SOME SIMPLE ECONOMICS OF EXIMSCRIPS

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The purpose of the paper is to examine some of the economic implications of foreign trade policies adopted by the Government of India since July, 1991 (GOI, 1991a; GOI, 1991b). The basic objectives of these policies are restoration of equilibrium in the balance of payments and promotion of efficiency in the trading sector through reliance on market forces and elimination of most of the quantitative and discretionary controls which marked the earlier trade regimes in India.[1] Since the new export-import policy has a number of new and interesting features, it appears worthwhile to explore their significance in terms of explicit models so that the important factors determining crucial variables can be easily identified. However, in order to keep the model tractable we propose to consider only the major features of the system;[2] focus on the working of the market for Eximscrips and examine the implications of the new trade regime for allocative efficiency, equity and the balance of trade.

The salient features of the new export-import policy are summarized in Section I. Sections II to VII are devoted to a fairly detailed discussion of the behaviour of exports and imports in terms of models of the market for Eximscrips. The models seek to capture the first order impact of the measures adopted by the government and the macroeconomic feedback effects of changes in the trading sector are abstracted from. We comment in Sections VIII and IX on the efficacy of the new system in attaining the objectives of efficiency, equity and balance of payments viability. The final section provides an overview of the main results and suggests that the policy measures under the new regime do not constitute an optimum package, if foreign exchange is in fact the binding constraint on domestic output.

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1. For a discussion of these trade policies see Bhagwati and Desai (1970); Government of India (1978; 1984) and Panchamukhi (1978).

2. Anyway, the rate at which the Government of India has been making minor changes in the policy initiated on July 4, 1991 it is impossible to examine the implications of all the measures without losing sight of the major forces operating under the new regime and their overall impact.

I. The New Trade Regime : Major Features

Under the new trade policy steps have been taken to let the market mechanism work without quantitative restrictions on the exports and imports of a large number of items. The Indian rupee is, to be sure, not yet convertible and the exchange rate far from market clearing; but the system of Eximscrips introduced under the new policy package constitutes an important device for making the pattern and the volume of trade respond to the forces of demand and supply in both domestic and international markets. Introduction of Eximscrips has been supplemented by a 20 per cent devaluation of the rupee; withdrawal of cash compensatory support and most other types of export subsidy; a fairly substantial cut in import duties; abolition of quantitative controls over several categories of imports; and decanalization of exports and imports of quite a few items.[3] The overall message of the new policy seems to be that in future it is the market for Eximscrips - rather than customs duties, quantitative restrictions, direct subsidy on exports or the exchange rate - that will play the key role in containing imports, boosting exports and determining the composition of output in the trading sector. Hence the focus on Eximscrips in the present paper to the relative neglect of other policy measures.

Eximscrips are freely tradable entitlements to foreign exchange issued to exporters and the amount accruing to an exporter constitutes a fraction of his net or gross foreign exchange earning depending on the system he has opted or is eligible for. Under the System of Advance Licensing - to be called NEFS hereinafter - exporters are issued foreign currency (at the official rate of exchange) in order to finance their import of raw material, components or other intermediate inputs, and are entitled to Eximscrips to the tune of 30 per cent of their net foreign exchange earnings (i.e., their export earnings in excess of the foreign exchange obtained through Advance Licences). While only the net foreign exchange earners can avail of NEFS, all exporters can choose what may be called FOBS, under which the entitlement rate of Eximscrips

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3. So that they no longer remain the exclusive preserve of the State Trading Corportion and stand on the same footing as other tradables.

is 30 per cent of the FOB value of exports. Under this system exporters have to use their own Eximscrips or buy them from the market in order to finance their import of intermediate inputs. The Eximscrips rate on certain categories of exports, e.g., "value-added agricultural products, bulk drugs and marine products", etc. is 40 per cent of their FOB value.

Eximscrips were initially intended as the only means of importing "any item in the limited permissible list, the non-sensitive canalised list and all OGL items for actual users" (GOI, 1991b). Some amendments have later been made and free foreign exchange is now allocated for import of some items under OGL. Anyway, even under the initial scheme a fairly substantial amount of total import was outside the pale of the (Eximscrips) market mechanism - at least at the micro level. There is practically no scope for direct import of final consumption goods by private traders. "Bulk imports" consisting of imports of petroleum products, fertiliser, edible oil and other essential items continue to remain the exclusive prerogative of the government.[4] There are also provisions for licences for the import of raw material, components and spares by small scale industries and manufacturers of specified life saving drugs and equipments. Finally, capital goods imports are allowed only against foreign credit or equity participation.[5] Some of these deviations from the principle of free market mechanism have no doubt been dictated by considerations of equity. But the critical balance of payments situation is said to be the dominant reason behind most of the lingering vestiges of the older regime and these are intended to be abolished in the none too distant future with the expected gains in productivity under the new economic policy initiated by the government.

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4. Bulk imports accounted for a little over 41 per cent of total imports in 1989-90.

5. However, new production units and units undergoing substantial expansion are permitted to import capital goods so long as their import requirement does not exceed 25 per cent of the value of plant and machinery or Rs 2 crores, whichever is lower. Also, exporters are allowed to use Eximscrips earned on their own exports for import of capital goods. Because of the relative insignificance of imports under these provisions we propose to ignore them in our formal models.

II. Modelling the Trading Sector : Abstractions and Assumptions

The main features of the new trade regime outlined above suggest a fairly simple classification of the major economic magnitudes between parameters and endogenous variables. The important policy parameters in the system are the exchange rate and the Eximscrips rates[6] under the two systems, NEFS and FOBS. Bulk imports by the government may also be regarded as a policy parameter, at least as a first approximation.[7] We abstract from imports of capital goods and assume that all non-bulk imports consist of intermediate inputs required for the production of exportables, import-substitutes or non-tradables and are financed through foreign exchange allocation under NEFS or through Eximscrips.

In analysing the behaviour of the (non-government) economic agents participating in trade and the market for Eximscrips, it appears useful to classify producers among four groups, two of which operate on the demand and the rest on the supply side of the Eximscrips market. Industries under NEFS will necessarily figure on the supply side of the market while some producers under FOBS may also sell Eximscrips after meeting their own needs. The buyers in the market will consist of (i) exporters whose earnings of Eximscrips (under FOBS) are less than their import requirement; and (ii) producers who do not sell abroad, but require imported inputs to sustain their activity.

The models in the present paper are built around a few simplifying assumptions regarding the characteristics of the trading sector. All production functions are fixed coefficient. Variations in the amount of exports or imports do not affect significantly the prices of domestic inputs. This can be justified either in terms of underutilization of domestic resources or by the assumption that the scale of trading is not large enough

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6. Other policy parameters, e.g., tariff or export subsidy, can be introduced in the system without much difficulty.

7. Given the overall foreign exchange constraints, the target for bulk imports cannot, strictly speaking, be set independently of non-bulk imports, export earnings and foreign loans. We assume for the most part that foreign exchange receipts on all counts net of non-bulk imports are enough to meet bulk imports and servicing of external debt.

to affect the prices of domestic inputs used in the production of tradables. Such an assumption also enables us to abstract from the feedback effects of exports and imports due to the operation of the foreign trade multiplier[8] (in nominal or real terms). The implication is that the demand for tradables in the domestic market may be regarded as a function only of prices which in their turn are governed by the exchange rate, the premium on Eximscrips and other factors operating in the sphere of foreign trade. Again, the country is small in respect of imports, but the elasticity of the demand for exports is finite. Finally, the product markets as also the market for Eximscrips are competitive and prices are market clearing.

