_2$
(<p_t>^{1}) and hence lowering of the equilibrium values of w_m, p_r, and p_n as well. Thus, we get higher equilibrium values for g, Y, L and D_f than what we have in section 4.3.2. (last section) or what we have at E^1. On the other hand, if there is downward rigidity of prices, government’s nominal expenditure on formal sector’s output, G has to increase accordingly from G^{0} to say, G^{1} with increase in F. In such a case, the new food-demand curve will be D_f^{1} and the equilibrium position will be E^4 in figure 9. This above comparative static analysis could be generalized as below:

As agricultural supply-constraint is relaxed without changing the land-distribution pattern, not only informal sector but also formal industry benefit in real terms\(^{79}\). Moreover, the proportion of division of expenditure of agricultural income (and hence the proportion of allocation of the marketable surplus of food) between these two sectors remains unchanged even after the increase in food production. As a consequence, both these segments of industry appropriate the benefit of this increase in food production accordingly\(^{80}\). We should reiterate that, the absorption of this increased food supply will occur through two distinctly different processes for the two sectors, formal and informal. We can summarise the analysis of this section as:

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\(^{79}\) This result is consistent with empirical study as well; Saith 1992.

\(^{80}\) However, we must mention the case, where technical progress benefits the big farmers rather than the small ones. In such a situation, with technical progress there is rise in F along with a fall in \(\alpha_f\). Hence, though formal industry expands the impact on informal sector is ambiguous depending on the relative strengths of F increase and \(\alpha_f\) fall.
**Proposition VIII:** Rise in agricultural productivity only through technological progress initiates simultaneous expansion of both formal and informal sectors without extending the basic conflict between these two sectors (as mentioned in proposition, VII) any further. This leads to a general increase in the levels of employment.

### 4.5. Raising Agricultural Productivity through Land-Reforms

It is frequently argued that several informal sector products are cheaper than those produced in formal industry and these products are having very low income-elasticity of demand. Hence, the poor farmers are more closely linked with informal sector in terms of spending-pattern of their income. Consequently, excessive inequality in the system may lead to substantial leakage of potential demand away from the products of informal sector. On the other hand, a land-reform programme with specific emphasis on redistribution of land ownership rights towards small farmers and / or agricultural labourers can act as a boost for informal sector\(^{81}\). The equitable distribution of wealth is conducive to informal sector’s growth due to its typical consumption-linkage pattern\(^{82}\). Moreover, it is also seen that households with access to land enjoy relatively better access to non-agricultural employment\(^{83}\).

Thus for the development of an informal sector, not only the generation of agricultural surplus but also who gains from such supply generation is important.

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\(^{81}\) See, in this regard, Saith, 1991.

\(^{82}\) See, Lanjouw and Lanjouw, 1995.

\(^{83}\) See, Rani and Shylandra, 2002.
from the point of view of both demand and supply\textsuperscript{84}. Rise in agricultural productivity only through improvement in technical efficiency cannot raise demand for informal sector's output significantly. It is the increase in agricultural productivity based on the changes in institutional or structural arrangement, especially the ‘distributist land-reform’ that becomes more important. This is because, the large farmers are dependent more on the capital-intensive formal industry for different types of commodities. Hence, only an equitable land distribution could strengthen the otherwise weak linkage between agriculture and informal sector\textsuperscript{85}. Thus agrarian transformation with changing pattern of consumption demand could lead to an increase in demand for output produced in informal sector\textsuperscript{86}. We explicate these propositions in this current section.

Let us assume that the government introduces a policy of land-reforms that makes the land distribution pattern in agriculture more equitable\textsuperscript{87}. Consequently, the value of the index, \( n \) rises from \( n = n^0 \) (see equation, III.1) to, say,

\[
n = n^1 \quad \ldots \ldots \quad (\text{III.1A})
\]

Moreover, we also assume that along with land redistribution other complimentary measures as, technological and / or institutional rearrangements are introduced. This policy package is supposed to increase agricultural productivity. Hence, the level of aggregate supply of marketable surplus of food to non-agriculture, \( F \) rises from \( F = F^0 \) (see equation, 11) to, say,

\textsuperscript{84} See, Lanjouw and Lanjouw, 1995.
\textsuperscript{85} Ray, 1994.
\textsuperscript{86} Rani and Shylendra, 2002.
First, as the assumption \( n = n^0 \) (equation, III.1) is modified to \( n = n^1 \) (equation, III.1A), equation (IV) is modified accordingly:

\[ \alpha_u = \alpha_u^1 \left( \frac{p_r}{p_u}, \theta, n^1 \right) = \alpha_u^1 \left( \frac{p_r}{p_u} \right) \quad \ldots \quad \ldots \quad \text{(IVA)} \]

with, \( \alpha_u^1 > 0 \).

Moreover, comparing equations (IV) and (IVA) we find that with \( n^1 > n^0 \), \( \alpha_u^1 > \alpha_u^0 \) for each \( (p_r/p_u) \).

Now, with \( \alpha_u = \alpha_u^1 \) (equation, IVA) and \( F = F^1 \) (equation, 11.2) equation (VIA) is modified accordingly as,

\[ D_u = D_u^2 \left( \frac{p_u}{p_r}, \alpha_u^1 \left( \frac{p_u}{p_r}, F^1 \right) \right) = D_u^2 \left( \frac{p_u}{p_r} \right) \quad \ldots \quad \ldots \quad \text{(VIC)} \]

with, \( D_u^2 < 0 \).