Notations and Symbols

For ready reference a list of notations widely used in the paper is given below.

P_d = price of output in terms of domestic currency;

P_f = price of output in terms of foreign currency;

c_d = cost of domestic inputs per unit of output;

P_m = price of imported input per unit of output;

$\hat{a}$ = amount of imported input per unit of output;

a = $\frac{P_m \hat{a}}{P_f}$ i.e., import content per unit of output, valued at international prices;

X = demand for export;

ϵ_x = elasticity of export demand;

ϵ_d = elasticity of domestic demand;

k = $\frac{X}{X + D}$;

S = supply of Eximscrips;

E = demand for Eximscrips;

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8. Note, however, that granted the stability conditions, the signs (though not the magnitude) of the first order effects on the external sector due to policy or other changes are not generally reversed even when interaction between the trading sector and the rest of the economy is explicitly allowed for.

δ = market premium (over the official exchange rate) on Eximscrips;

e = exchange rate expressed as domestic currency per unit of foreign currency;

λ = rate of entitlement of Eximscrips for exporters.

A variable with subscripts 1 and 2 will denote its value under NEFS and FOBS respectively. Thus P_{d1} stands for the domestic price of exportables of producers who are under NEFS; λ_2 = Eximscrips rate under FOBS. Similarly for other relevant variables. We shall, however, avoid using the subscripts 1 and 2 when there is no scope for ambiguity and the meaning of the variable is clear from the context.

III. Exporters' Choice and Price Relations

Before examining the behaviour of the market for Eximscrips and its (two-way) links with the trading sector we need first to identify the exporters who would be under FOBS and those who are eligible for, and prefer to be under, NEFS. To avail of NEFS an exporter has to be a net foreign exchange earner; but even if the exporter can satisfy this criterion, he may opt for FOBS if it yields him higher profits. Consider a producer faced with constant prices, a fixed exchange rate and a given premium on Eximscrips. Given his sales between the domestic and the foreign markets (in the ratio of 1-k and k respectively) profits per unit of output under FOBS, π_2, would be[9]

(1) $\pi_2 = [(1-k)P_d + (1-\lambda_2)keP_f] + \{\lambda_2 k P_f - P_m e\hat{\alpha}(1+\delta)\} - c_d$.

The expression within the third brackets on the r.h.s. of (1) denotes the average revenue without counting the premium on Eximscrips earned, while that within the second brackets indicates the average (net) earnings from Eximscrips after meeting the cost of imported inputs. Since under this system the exporter has to finance his imports through Eximscrips earned or bought

9. Note that so long as (i) the petroleum and other prices of bulk imports are a policy variable of the government, and (ii) these inputs are not rationed, we need not consider them separately in the formal model and the cost on account of them may be taken to form a part of c_d. Some implications of bulk imports are examined in Section IX.

from the market, both the average Eximscrips entitlement (λ_2 kP_f) and the cost of imported inputs ($P_m \hat{a}$) are to be evaluated at e(1+δ) and not e.

Under NEFS the exporter can buy foreign inputs at the official rate of exchange, but his Eximscrips entitlement is then on his net and not gross foreign exchange earnings. Under this system profits per unit of output, π_1, will be

(2) $\pi_1 = (1-k)P_d + ke\ P_f + \lambda_1\ (ke\ P_f - e\ P_m\hat{a})\delta - (eP_m\hat{a} + c_d)$

where the four expressions on the r.h.s. stand respectively for domestic sale proceeds, (gross) export earnings, net revenue from the sale of Eximscrips and cost of production (all expressed as ratios of total output). It is useful to rearrange (2) and express it in the following form:

(2a) $\pi_1 = (1-k)P_d + (k-\alpha)\ (1+\lambda_1\delta)e\ P_f - c_d$

where α, let us recall, is the import content of the exportable. Note that the effective foreign exchange rate for net exports is $(1+\lambda_1\delta)e$, rather than the official rate e. Needless to say, $k>\alpha$ is necessary for producers to be eligible for NEFS.

The exporter will choose NEFS or FOBS according as π_1 is greater or less than π_2[10]. From (1) and (2) it is clear that

(3) $\pi_1 \gtrless \pi_2$ according as $\dfrac{\alpha}{k} \gtrless \dfrac{\lambda_2-\lambda_1}{1-\lambda_1}$.

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10. The perceptive reader must have noticed that the relative profitability of the two systems is being judged not only at given prices, but also at a given value of k. Are not, one may legitimately ask, output and its division between the domestic and the foreign markets subject to choice on the part of a producer even under competitive conditions? The problem here is similar to that appearing in all competitive models with constant costs where total demand, but not its distribution among producers in an industry, is determinate. Hence, following the well established procedure, our analysis runs in terms of the behaviour of a representative producer, who is a price taker, has constant costs, but is faced with determinate demand at home and abroad. It is, of course, true that the individual producer will try to sell in that market where revenues are higher than costs. The problem is taken care of in our analysis of market equilibrium where, to anticipate the subsequent discussion, P_d and P_f are such that (i) profits from domestic as also foreign sales are eliminated; and (hence) (ii) there is no tendency for producers to try to change output or k both of which are then governed by demand conditions.

Before proceeding further we may take stock of one or two implications of the result just set forth. Note that when $\lambda_1 \geqslant \lambda_2$, the exporter will prefer NEFS irrespective of the import content or the proportion of foreign sale to output.[11] For a positive α and $\lambda_2 < \lambda_1$, NEFS dominates over FOBS since under the latter, the exporter has to finance his imports through Eximscrips and (with $\delta > 0$) the additional cost on account of this is not offset by a higher rate of Eximscrips entitlement. Condition (3) also suggests that irrespective of the differential between the two Eximscrips rates, exporters prefer to be under NEFS if $\alpha > k$, but the eligibility criterion will bar them from exercising their preference.[12]

We may thus distinguish among three groups of exporters:

(a) exporters who prefer, and are eligible for, NEFS;

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11. Under the Government of India's policy statement on July 4, 1991, except for some special categories of exports (noted earlier in the text), λ_2 was fixed at 30 per cent and λ_1 at 20 per cent (GOI, 1991a). Later, λ_1 has been raised to 30 per cent so that the problem of choice between the two systems has disappeared. Since λ_1 and λ_2 are important policy parameters we consider the more general case where the two need not be the same. Again, NEFS was intended primarily for financing production for export, not domestic sale. If the government can ensure that imports under NEFS are used exclusively for export production, the comparison, for purposes of choice, would have to be between the profitability of exports under the two systems. Using π_{1x} and π_{2x} to denote profits from one unit of export under NEFS and FOBS respectively, it is clear that

$$\pi_{1x} = [(1-\lambda_1)eP_f + \lambda_1 e(1+\delta)] - (c_d + e\hat{\alpha}P_m)$$

$$\pi_{2x} = [(1-\lambda_2)eP_f + \lambda_2 e(1+\delta)] - [c_d + e(1+\delta)\hat{\alpha}P_m].$$

Hence,

$\pi_{1x} \gtrless \pi_{2x}$ according as $\lambda_1 + \alpha \gtrless \lambda_2$.
Note that in this case, with $\alpha < 1$, all producers would be eligible for NEFS (when $\alpha > 1$, production, even for export, is not profitable). Again, except for producers with a negligible import content, all would prefer NEFS when the differential between λ_2 and λ_1 is small. It is, however, extremely difficult for the government to conduct a physical verification regarding the proportion of imports used for export production. Such verification, anyway, would entail a fairly time consuming bureaucratic procedure which the government is bent on getting rid of. Hence we have concentrated on that variant of NEFS where the eligibility criterion is only a positive net foreign exchange earning.