Furthermore, as \( \alpha_u^1 > \alpha_u^0 \) and \( F^1 > F^0 \), comparing equations (VIA), (VIB) and (VIC) we find, \( D_u^2 > D_u^1 > D_u^0 \) for each \( (p_u/p_r) \). Consequently, \( D_u^0 \) curve (figure 6) shifts to the right to \( D_u^2 \) curve, as in figure 10. Consequently, the equilibrium values of the relevant variables will change. From the determination of the equilibrium value \( (p_u / p_r)^* \) as expressed in equation (IA), it is quite clear that this value does not change in the present case. However, the equilibrium values of other relevant variables, such as, \( D_u^2, S_u, Y_u, L_u \) and \( D_{uU} \) change accordingly.

Given the derivation of \( D_u = D_u^2 \), as in equation (VIC), the equilibrium condition (VIII) is modified accordingly as,

\[ S_u = D_u^2 \quad \ldots \quad \ldots \quad \text{(VIIIIB)} \]

\[ F = F^1 \quad \ldots \quad \ldots \quad (11.2) \]

\[ \text{93} \]

Although we assume an intra-sectoral redistribution of property, inter-sectoral income distribution and hence the agriculture–formal industry terms of trade are still kept unchanged. This fixity of the historically settled terms of trade between agriculture and formal industry, evolved through the interactions between different classes and institutions, can be rationalized as an
Now, putting equation (IA) in equation (TVA) we get a modification of the expression (VII) as,

\[
\alpha_a^{1*} = \alpha_a^{1*} \left[ \left( \frac{p_f}{p_u} \right)^*, 0, n^1 \right] = \alpha_a^{1*} \left[ \left( \frac{p_f}{p_u} \right)^* \right] \quad \ldots \ldots \text{(VIIA)}
\]

Subsequently, using equations (IA), (VIIA) and the assumption \( F = F^1 \) (equation 11.2) equation (V) can be written as,

\[
D_u^{2*} = \left[ (1 - \beta_u^0) / \alpha_u^0 \right] \cdot \alpha_a^{1*} \cdot F^1 \quad \ldots \ldots \text{(VC)}
\]

Substituting equation (VC) in the equilibrium condition (VIIIB) we get a modification of equation (IX). Accordingly the new equilibrium value for \( S_u \) becomes,

\[
S_u^{*2} = D_u^{2*} = \left[ (1 - \beta_u^0) / \alpha_u^0 \right] \cdot \alpha_a^{1*} \cdot F^1 \quad \ldots \ldots \text{(IXB)}
\]

This solution could be shown graphically by using the \( S_u \) and \( D_u^2 \) curves as in figure 10 below:

\[
\begin{align*}
(p_u/p_d) & \quad (p_u/p_d)^* \\
S_u & \quad S_u \quad S_u^{*2} = D_u^{2*} \quad S_u, D_u
\end{align*}
\]

**Figure 10:** Effect of rise in agricultural productivity through land-reforms on informal sector.

expression of the balance between the ‘agriculture first’ and ‘agriculture squeeze’ development strategies.
Thus demand-supply equilibrium for informal sector as expressed in equation (IXB) is represented by point E$^2$ in figure 10. Furthermore, figure 10 also shows the initial demand-supply equilibrium for informal sector as point E. This point E is identical to the equilibrium position of figure 6. Thus, the movement of equilibrium position from E to E$^2$ in figure 10 and that of the equilibrium value of $S_u$ from $S_u^*$ to $S_u^{*2}$ are due to land-reforms induced rise in agricultural productivity.

Moreover, with $\alpha_u^{1*}$ and $F^I$, derived from equations (VIIA) and (11.2) respectively, equation 10 is modified as,

$$Y_u^{*2} = L_u^{*2} = \frac{[\alpha_u^{1*} \cdot F^I]}{a_{\alpha}^0} \ldots \ldots \ldots \ldots (XB)$$

As $\alpha_u^{1*} > \alpha_u^{0*}$ and $F^I > F^0$, comparing equations (X), (XA) and (XB) we find,

$$Y_u^{*2} > Y_u^{*1} > Y_u^* \text{ and } L_u^{*2} > L_u^{*1} > L_u^*.$$  

Thus, due to rise in agricultural productivity through land-reforms equilibrium values of output and employment in informal sector rise unambiguously. Moreover, this expansion is much greater than what we got in the last case of simple technical progress in agriculture. Here, the impetus is coming from two sources: the rise in agricultural productivity in general as well as creation of more equitable land-distribution pattern. Thus, a comprehensive land-reforms policy could provide a boost for informal sector through two channels: Redistribution of land in favour of the poor strengthens demand as well as supply-side linkages between agriculture and informal sector. Moreover, rise in agricultural productivity as an additional effect of such a policy induces the expansion of informal sector still further. Hence, given the relevance of informal sector in the process of development of LDCs, land-reforms could be a complementary measure. As an
additional result, we can show that the initial equilibrium value of aggregate food-demand from informal sector as expressed by equation (VI) is modified in the present situation as,

\[ D_{m*2}^2 = a_{m0}^*. L_{n*2}^2 = a_{n1*}^* \cdot F^1 \]  

... ... (XII B)

It is clear that \( D_{m*2}^2 > D_{m*1}^2 > D_{m*0}^2 \).

Now, we turn to the analysis of formal industry-agriculture interaction in presence of informal sector. The equilibrium condition for this sector expressed in terms of food-market demand-supply interaction is modified due to the rise in agricultural productivity through land reforms.

Thus, given equations (VII A) and (11.2), the food market equilibrium condition representing formal sector-agriculture interaction, i.e., equation (XII) can be rewritten as:

\[(1 - \alpha_{n1*}) \cdot F^1 = a_{f0}^* \cdot [F^0 + \theta \cdot (G^0 / p_i)] / (1-\alpha) \]  

... ... (XIII B)

Comparison between equations (XIII) and (XIII B) generates interesting policy conflicts:

Simultaneous changes: from \( \alpha_{d0}^* \) to \( \alpha_{d1*}^* \) and from \( F^0 \) to \( F^1 \), both in the same (positive) direction generate ambiguous results for formal industry. The ambiguity could be explained easily if we compare the last equation (XIII B) with equation (XIII). If the left hand sides of these two equations are juxtaposed, we can have three situations:

\[(1 - \alpha_{n1*}) \cdot F^1 >, = or < (1 - \alpha_{d0}^*) \cdot F^0 \]

Hence, we can have three possible outcomes for formal sector:

(a) \( (1 - \alpha_{n1*}) \cdot F^1 > (1 - \alpha_{d0}^*) \cdot F^0 \)
This means a net increase in food-supply to formal industry. Supply-constraint is relaxed and hence through endogenous expansion in real domestic exports there is increase in the levels of output and employment in formal industry. The analysis will be similar to that of the last section (4.4) and figure 9. However, the results will be quantitatively different. The effects on the levels of output and employment in formal industry will be much less due to the accompanying rise in α_u along with the increase in F. The rise in α_u is partially counter-balancing the expansionary effect of increase in F. This is evident from the following results: In the last case (section 4.4; figure 9), level of supply of marketable surplus of food to formal sector increased to \([(1 - \alpha_u^0 \cdot F_1)]\) from \([(1 - \alpha_u^0 \cdot F_0)]\). However, in the present case, it is increased to \([(1 - \alpha_u^1 \cdot F_1)]\) from the same initial level. It is clear that \([(1 - \alpha_u^1 \cdot F_1)] < [1 - \alpha_u^0 \cdot F_1]\).

Thus, increase in food-supply to formal industry is less in the present situation than that in the previous case. The expansionary effect of rise in agricultural productivity induced by land-reforms is depressed due to redistribution of land in favour of the poor under this very policy of land-reforms itself. However, we have the overall expansion of the non-agricultural sectors, though formal industry benefits proportionately less.

\[(b) (1 - \alpha_u^1 \cdot F_1) = (1 - \alpha_u^0 \cdot F_0)\]

The food-supply-constraint for formal sector remains unchanged. Hence, we have absolutely no effect on formal industry. Consequently, the analysis corresponding to figure 7 is applicable in this case as well. The positive effect of rise in food-supply due to land-reforms is completely negated by the redistribution of land in
agriculture in favour of the poor. Only informal sector expands by a larger amount than that in the case (a) above.

\[(c) (1 - \alpha^1_a).F^1 < (1 - \alpha^0_a).F^0\]

If rise in F is outweighed by fall in \((1 - \alpha_a)\), there is net decrease in the level of food-supply to formal industry. Supply-constraint becomes more stringent and hence we have contraction of formal sector with a consequent fall in the level of endogenously determined real domestic exports. Food production increases, but its effect on formal sector is outweighed by that of the redistribution of land in favour of the land-poor. This is a typical case where the pattern of industrialisation having a bias towards informal industry is dependent on the pattern of agricultural growth. This particular case brings out an interesting policy-conflict. Rise in agricultural productivity through land-reforms induces the expansion of informal sector, though only at the cost of contraction of formal industry. Thus, the basic conflict between these two sectors, mentioned in proposition VII, is intensified in the present case.

It will be interesting to find out for the last three cases (a, b and c) the effects of rise in agricultural productivity through land-reforms on aggregate employment of non-agricultural sectors, formal and informal industries taken together. In the first case (a), both the segments of industry expand. Consequently, the level of aggregate industrial employment rises undoubtedly. In the second case (b), only informal sector's employment level increases without any change for formal industry. However, the third case (c) is more interesting. In this case, given \(\alpha^0_a\)
from equation (10) the contraction in employment (L) in formal sector due to contraction in food-supply is derived as:

$$\Delta L = \left[ (1 - \alpha_{a0}^* \cdot F^0 / a_{r0}^* \right] - \left[ (1 - \alpha_{a1}^* \cdot F^1 / a_{r0}^* \right]$$

$$= \left[ (\alpha_{a1}^* \cdot F^1 - \alpha_{a0}^* \cdot F^0) - (F^1 - F^0) \right] / a_{r0}^*$$