12. The reason for the exporter's preference for NEFS with $\alpha > k$ is not far to seek. Were he permitted to opt for the system, he could finance his entire imports at the official rate of exchange. With a negative foreign exchange earning he would no doubt be required to buy Eximscrips from the market in order to meet his obligations under the scheme. But this obligation would only be a fraction (λ_1) of his net outgo of foreign exchange. Hence the preference.

(b) those who chose FOBS even though their $\alpha<k$[13]; and

(c) exporters forced to be under FOBS since their $\alpha>k$.

Quite clearly, the entire supply of Eximscrips will come from the first two categories of exporters while the third group of exporters and producers catering exclusively to the domestic market have to buy Eximscrips in order to meet their requirement of imported inputs.

Domestic and Foreign Prices Under Competitive Conditions

While examining the problem of choice between the two systems we took P_d, P_f and k to be given [in (1) and (2)]. But if, under any system, P_d and P_f are such that <u>at the margin</u> the revenue accruing to the producer from the sale in the domestic and foreign markets differ, there will be a diversion of supply to the market yielding higher revenue. Such a diversion is profitable, since, whatever the system the exporter might be operating under, for any given amount of output, the total cost is independent of the ratio of foreign to domestic sales. While to a producer the average revenue from domestic sale is P_d, that from export is given by $e(1-\lambda)\ P_f + \lambda\ e(1+\delta)P_f$, where λ is the relevant rate of Eximscrips.[14] Hence, under competitive conditions

(4) $P_d = e(1-\lambda)P_f + \lambda\, e(1+\delta)P_f$

which, on simplification, yields

(4a) $$P_f = \frac{P_d}{(1+\lambda\,\delta)e}.$$

The premium on Eximscrips, it is thus clear, is to make foreign prices relatively lower and cause thereby an increase in exports relatively to domestic sales. Note also that since e and δ are the same for all producers, the relative differential between domestic and foreign prices of different exportables will be the same under NEFS and FOBS so long as the Eximscrips

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13. It may be of some interest to note that even if $\lambda_1<\lambda_2$ and the ratio of foreign sales to output (k) large, most exporters would prefer NEFS unless their import content (α) is quite small. Thus when $\lambda_1=.2$, $\lambda_2=.3$ (the rates fixed in the Policy Statement of July 4, 1991), and the producer caters exclusively to the foreign market, NEFS yields higher profits unless the import content is less than 12.5 per cent. For k=.5, α has to be less than 6.25 per cent to make FOBS more profitable.

14. Note that it is this rate and not the other features of FOBS or NEFS that are relevant in determining the revenue at the margin (to a producer) from sale abroad.

rates under the two systems are identical. However, the absolute levels of prices and the factors governing them differ significantly under the two schemes.

Given the conditions of competition, the equality of price and marginal cost ensures that under NEFS

(5) $P_{d1} = c_d + eP_m\hat{a}$,

where P_{d1} is the domestic price under NEFS. Thus P_{d1} is independent of λ_1 and δ, the reason being that producers can buy imported inputs at the official rate of exchange. So far as the foreign price, P_{f1}, is concerned, (4a) and (5) yield

(6) $$P_{f1} = \frac{c_d + eP_m\hat{a}}{(1+\lambda_1\delta)e},$$

so that a higher λ_1 or δ makes exportables cheaper in the foreign market.

Under FOBS the actual or the opportunity cost of foreign exchange is $(1+\delta)e$. Hence the domestic price P_{d2} and the foreign price P_{f2} under this system will be

(7) $P_{d2} = c_d + e(1+\delta)P_m\hat{a}$

(8) $$P_{f2} = \frac{c_d + e(1+\delta)P_m\hat{a}}{(1+\lambda_2\delta)e}$$

The implication is that both P_{d2} and P_{f2} are influenced by λ_2 and other factors operating in the market for Eximscrips.

IV. Market for Eximscrips : Supply Side

We are now in a position to identify the factors influencing the demand for and the supply of Eximscrips. The suppliers of Eximscrips are (a) all exporters under NEFS and (b) those opting for FOBS whose Eximscrips earnings are in excess of their import requirement. As our earlier analysis suggests, given the policy parameters e, λ_1 and λ_2, and the premium on Eximscrips, the choice between NEFS and FOBS by producers in different industries[15] and their

supply of or demand for Eximscrips will depend on the product prices in the two markets and hence on their c_d's and $\hat{\alpha}$'s.[16] To be more precise, assuming that the supply of Eximscrips is perfectly elastic at a given δ, we can obtain from (5) to (8) the competitive prices in a particular industry under the two systems. Since the domestic and the foreign demand are assumed to depend only on prices in the two markets, the system producers in the industry will operate under as also their supply of or demand for Eximscrips can be derived from the sales in the two markets at the relevant prices.[17] In other words, using the foreign and the domestic demand functions, price relations (5) to (8) and the condition (3), we can set forth the demand for or the supply of Eximscrips by producers of some exportable as a function of δ. Let us examine first the nature of the supply of Eximscrips in an industry operating under NEFS.

Supply of Eximscrips under NEFS

The supply of Eximscrips by an industry under NEFS, S_1, is given by

$$(9) \quad S_1 = \lambda_1[P_{f1}\, X(P_{f1}) - P_m\hat{\alpha}\{X(P_{f1}) + D(P_{d1})\}]$$
$$= \lambda_1(k_1 - \alpha_1)\, P_{f1}[X(.) + D(.)]$$

where $X(.)$ and $D(.)$ denote foreign and domestic sales respectively, while α_1 and k_1 represent the values of the two variables under NEFS. As we have already pointed out, given the parameters of the system, P_{f1} and P_{d1} and hence S_1 can be treated as functions of δ. Needless to say, (9) holds only if $k_1 > \alpha_1$ and (3) is satisfied.

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15. It is possible, however, that even in the same industry c_d and α may differ across firms. In this case the industry supply will no longer be perfectly elastic at a given value of δ and some surplus accrues to intra-marginal firms. We propose to abstract from the problem and work in terms of the behaviour of a representative firm in a particular industry.

16. When there is no scope for confusion we will use the same symbols, viz., c_d, $\hat{\alpha}$, etc. for different groups of producers.

17. Note that, given P_{d1} and P_{f1}, the values of α_1 and k_1 are fixed. Similarly for the values of α_2 and k_2. Hence (3) gives the system of Eximscrips relevant for the particular industry (at the given δ). See however Section V.