On the other hand, given $a_{a0}^0$, the volume of expansion of employment ($L_u$) in informal sector due to rise in demand as well as supply is given by:

$$\Delta L_u = \left[ (\alpha_{a1}^* \cdot F^1 / a_{a0}^0 \right] - \left[ (\alpha_{a0}^* \cdot F^0 / a_{a0}^0 \right]$$

$$= \left[ (\alpha_{a1}^* \cdot F^1 - \alpha_{a0}^* \cdot F^0) / a_{a0}^0 \right]$$

If we assume (quite logically), $a_{a0}^0 < a_{r0}^0$, then, it is clear that:

$$| \Delta L_u | > | \Delta L |$$

Hence, in this case (c), though formal sector's employment contracts, this contraction is outweighed by the expansion in employment in informal sector. Consequently, the level of aggregate employment of formal and informal sectors taken together ($= L_u + L$), or, that of non-agricultural sectors as a whole expands. Furthermore, this expansion is higher with the condition $a_{a0}^0 < a_{r0}^0$ than with $a_{a0}^0 = a_{r0}^0$.

**Proposition IX:** While informal sector undoubtedly benefits in terms of output and employment from a programme of land-reforms leading to a rise in agricultural productivity, the effect on formal industry is ambiguous. However, the aggregate level of employment of non-agricultural sectors expands.

88 See, Saith, 1992 for such a condition.

89 As a corollary to above analysis we can interpret a recent phenomenon of reorganisation of industrial structure in many of the developing countries. The above analysis showing a firm linkage between the growth of informal sector and the land-reforms policy could be viewed just from the other side. Recently, there has been a strong trend of ‘informalisation’ (Pais, 2002) which has evolved mainly from the perception that the path of formal industrialisation develops serious institutional, socio-economic and political problems. However, to sustain such a trend it is...
4.6. Rise in Agricultural Productivity with Labour Scarcity in Informal Sector

4.6.1. Perfectly Inelastic Labour-Supply

The phenomenon of growth of informal sector is not always seen as a positive process. It is argued that in many cases, this process is ‘distress-induced’ where poverty, population growth, depleting resource base and agricultural stagnation compel the labour force to diversify under duress. In such cases surplus population is forced (pushed) towards low-productivity, low-income informal activities. These activities are taken up for sheer survival. In such situations, not the volume of employment rather the low level of income and hence the question of poverty alleviation through diversification assume greater importance.

It is argued that rise in agricultural productivity not only increases the levels of output and employment in informal sector but also can raise its real income level. However, the outcome is dependent on elasticity of labour-supply in informal sector. In presence of surplus labour the former result is found to be prevalent (earlier sections), while scarcity of labour leads to the latter consequence to which we turn now. However, for that we need to modify our surplus labour assumption mentioned in the basic features of our extended model-economy [feature (c) of section (4.2.1.).] Hence, we start with an assumption of full-employment in informal sector. Due to this full-employment situation in informal sector the assumption of constancy of per capita food requirement, i.e., the assumption, $a_e =$
\(a_{fi0}\) needs to be changed significantly\(^{91}\). In absence of surplus labour per capita food requirement in informal sector turns out to be dependent on real income in terms of food. Thus,

\[ a_{fi} = a_{fi} \left( \frac{p_u}{p_f} \right) \]

such that \(a_{fi} > 0\).

Consequently, with this modification, equation (I) is also changed as,

\[ \left( \frac{p_u}{p_f} \right) = \frac{[a_{fi} (p_u/p_f)]}{(1 - \beta_u^5)} \]

\[ \Rightarrow \ldots \ldots (I'B) \]

Thus, we move away from our earlier assumption of fixity of terms of trade between informal sector and agriculture towards a flexible one\(^{92}\). This happens due to the assumption of absence of surplus labour in informal sector. Moreover, as a consequence of this very assumption we have fixity of \(L_u\) at, say, \(L_u0\). Now, given \(L_u = L_u0 = 1\), we get fixity of \(Y_u\) as well at, say, \(Y_u0\). Furthermore, with the assumption of \(\beta_u = \beta_u0\), fixity of \(Y_u\) generates a perfectly inelastic supply of net output, \(S_u\). Hence, this \(S_u\) curve will be a vertical line on \(\text{S}_u - \frac{p_u}{p_f}\) plane as in figure 11.

Suppose, \(S_u = S_u0\), a constant whose value is determined ultimately by the (limited) volume of labour-supply in this informal sector. Thus, instead of being demand-determined the levels of output and employment in informal sector turn out to be supply-determined\(^{93}\). On the other hand, variation in the level of food-supply to this informal sector is accommodated only through the variation in per capita food-consumption as the aggregate employment is fully inflexible. Given these supply-

\(^{90}\) Rani and Shylendra, 2002.

\(^{91}\) Absence of surplus labour invalidates the subsistence income assumption. Excess demand for labour pushes up the real income in terms of food in this informal sector.

\(^{92}\) The terms of trade between formal industry and agriculture is still assumed to be rigid.
side modifications, we now turn to demand-side analysis for agriculture-informal sector interlinkage, to demand-supply interactions evolving equilibrium in informal sector and subsequently, to the impact on this equilibrium value due to change in agricultural productivity.

The demand-side analysis for agriculture-informal sector interaction is similar to that of earlier sections. The initial demand-conditions for informal sector can be captured through equation (VIA) and through curve \( D_u^0 \) of figure 6. Essentially, \( D_u^0 \) of figure 6 is reproduced in figure 11. Hence, determination of the initial equilibrium values for informal sector is dependent on particular supply-conditions prevailing there. Given \( S_u = S_u^0 \) (as assumed in this section), the equilibrium condition for informal sector as expressed by equation (VIII) is modified as:

\[
S_u^0 = D_u^0 \left( \frac{p_u}{p_r} \right) \quad \ldots \ldots (VIIIC)
\]

Equation (VIIIC) solves for the initial equilibrium position \( E \) (figure 11) and hence, for \( \left( \frac{p_u}{p_r} \right)^* \).

\[\text{Figure 11: Effect of rise in agricultural productivity on informal sector in absence of surplus labour.}\]

\[93\text{ In this case, the interaction between informal sector and agriculture is 'closed' through variations of the corresponding terms-of-trade.}\]
Next, let us assume a rise in agricultural productivity only through technical progress without changing the land-distribution pattern in agriculture (as in section, 4.4.). Thus, we have a technological progress induced bumper crop situation. Just like section (4.4.), \( F^0 \) rises to \( F^1 \), while ‘\( n \)’ is unchanged at the initial level \( n = n^0 \).

Hence, reproducing equation (VIB) we have:

\[
D_{a1} = D_{a1}^0 \left( \frac{p_u}{p_f}, \alpha_a^0, F^1 \right) = D_a^1 \left( \frac{p_u}{p_f} \right) \quad \cdots \cdots \text{(VIB)}
\]

with \( D_{a1}^1 < 0 \).

We know, \( D_{a1} > D_{a0} \) for all \( \left( \frac{p}{p_f} \right) \) where, this \( D_{a0} \) is derived from equation (VIA).

Thus \( D_{a0} \) curve as reproduced from figure 6 shifts-up to \( D_{a1} \), as in figure 11 above.

Subsequently, as \( D_a \) shifts to \( D_{a1} \) due to rise in agricultural productivity we get the new equilibrium position for informal sector as \( E^1 \) in figure 11. Consequently, \( \left( \frac{p_u}{p_f} \right)_{1} \) is derived by solving the following equation:

\[
S_u^0 = D_{a1} \left( \frac{p_u}{p_f} \right)
\]

As equilibrium position for informal sector shifts from \( E \) to \( E^1 \), equilibrium value of \( \left( \frac{p_u}{p_f} \right) \) rises and hence, following equation (IV) that of \( \alpha_a^0 \) falls. Rise in \( \left( \frac{p_u}{p_f} \right) \) and fall in \( \alpha_a^0 \) reduce the value of \( D_a \), as is evident from equation (VI)\(^{94} \). Now, given \( S_a = S_u^0 \), initial rise in \( D_a \) due to rise in \( F \) is fully counter-balanced by this fall in \( D_a \). Thus, initial excess-demand for informal sector’s output is fully eliminated. However, even if \( \alpha_a \) falls rise in food-supply to informal sector is not fully counterbalanced by this decline. The net increase in this food-supply to informal sector is absorbed only through an increase in \( a_{fn} \) as \( \left( \frac{p_u}{p_f} \right) \) rises. This

\(^{94} \) The extent of rise in this terms of trade and its consequences essentially depend on the elasticity of demand for informal sector’s output with respect to its relative price.
could be analysed, first, generalizing equation (XI) with incorporation of the assumption, \( a_f = a_f (p_u/p_f) \) as,

\[
[a_f (p_u/p_f) \cdot L_o] = D_f = [\alpha_u (p_u/p_f) \cdot F]
\]

Hence, introducing change (\( \Delta \)) we get:

\[
\Delta [a_f (p_u/p_f) \cdot L_o] = \Delta D_f = \Delta [\alpha_u (p_u/p_f) \cdot F]
\]

From the above analysis we have \( \Delta a_f > 0 \) [due to a rise in \( p_u/p_f \)] though \( \Delta L_o = 0 \) (because of full-employment assumption). Hence,

\[
\Delta [a_f (p_u/p_f) \cdot L_o] = \Delta D_f > 0.
\]

Consequently, for demand-supply equality, as captured by the second equality of the last equation, we need to have:

\[
\Delta D_f = \Delta (\alpha_u \cdot F) > 0.
\]

The impact of \( \Delta F > 0 \) outweighs that of \( \Delta \alpha_u < 0 \) to have a net rise in the supply of food to informal sector.

Thus, given the condition of full-employment in informal sector, a rise in agricultural productivity raises the real income in terms of food for all the existing self-employed persons in this sector.