From (5) and (6) it is easy to see that

$$(10)\quad \frac{dP_{f1}}{d\delta} = -P_{f1}\,\frac{\lambda_1}{1+\lambda_1\,\delta}$$

$$(11)\quad \frac{dP_{d1}}{d\delta} = 0.$$

Since producers can finance their imports at the official exchange rate, a higher premium on Eximscrips does not affect P_{d1}, but reduces the price in the foreign market. The behaviour of S_1 with respect to a change in δ is obtained from (9) to (11).

$$(12)\quad \frac{dS_1}{d\delta} = \frac{\lambda_1 P_{f1}}{1+\lambda_1\delta}\,[\epsilon_x(1-\alpha_1)-1] \gtrless 0$$

according as $\epsilon_x \gtrless \frac{1}{1-\alpha_1}$

where ϵ_x is the elasticity of export demand. Thus even when the export demand is elastic, the supply of Eximscrips falls with an increase in δ if α_1 is sufficiently high. Note however that $\alpha_1 (\equiv P_m\hat{a}/P_{f1})$ is an endogenous variable and tends to rise with an increase in δ:

$$(13)\quad \frac{d\alpha_1}{d\delta} = \frac{d\alpha_1}{dP_{f1}}\,\frac{dP_{f1}}{d\delta} = \frac{\lambda_1\alpha_1}{P_{d1}} > 0 \qquad \text{[from (5) and (6)]}.$$

Indeed, since

$\lim P_{f1} = 0$ and $\lim \alpha_1 = \infty$,

$\delta \to \infty$. $\qquad P_{f1} \to 0$

$$(14)\quad \lim_{\delta\to\infty} \alpha_1 = \infty .$$

Again, from (10) and (11) it is clear that

$$(15)\quad \lim_{\delta\to\infty} k_1 \leq 1^{18}.$$

Relations (12) to (15) reveal two interesting features of the supply of Eximscrips under NEFS:

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18. $\lim_{\delta\to\infty} k<1$ if $X(0)$ is finite.

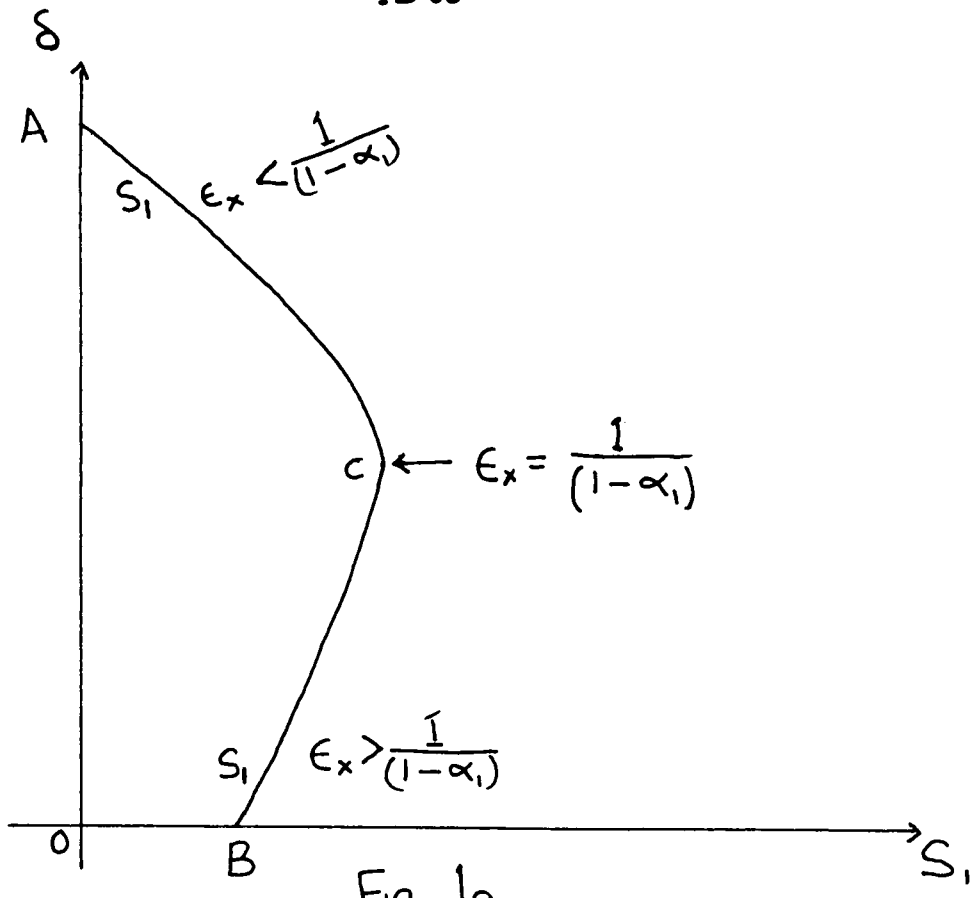
δ
A
S_1
$\epsilon_x < \frac{1}{(1-\alpha_1)}$
C
$\epsilon_x = \frac{1}{(1-\alpha_1)}$
S_1
$\epsilon_x > \frac{1}{(1-\alpha_1)}$
0
B
S_1

Fig 1a

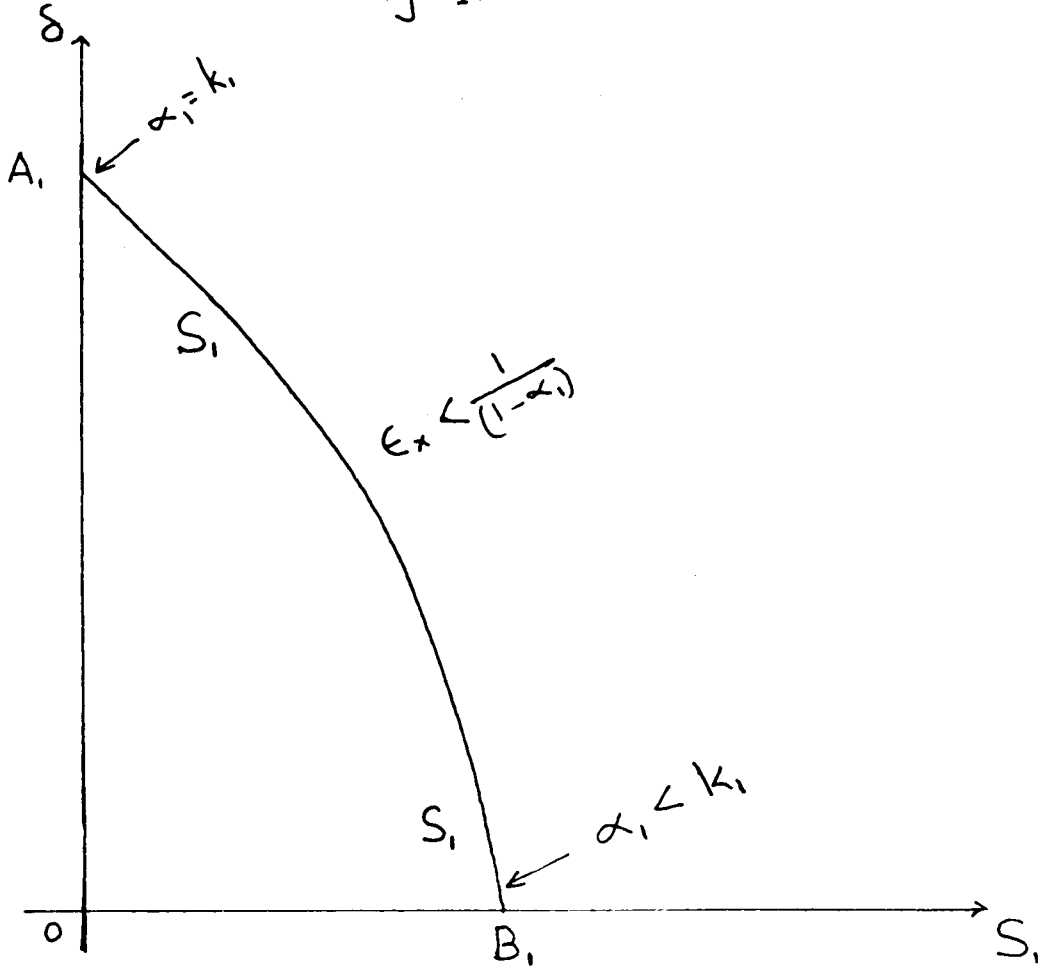
δ
$\alpha_1 = k_1$
A_1
S_1
$\epsilon_x < \frac{1}{(1-\alpha_1)}$
S_1
$\alpha_1 < k_1$
0
B_1
S_1