Now, we move to the interaction between formal sector and agriculture. We have already assumed that with rise in agricultural productivity aggregate supply of marketable surplus of food to formal sector rises from \( F^0 \) to \( F^1 \). Moreover, with this rise in agricultural productivity the equilibrium value of \( (p_u/p_f) \) rises from \( (p_u/p_f)^* \) to \( (p_u/p_f)^*1 \). Now, putting the value \( (p_u/p_f)^*1 \) in equation (VII) we get,

\[
\alpha_u^{0^1} = \alpha_u^{0^1} [(p_u/p_f)^*1]
\]

104
As \((p_u/p_f)^* < (p_u/p_f)^*1\), therefore, \(\alpha_u^0*1 < \alpha_u^0*\). Now, with \(\alpha_u = \alpha_u^0*1\) and \(F = F1\) equation (XIII) is modified as,

\[
(1 - \alpha_u^0*1) \cdot F1 = Df = a^0 \cdot [G^0 \cdot (G^0/p_0)] / (1-\alpha) 
\]

Comparing left-hand-sides of the equations (XIII), (XIIIA) and (XIIIIC) respectively we can say:

\[
(1 - \alpha_u^0*1) \cdot F1 > (1 - \alpha_u^0*1) \cdot F1 > (1 - \alpha_u^0*1) \cdot F0 
\]

Consequently, in the present case, the extent of relaxation of food-supply-constraint is maximum. This is because, both the rise in \(F\) and the consequent fall in \(\alpha_u\) are favourable changes for formal sector. Thus, there is rise in aggregate supply as well as the fraction of that aggregate exchanged with formal industry’s output.

Thus these dual changes unambiguously help this sector to expand. Moreover, this expansion will be more than what we have in section (4.4).

In this section we have few specific things to mention. Just like section 4.4, here also we have real expansion of formal sector, but informal sector gains in terms of real income and not in terms of output or employment. Moreover, the expansion in the former is higher in the present case than that in section (4.4). So benefits of rise in ‘\(F\)’ are not appropriated by formal and informal sectors in the same way and in the same proportion as that in section (4.4). All these happened because of the assumption of absence of surplus labour in the latter sector.

**Proposition X:** In absence of surplus labour in informal sector a rise in agricultural productivity raises real income in this sector without any effect on its levels of output and employment. However, formal sector expands significantly as along
with the general rise in $F$ we also have an endogenous reallocation of food-supply towards formal industry.

### 4.6.2. An Intermediate Case

Throughout the above analysis we have been dealing with two extreme assumptions on the conditions of labour-supply in informal sector: first, the existence of surplus labour (sections 4.2. through 4.5.) and secondly, full-employment (section 4.6.1.). Consequently, we had two extreme types of $S_u$ curves: either perfectly elastic or just the opposite, leading to two extreme types of impacts on informal sector due to change in agricultural productivity. Perhaps an intermediate case would be a more plausible one, where this $S_u$ curve is positively slopped in $\{S_u - p_u/p_f\}$ plane (see, figure 12 below).

Consequently, an expansionary impetus simultaneously raises both the real income through the variation of the terms-of-trade and the level of employment in the informal sector. However, the interaction between this sector and agriculture and its different variations, as discussed above, still remain qualitatively the same. The outcomes will differ only quantitatively depending on the elasticities of demand and supply for informal sector's output. Under such a situation, the level of $S_u$ depends on informal sector-agriculture terms of trade ($p_u/p_f$).

Hence, $S_u = S_u (p_u/p_f)$

with, $S_{u1} > 0$.

This gives us the upward rising $S_u$ curve (figure 12). On the other hand, the initial demand-condition for informal sector can be captured through equation (VIA) and through curve $D_u^0$ of figure 6. $D_u^0$ curve of figure 6 is reproduced in figure 12.
Under such a situation, the equilibrium condition for informal sector as expressed by equation (VIII) is modified to:

\[ S_u \left( \frac{p_u}{p_d} \right) = D_u^0 \left( \frac{p_u}{p_d} \right) \] … … …(VIIIID)

Equation (VIIIID) solves for the initial equilibrium position E (figure 12) and hence, for \( \left( \frac{p_u}{p_d} \right)^* \).

Putting \( \left( \frac{p_u}{p_d} \right)^* \) in equation (VIIIID) we get:

\[ S_u^* \left[ \left( \frac{p_u}{p_d} \right)^* \right] = D_u^0 \left[ \left( \frac{p_u}{p_d} \right)^* \right] \]

Now, these values could be determined by using equation (V) as:

\[ S_u^* \left[ \left( \frac{p_u}{p_d} \right)^* \right] = D_u^0 \left[ \left( \frac{p_u}{p_d} \right)^* \right] = \left( \frac{p_r}{p_u} \right)^* \cdot \alpha^* \left[ \left( \frac{p_r}{p_u} \right)^* \right] \cdot F \]

With \( \frac{p_r}{p_u} = 0 \), \( n = n^0 \), and \( F = F^0 \) as above, this expression boils down to:

\[ S_u^* \left[ \left( \frac{p_u}{p_d} \right)^* \right] = D_u^0 \left[ \left( \frac{p_u}{p_d} \right)^* \right] = \left( \frac{p_r}{p_u} \right)^* \cdot \alpha^0 \left[ \left( \frac{p_r}{p_u} \right)^* \right] \cdot F^0 \]

The equilibrium values of \( \left( \frac{p_u}{p_d} \right) \), \( S_u \) and \( D_u^0 \) are shown in figure 12 below.

![Figure 12: Informal sector equilibrium with elastic labour-supply.](image)
As in section (4.6.1.) here also,

\[ a_{fa} = a_{fs} (p_u / p_f) \]

with \( a_{fa1} > 0 \).

Consequently, given \((p_u / p_f)^*\), we can derive \( a_{fa}^* \).