Fig 1b

(i) At sufficiently large values of δ, $dS_1/d\delta$ is negative so long as the elasticity of export demand is finite.

(ii) There exists some finite δ at which $\alpha_1=k_1$, i.e., $S_1 = 0$.

If ϵ_x is not sufficiently sensitive to changes in export prices, it is possible to characterize more precisely the nature of the supply of Eximscrips under NEFS. Let a variable with subscript zero stand for its value at $\delta=0$ and let us assume that at $\delta\geq 0$, NEFS is in force. An iso-elastic export demand function together with (12) to (15) ensures that

(i) the supply curve of Eximscrips, S_1S_1, must be backward bending beyond some δ if $\epsilon_x > 1/(1-\alpha_{10})$ (as shown in Fig.1a);

(ii) S_1S_1 will throughout be negatively sloped if $\epsilon_x<1/(1-\alpha_{10})$ (Fig. 1b); and

(iii) there exists some value of δ, say δ_m, at which $\alpha_1 = k_1$ and for $\delta>\delta_m\geq 0$ producers become ineligible for NEFS.[19]

If no restriction is put on the variation of ϵ_x with P_{f1}, there is nothing to prevent the supply curve from having multiple turning points or for δ_m (with $\alpha_1=k_1$) to have more than one value.[20]

<u>Supply of Eximscrips under FOBS</u>

Supply of Eximscrips by producers of some exportable under FOBS, S_2, would be

$$(16)\quad S_2 = \lambda_2 P_{f2} X(P_{f2}) - \hat{\alpha}P_m [X(P_{f2}) + D(P_{d2})]$$

$$= P_{f2} X(P_{f2}) \left[\lambda_2 - \frac{\alpha_2}{k_2}\right]$$

The condition for producers to be (net) suppliers of Eximscrips under FOBS thus appears more stringent than that for their counterparts under NEFS: for S_2 to be positive, not only is it necessary that $\alpha_2<k_2$, but α_2 should also be

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19. See, however, Section V.

20. However, by (6), (15) and the definition of α_1, it may be verified that $\delta_m \leq \delta^*_m$ where $\delta^*_m = \lambda_1 [\beta+e/(e-1)]$ with $\beta = c_d/eP_m\hat{\alpha}$, the ratio of domestic to foreign input content. In plain English, there is some maximum value of δ ($=\delta^*_m$) at which $\alpha_1=1$ and beyond which $\alpha_1>1$. Since both α_1 and k_1 rise monotonically with respect to δ, δ_m cannot exceed δ^*_m.

less than $\lambda_2 k_2$. However, the condition is in fact satisfied when FOBS is preferred (at prices prevailing under it), since by (3)[21]

$$(17)\quad \alpha_2 < \frac{\lambda_2 - \lambda_1}{1-\lambda_1} k_2 < \lambda_2 k_2 < \lambda_2.$$

We may (as in the case of S_1) treat S_2 as a function of δ via (7) and (8), which imply

$$(18)\quad \frac{dP_{f2}}{d\delta} = \frac{P_{f2}(\alpha_2 - \lambda_2)}{(1+\delta\lambda_2)} < 0$$

$$(19)\quad \frac{dP_{d2}}{d\delta} = eP_m\hat{\alpha} > 0$$

and confirm the intuitive conclusion that a higher premium on Eximscrips makes exports cheaper and domestic prices higher. Note however that (18) and (19) hold when exporters enjoy the same revenue at the margin on domestic and foreign sales.

From (16) we have

$$(20)\quad \frac{dS_2}{d\delta} = X(.)[\lambda_2 - \epsilon_x(\lambda_2 - \alpha_2)] \frac{dP_{f2}}{d\delta} - \hat{\alpha}P_m \frac{dD(.)}{dP_{d2}} \frac{dP_{d2}}{d\delta}.$$

Equations (18) to (20) yield the condition

$$(21)\quad \frac{dS_2}{d\delta} \gtrless 0 \text{ according as } k_2(\lambda_2 - \alpha_2)^2 [\epsilon_x - \lambda_2/(\lambda_2 - \alpha_2)] + (1-k_2)\alpha_2^2 c_d \gtrless 0$$

where ϵ_d is the elasticity of domestic demand.

For $\frac{dS_2}{d\delta} > 0$, it is thus sufficient that $\epsilon_x \geq \frac{\lambda_2}{\lambda_2 - \alpha_2}$.

As in the previous case, the supply curve of Eximscrips under FOBS (to be called S_2S_2 hereinafter) can be either upward or downward sloping. While large values of ϵ_x, ϵ_d and λ_2 tend to make S_2S_2 positively sloped, the impact of a large k_2 is not clear cut, though the effect is unambiguously negative when $\epsilon_x < \lambda_2/(\lambda_2 - \alpha_2)$.

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21. If $k_2 > \alpha_2 > \lambda_2 k_2$, exporters will like to be under NEFS for which they would also be eligible.

In order to examine the nature of S_2S_2 it is useful to consider the response of α_2 and k_2 to changes in δ:

$$(22)\quad \frac{d\alpha_2}{d\delta} = \frac{\alpha_2(\lambda_2 - \alpha_2)}{(1+\delta\lambda_2)} > 0 \qquad \text{[from (17)]}$$

$$(23)\quad \frac{dk_2}{d\delta} = \frac{\delta}{(1+\delta\lambda_2)}(\lambda_2-\alpha_2)(1-k_2)(\epsilon_x+\alpha_2\epsilon_d) > 0$$

so that

$$(24)\quad \frac{d(\alpha_2/k_2)}{d\delta} \gtrless 0 \text{ according to } \epsilon_x+\alpha_2\epsilon_d \lessgtr \frac{1}{1-k_2}.$$

It thus appears that even with isoelastic foreign and domestic demand functions, not only can S_2S_2 be upward or downward sloping, but the slope of the supply curve may undergo a change in sign with variations in δ.[22] The natural question to ask at this stage is: when $dS_2/(d\delta) < 0$, do exporters turn net buyers of Eximscrips when δ crosses some value? In order to answer the question it is useful to look at the limiting values of the relevant variables (obtained from (7), (8) and the definitions of α_2 and k_2):

$$\lim_{\delta \to \infty} P_{f2} = \frac{P_m\hat{\alpha}}{\lambda_2}$$

$$\lim_{\delta \to \infty} \alpha_2 = \lambda_2$$

$$(25)\quad \lim_{\delta \to \infty} P_{d2} = \infty$$

$$\lim_{\delta \to \infty} k_2 = 1$$

Relations (24) and (25) suggest some interesting features of the supply of Eximscrips under FOBS. First, if $dS_2/(d\delta) < 0$ (but $S_2 > 0$) at some δ, S_2 may become negative at some higher value of δ. Second, irrespective of the sign

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22. Consider, for example, the case where at $\delta=0$, k_2 is close to 1 and ϵ_x marginally greater than $\lambda_2/[\lambda_2 - \alpha_{20}]$ so that $dS_2/(d\delta) > 0$ (from 21), where a variable with a subscript 0 denotes its value at $\delta=0$. It is clear from (21) to (23) that for some positive value of $\delta=h$, α_2 would be approximated by $\alpha_{20} + \alpha_{20}(\lambda_2-\alpha_{20})\,h$ and $k_2 \approx 1$. Hence at $\delta=h$, $dS_2/(d\delta)$ turns negative since its sign would be the same as that of $\epsilon_x-\lambda_2/[1-\alpha_2]$. Again, suppose ϵ_d is relatively large, $\epsilon_x \approx 0$, and $(1-k_{20})\,\alpha^2_{20}\,\epsilon_d - k_{20}\,\lambda_2(\lambda_2-\alpha_{20}) = -\tau$ where τ is positive, but close to zero. Thus S_2S_2 is negatively sloped at $\delta=0$. However, since at $\delta\approx 0$, $dk_2/(d\delta)\approx 0$ and $d\alpha_2/(d\delta) \approx \alpha_{20}(\lambda_2 - \alpha_{20})$, it is clear that at some positive value of δ, the supply curve would become positively sloped.

of S_2 at relatively low values of δ, at large enough δ's exporters will be net sellers of Eximscrips. Third, S_2S_2 will be negatively sloped for large values of δ though S_2 remains positive. (See Appendix I.)

V. Switching and Reswitching of Regimes

Before turning to consider the nature of the demand for Eximscrips we should perhaps try to fill in an important gap in our analysis of the responsiveness of exporters to changes in the premium on Eximscrips. The analysis has been conducted on the tacit assumption that a group of exporters remains under the same system[23] for all values of δ.

As we show in Appendix II, the behaviour of a group of exporters will in fact be characterized by switching and reswitching between NEFS and FOBS or vice versa. To summarize the main results, if at $\delta=0$ exporters opt for NEFS, at some finite (positive) δ, (say) δ_1, there will be a switchover to FOBS because either it appears more attractive or α_1 becomes lower than k_1. However, if the producers switch over to FOBS at $\delta=\delta_1$, there will be a reswitching to NEFS at some $\delta>\delta_1$.

In interpreting the results relating to switching and reswitching of regimes, it is important to distinguish between the relative profitability of a system before and after the transition. The conclusions drawn above are based on an analysis of the relative attractiveness of the alternative systems at prices prevailing under the present system. Thus if for an increase in δ the changes in P_{f1} and P_{d1} are such that either $\alpha_1<k_1$ or $(\alpha_1/k_1) < (\lambda_2-\lambda_1)/(1-\lambda_1)$, the producers, we have suggested, will switch from NEFS to FOBS. However, after the switchover to FOBS prices would change and so can the relative profitability of the two systems. Since in their choice between NEFS and FOBS producers will generally be governed by the prevailing prices (under

23. Though we did note how they become ineligible for NEFS at large values of δ.

competitive conditions), for exporters in an industry the ranges of δ can be classified under three types.

i. There are ranges where one system dominates, i.e., at prices prevailing under both NEFS and FOBS the system chosen will be the same.

ii. There can be ranges of δ at which both the systems can prevail. If the exporters happen to be under (say) FOBS, α_2 and k_2 would be such that NEFS is ruled out. However, if the prevailing system is NEFS, the corresponding domestic and foreign prices ensure that the exporters do not switch over to FOBS.

iii. There may also be values of δ at which the existing system cannot be sustained. The implication is that while at the prices corresponding to the prevailing system a switchover to its alternative is called for, the new system will turn unattractive (or non-viable) after the prices have adjusted to it.

The existence of ranges of δ at which either of the two systems can be in force or the grass appears greener on the side of the fence creates serious problems in analysing the behaviour of the market for Eximscrips. Fortunately, if we ignore very large values of δ, these ranges can in general be taken to be fairly small. When δ is very large, at prices prevailing under NEFS $\alpha_1<k_1$; but when producers are under FOBS, $\alpha_2<k_2$ and NEFS appears more attractive. We propose to ignore these theoretical curiosums, consider only small variations in policy parameters and assume that in the relevant range of δ the system of Eximscrips the exporters in any industry will be under is unique.

VI. Demand for Eximscrips

For an anlaysis of the factors operating on the demand side we need to focus on only two categories of buyers of Eximscrips:

i. exporters under FOBS whose entitlement of Eximscrips is insufficient to meet their import requirement, i.e., for whom $a_2 > k_2 \lambda_2$ [vide (16)]; and

ii. producers of goods with a positive important content who cater exclusively to the domestic market.

Exporters' Demand for Eximscrips

Among the exporters required to buy Eximscrips it is useful to distinguish between two groups:

(a) exporters with $a_2 > \lambda_2 > k_2 \lambda_2$; and
(b) those with $\lambda_2 > a_2 > k_2 \lambda_2$.

The difference between the two groups turns on the fact that the first group of exporters, unlike their counterparts under (b), cannot become (at the given δ) net suppliers of Eximscrips even when their entire output is sold abroad. Let the demand for Eximscrips by the first and the second group of exporters be denoted by E^{da} and E^{db} respectively. From (18) and (19) it is clear that

under (a) $\frac{dP_{f2}}{d\delta} > 0$ and $\frac{dP_{d2}}{d\delta} > 0$; but
under (b), while $\frac{dP_{d2}}{d\delta} > 0$, $\frac{dP_{f2}}{d\delta} < 0$.

From (20) and (21) we then have[24]

(26) $\frac{dE^{da}}{d\delta} < 0$,

(27) $\frac{dE^{db}}{d\delta} \gtrless 0$.

A sufficient though not a necessary condition for $dE^{db}/d\delta$ to be negative is that $\epsilon_x \geq \lambda_2/(\lambda_2 - a_2)$. However, we cannot rule out $dE^{db}/d\delta$ from being positive if ϵ_x and ϵ_d are small.

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24. Note that S_2 is nothing but the negative of E^{da} or E^{db}. Hence (26) and (27).