Given the above modifications, we can also show that a rise in agricultural productivity with or without land-reforms raises simultaneously both the levels of employment and real income (in terms of food) in informal sector. The interaction between agriculture and informal sector still occurs through simple market mechanism with the additional effect on the terms of trade \((p_u/p_f)\). This leads only to certain quantitative modifications of the outcomes discussed in sections (4.4.) and (4.5.) above.

On the other hand, impacts of a rise in agricultural productivity through technical progress on formal sector’s output and employment will be qualitatively same as that derived in the previous section (4.6.1). However, in the present case, this impact will be quantitatively less than that of the previous one. This happens as in the present case, \( S_u \) is more elastic.

4.7. Interaction between Formal and Informal Sectors – Few Observations

A. In our above analysis (sections 4.2. through 4.6.) we have not taken into consideration the direct interaction between formal and informal sectors which has become an important area of concern in recent days. Though in most of the cases, the initial impetus for informal sector may come from agriculture, at a later stage the interaction between formal and informal sectors becomes important for the
growth of the latter. However, certain questions are raised regarding the nature of this interaction: whether this interaction is conflicting or complementary. Before going into these discussions we try to understand the different dimensions of linkages between the two sectors.

Informal sector can act as an important source of cheaper consumer goods for formal sector. Moreover, the former may produce semi-finished products as well as inputs for the latter sector which are processed or utilized in formal production. This process operates due to lack of access to market for informal sector. However, formal industry also benefits from such interactions through cost reductions and organizational advantages. To reap all these benefits ‘informalisation’ or ‘casualisation’ of certain parts of formal production have been taking place. Moreover, formal industry is also practising subcontracting with informal sector through ‘ancillarisation’ and ‘franchising contracts’. On the other hand, sometimes informal sector also has to depend on formal industry for production as well as consumption requirements.

B. Given these issues, using our basic construction of sections (4.2.) and (4.3.) we can analyse certain hypotheses. Let us start with a situation where all the three sectors: formal, informal and agriculture are in equilibrium. Now, we assume that a part of the income generated in formal sector is spent on informal sector’s output over and above the expenditure on food. Hence, a leakage of purchasing power from the former to the latter sector occurs.

We also assume that a part of the money received by informal sector from formal industry has to be spent on food. The other part is used for internal use by informal
sector to raise the level of its production and thereby to cater to the need of formal industry. Consequently, informal sector registers net 'export' vis-à-vis the other sectors: formal industry and agriculture and hence, it experiences a rise in demand. As a result, informal sector expands raising the level of demand for food. Now, given the aggregate food-supply-constraint, \( p_f \) rises. As \( p_f \) rises, given agriculture-formal industry terms of trade and given the level of nominal domestic exports, real domestic exports from formal industry falls. As a consequence, we have contraction of formal industry. Hence, under this situation of unbalanced trade between informal sector and the rest of the economy the former expands but only at the cost of formal sector, given the aggregate food-supply-constraint.

Thus the basic supply-side conflict mentioned in proposition VIII above intensifies through demand-side modifications. Moreover, though informal sector expands in terms of output and employment the real income in terms of food declines as \( p_u / p_f \) falls. This whole process could be explained by a rightward shift of \( S_u \) curve in figure (12).

C. Now we move to a different situation. Informal sector is assumed to spend the whole amount received from formal sector on both formal as well as agricultural sectors. Hence, the trade balance between informal sector and other two sectors becomes zero. Thus, there is no change in demand for informal sector's output. Implicitly, there is only a transfer of purchasing power from formal industry to agriculture. Food-supply-constraint remaining the same, we have no real impact on any of the three sectors irrespective of the trade balance between agriculture and formal industry. The outcome remains the same even if informal sector fully
spends back the money received from formal industry either on the latter or on agriculture. Thus the mere presence of informal sector and its simple interaction with formal industry generating a leakage of purchasing power from the latter do not necessarily initiate a demand driven conflict\textsuperscript{95} between these two sectors.

**Proposition XI:** Initiation of a demand driven conflict between formal and informal sectors crucially depends on the trade balance for informal sector. Though this new conflict is a demand driven one, it revolves essentially around the food-supply-constraint itself.

D. Using this analysis but reversing the argument we can also discuss the much-debated process of ‘de-industrialization’. How can formal industry expand at the cost of vast informal sector? Formal industry registers an ‘export-surplus’ vis-à-vis informal sector and thereby intensifies the supply-side conflict. Thus the demand-side policy of formal sector squeezes out informal economy in presence of the supply-constraint. This happens through a leftward shift of $S_a$ in figure (12).

E. Formal and informal sectors may also enter into certain ‘contracts’ leading to serious economic consequences. Formal contracting with informal sector and formal sector changing its own organizational setup through informalisation has become quite prevalent in the LDCs. In such situations, informal sector may produce semi-finished products as well as other inputs for formal sector which are then processed or utilized in formal production and subsequently marketed.

\textsuperscript{95} As mentioned in the literature.
This process operates due to lack of access to different markets for informal sector. Its interaction with formal sector provides it a way out. However, formal sector benefits from such interactions due to cost reductions and organizational as well as extra-economic advantages. To reap all these benefits informalisation or 'casualisation' of certain parts of formal production and also formal industry subcontracting with informal sector through 'ancillarisation' and 'franchising contracts' have become the dominant process. This 'neo-putting-out system' though beneficial to formal industry or formal institutions and agents entering into contracts with informal sector, in many cases, this process intensifies exploitation in the latter sector. Formal sector as the hierarchical superior extracts surplus from informal sector through its control over markets and in some situations using modern technology. Though this whole process expands employment potential of the economy, it may be at the cost of reduction of earnings in informal sector.