Demand for Eximscrips by Other Producers

Producers who do not export have to buy Eximscrips in order to meet their entire demand for imported inputs. It is important to recognise that there are products[25] which do not figure as items of exports, but are used as intermediate inputs in the production of exportables. In the text we abstract from this source of demand for Eximscrips since the factors operating here are similar to those under FOBS (see Appendix III). The "other producers" are assumed to cater exclusively to the domestic market for final goods. Prices of these final goods, P_{d3}, will be given by the relation

$$(28) \quad P_{d3} = c_d + (1+\delta)\, e\hat{a}\, P_m.$$

The derived demand for Eximscrips by this group of producers is thus

$$(29) \quad E^{dc} = \hat{a}\, P_m\, D(P_{d3})$$

so that

$$(30) \quad \frac{dE^{dc}}{d\delta} < 0.$$

VII. Market for Eximscrips

We are now in a position to specify the equilibrium configuration in the market for Eximscrips and examine its impact on exports and imports. We have distinguished among five categories of producers buying or selling Eximscrips and their supply and demand have been denoted by S_1, S_2, E^{da}, E^{db}, and E^{dc}. Assuming that producers in different industries belonging to a given group are homogeneous in respect of their demand and cost conditions we use the five notations to represent the aggregate demand for or the supply of Eximscrips by

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25. The most important of which are electricity, transport and other services which require imported inputs including universal intermediates like petroleum products. Again, quite a few domestic firms produce components of exportable engineering goods, but do not sell abroad. In Section VIII we indicate the implications for allocative efficiency of indirect exports and import of universal intermediates.

producers in the respective groups. Since the prices of domestically produced goods, as shown in (5), (6), (7), (8) and (28), can be taken to be functions of δ and exogenous variables including the policy parameters, the various components of demand and supply may be expressed as functions of δ and e, and λ_1 or λ_2. The equilibrium condition for the Eximscrips market then assumes the following form:

$$(31)\quad S_1(\delta;\ \lambda_1,\ e) + S_2(\delta;\ \lambda_2,\ e) = E^{da}\ (\delta;\ \lambda_2,\ e) + E^{db}\ (\delta;\ \lambda_2,\ e) + E^{dc}\ (\delta;\ e)\ .$$

Our earlier analysis suggests that while an increase in δ reduces E^{da} and E^{dc}, the other three constituents of demand and supply may be negatively or positively sloped. For characterizing the nature of equilibrium and analysing the effects of policy parameters we thus need to specify the stability condition and hence the process of adjustment in the market for Eximscrips. It appears reasonable to assume that while the premium on Eximscrips moves up or down to clear the market almost instantaneously, the quantity of Eximscrips, related as it is to volume of exports and imports, would be much slower to adjust. Hence, for purposes of stability, we require that the demand curve for Eximscrips, E^dE^d, lies above or below the supply curve, SS, according as the quantity of Eximscrips is smaller or larger than its equilibrium value (Fig. 2).[26]

Changes in Policy Parameters

Without going into the tedious algebra we propose to indicate, in terms of simple diagrams, how δ and other variables in the system will be affected by changes in e, λ_1 or λ_2. But before that let us see how the different

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26. In other words, the relevant stability condition here is Marshallian. Note, however, that if the market for Eximscrips is influenced by expectations regarding the premia likely to prevail in future and if these expectations are somewhat inelastic, it is possible for quantity adjustments to be faster than those in δ. In this case the Walrisian stability condition will be the relevant one and some of the comparative static results of the text have to be modified. Again, for a more satisfactory analysis of the stability condition, it is necessary to specify the dynamics of adjustment in both the commodity markets and the market for Eximscrips.

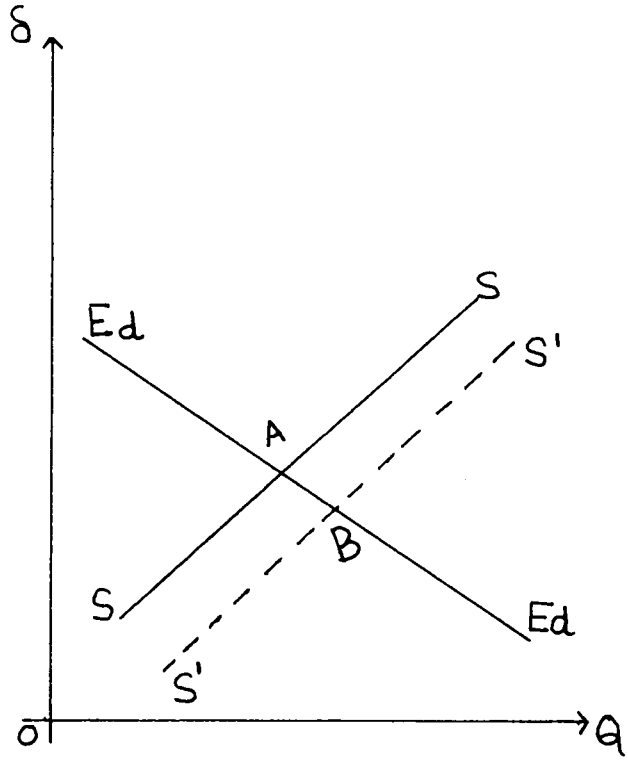

Fig. 2a

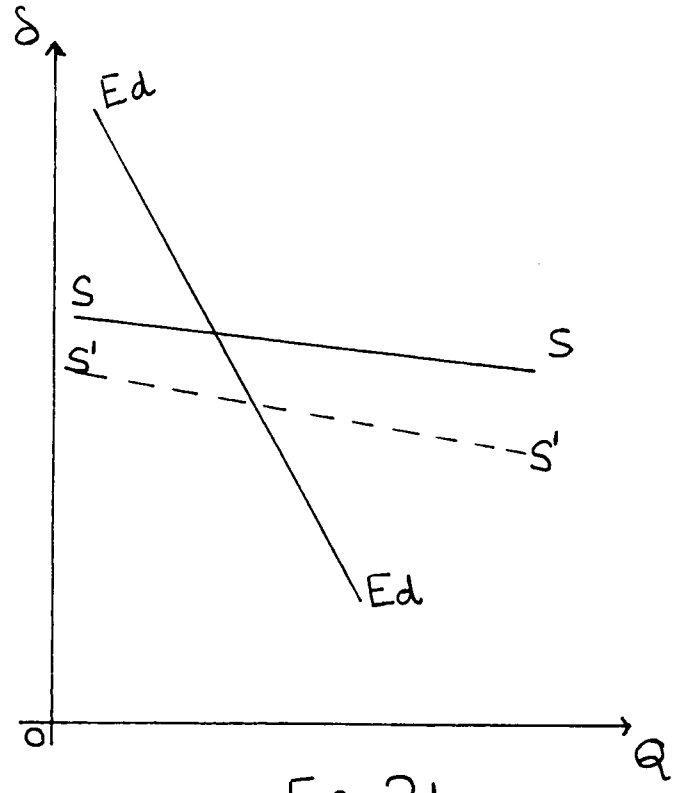

Fig. 2b

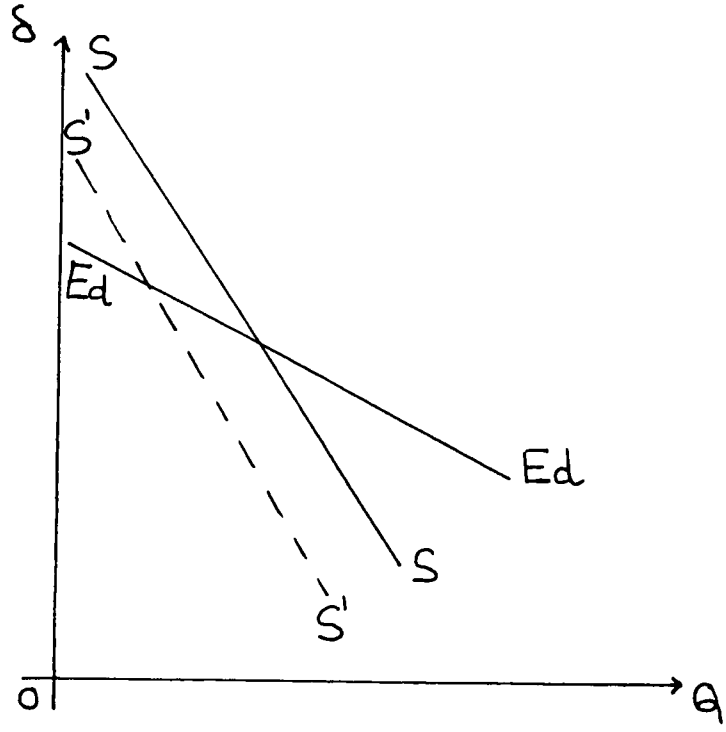

Fig. 2c

components of the supply and the demand curve will shift with respect to changes in policy parameters.