These are quite evident from our preceding analyses. Food-supply being constrained at \( F = F^0 \), the process of informalisation can sustain higher level of employment than that with only formal sector if we assume, \( a_n^0 < a_f^0 \), i.e., food requirement rate is reduced through informalisation. Thus informalisation raises employment potential of the economy from \( (F^0/ a_f^0) \) to \( (F^0/ a_n^0) \) but only at the cost of reduction of earnings in terms of food by \( (a_f^0 - a_n^0) \), i.e., only at the cost of intensification of exploitation.
4.8. Interaction between Informal Sector and Agriculture – the Role of the Government

A. Let us conceive of a situation where informal sector is not well developed due to lack of demand and supply-side linkages with other sectors. Government in this situation could encourage growth of informal sector through various policy measures. It may try to generate the possible linkages between informal sector and other sectors of the economy.

Let us start with the equilibrium position as described in section (4.3.). We assume that the government faced with a bumper crop situation executes a policy of 'food procurement' to check the fall of food-price. We also assume that after procuring the surplus food, instead of using it in a 'food for work' type programme, government distributes it among the potential producers to generate self-employment in informal sector96. Thus, government establishes supply-side linkage between informal sector and agriculture through transfer of surplus from the latter to the former97. Moreover, we presume that government also organizes the marketing of the commodities (surplus) produced in informal sector. However, in establishing these demand and supply-side linkages government faces a policy dilemma.

If government procures food from large farmers it raises demand for formal sector’s output. Due to this procurement, income of larger farmers rise and not that of the small ones. Hence, informal sector’s products remain unsold. This is

96 See, in this regard Saith, 1992.
because, the rich farmers are more closely linked with formal industry due to their particular demand pattern. To solve simultaneously the dual problems of supply and demand for informal sector procurement of food from the poor farmers (rather than from the large ones) is essential. Here, the government acts only as a facilitator of transactions and the outcome is the same as that we have in section (4.2.2.). This process occurs with simultaneous rightward shifts of both $D_u$ and $S_u$ curves, in figure (12).

As a variation of the last case, we can assume that government distributes procured food to create employment in informal sector in such a way that the amount of food received by each self-employed person is higher than the market determined equilibrium value of $a_t$. Moreover, government also sells the products of informal sector purchased against food to poor farmers at a relative price which is less than $(p_t/p_f)^*$. Hence, government has to provide subsidy in terms of food. Through this process government can ensure both food security for the unemployed and also cheaper industrial goods for the poor in agriculture. This process can be analysed in terms of figure (12). The ‘perceived’ $S_u$ curve for the poor farmers shifts to the right, while the actual $S_u$ remains the same. Farmers derive their equilibrium at the intersection of their demand curve and the perceived supply curve. The people in informal sector, however, get the corresponding price on their actual $S_u$ curve.

B. Next, we take up a situation where the government, instead of supporting informal production through procurement and distribution of food (as above),
directly subsidizes informal sector's products. As a consequence, the agricultural sector can purchase these products at a cheaper (market) rate. This means that the (p_f/p_t) falls from its initial equilibrium value (equation (1A)), leading to a rise in \( \alpha_u^{0*} \) (equation (7)). Accordingly, we have a (demand driven) redistribution of food-supply in favour of informal sector and away from formal industry. The results of this supply-side variation are the same as those found for the policy of land reforms, in section (4.4), with the additional adverse impact on the real income — in terms of food — in informal sector, as p_f/p_t falls.

C. Finally, we contemplate a situation where the government directly purchases informal sector’s products to support this sector on the demand-side. Now the money received by informal sector — from this ‘domestic exports’ — is assumed to be spent partially on food. The other part is retained for its internal use. Hence, this sector realizes ‘net exports’ vis-à-vis the rest of the economy leading to an increase in its demand. Consequently, there is expansion of employment in this sector in presence of surplus labour. As a result, demand for food rises from informal sector pushing up \([p_f/p_h]^*\), given the food constraint. This, in turn, raises \( \alpha_u^{0*} \). Thus there is (endogenous) reorientation of demand (and accordingly that of food-supply from agriculture) towards informal sector. The government through the sale of its procured goods of informal sector meets this excess demand for informal sector’s output from agriculture. On the other hand, we have squeezing of the food-supply for formal industry. Hence, informal sector expands only at the cost of formal industry and also with a decline in the real income in terms of food in the former
sector. This particular case is significant in the sense that it shows the (quantitative) intensification of the basic conflict of proposition VIII, originating from an exogenous expansion of demand for informal sector’s output from the government. However, though the initial impetus for this intensification comes from a rise in demand the essential cause remains the food constraint⁹⁹. This process can be shown by a rightward shift of \( S_a \) and its consequences following figure 12 above.

⁹⁹ This case is similar to the Keynesian crowding-out effect, where the expansion of informal sector – originating from the government intervention – leads to the contraction of the formal industry, in presence of the food-supply-constraint.