It is clear from (31) that λ_1 affects only S_1 S_1. Algebraic manipulation of (9), with δ held constant, yields

$$(32)\quad \frac{\partial S_1}{\partial \lambda_1} = P_{f1}\,(X+D)\left[(k_1-\alpha_1)+\lambda_1 k_1\,\frac{\delta}{1+\lambda_1\delta}\,\{\epsilon_x\,(1-\alpha_1)-1\}\right]$$

$$(33)\quad \frac{1}{\lambda_1}\cdot\frac{\partial S_1}{\partial e} = X\cdot\frac{c_d}{e}\,\frac{P_{f1}}{P_{d1}}\left[\{\epsilon_x(1-\alpha_1)-1\}+\epsilon_d\alpha_1\,\frac{1-k_1}{k_1}\,\frac{\beta_1}{1-\beta_1}\right]$$

where $\beta_1 = eP_m\hat{a}/(P_{d1})$, i.e., the import content measured in terms of domestic prices. Thus if $\epsilon_x \geq 1/(1-\alpha_1)$, i.e., if S_1S_1 is upward rising, an increase in λ_1 or e will cause a rightward displacement of S_1S_1. However, when S_1S_1 is negatively sloped, the shift may be in either direction, though our earlier analysis in Section III suggests that the shift will be rightward for relatively small and leftward for relatively large values of δ.

The three components of supply and demand, S_2, E^{da} and E^{db}, are governed by the same set of factors and the way these components are affected by changes in e and λ_2 can be ascertained from (16).

$$(34)\quad \frac{\partial S_2}{\partial e} = X\cdot\frac{c_d}{(1+\lambda_2\delta)e^2}\left[\{\epsilon_x(\lambda_2-\alpha_2)-\lambda_2\}+\epsilon_d\,\frac{1-k_2}{k_2}\,\alpha_2\,\frac{\beta_2}{1-\beta_2}\right]$$

$$(35)\quad \frac{\partial S_2}{\partial \lambda_2} = P_{f2}\;X\left[1+\frac{\delta}{1+\lambda_2\delta}\,\{\epsilon_x\,(\lambda_2-\alpha_2)-\lambda_2\}\right]$$

where $\beta_2 = \dfrac{e(1+\delta)P_m\hat{a}}{P_{d2}}$.

A few results regarding the effects of devaluation and an increase in λ_2 on the demand for and the supply of Eximscrips by exporters under FOBS are immediate from (34) and (35).

i. Since $\alpha_2 < \lambda_2 k_2 < \lambda_2$ for the (net) sellers of Eximscrips, $\epsilon_x \geq \lambda_2/(\lambda_2-\alpha_2)$ is sufficient to cause a rightward displacement of S_2S_2 following devaluation.

ii. With $\lambda_2 > \alpha_2$ for (net) suppliers, $\partial S_2 / \partial \lambda_2$ is positive even when $\epsilon_x = 0$ (since $\delta\lambda_2/(1+\lambda_2\delta)$ is a proper fraction). In other words, irrespective of whether S_2S_2 is upward rising or downward sloping, it will shift to the right with an increase in λ_2.

iii. So far as E^{db} is concerned, (with $\lambda_2 > \alpha_2$) for devaluation to reduce demand it is sufficient that $\epsilon_x \geq \lambda_2/(\lambda_2 - \alpha_2)$. For an increase in λ_2 the effect (on E^{db}) is unambiguously negative.

iv. For buyers under E^{da}, $\alpha_2 > \lambda_2$. Hence, as evident from (34) and (35), sufficiently large values of ϵ_x can cause an increase in demand with an increase in e or λ_2.

Relations (28) and (29) yield unambiguous results for E^{dc}.

$$(36) \quad \frac{\partial E^{dc}}{\partial e} < 0.$$

The effects of changes in policy parameters on the different components of demand and supply suggest the possibility of a wide variety of outcomes in respect of both the premium on, and the quantity of, Eximscrips traded in the market. The difficulty of predicting the outcome is compounded by the fact that even the stability condition relevant for the model is by no means simple to identify. Hence, while analysing the most likely effects of government intervention in the form of changes in λ_1, λ_2 or e we concentrate on what can perhaps be regarded as the typical case and leave it to the interested reader to work out the results in other cases.

Our analysis in Section III points clearly to the fact that under the prevailing system almost the entire supply of Eximscrips would come from exporters under NEFS. Again, it is the producers with $\alpha_2 > \lambda_2$ who are likely to be the dominant buyers of Eximscrips. Hence, for analysing the behaviour of the market for Eximscrips we may use a simplified version of the equilibrium condition (31).

(31a) $S_1(\delta;\ \lambda_1,\ e) = E^{d*}(\delta;\ \lambda_2,\ e)$.

The demand curve E^dE^d, is then negatively sloped, but the slope of the supply curve SS, may be positive or negative (Fig.2). We also assume that the relevant stability condition is Marshallian. Given these specifications, the effects of a change in λ_1 are fairly unambiguous. An increase in λ_1, as per (32), causes a rightward displacement of an upward rising supply curve, but the shift will in general be leftward when the supply curve is negatively sloped. Hence, irrespective of the nature of the supply curve, an increase in λ_1 will reduce δ and raise the quantity of Eximscrips, Q, traded in the market.[27]

In the typical situation, with a large ϵ_x and small ϵ_d, the demand for Eximscrips by producers under FOBS will tend to rise following an increase in λ_2. This raises the amount of Q, but the equilibrium δ goes up or down according as SS is upward rising or down sloping.[28] Since devaluation tends to reduce the demand for Eximscrips by producers under FOBS, the result depends crucially on the slope of the supply curve. For an upward rising supply curve, δ will generally fall, but Q may move either way. In case SS is backward bending, clear cut conclusions cannot be drawn for either δ or Q.

VIII. Eximscrips as an Instrument of Economic Policy : Efficiency and Equity

Our examination of the market for Eximscrips was primarily intended as a necessary step towards an evaluation of the efficacy of the new trade regime

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27. The fall in δ in the wake of a decline in supply (Fig. 2b) may appear odd at first sight, but the explanation is quite simple. With an increase in λ_1 the value of δ falls with larger availability of Eximscrips when prices and production have not yet been adjusted. Over time the fall in δ will tend to raise P_{x1} and hence boost further the availability of Eximscrips. Note, however, that with the Walras-Hicks stability condition, the effect will be exactly opposite: the rise in λ_1 will cause an increase in δ and reduce Q (when SS is negatively sloped)(Fig.2C).

28. Check that under the Walras-Hicks adjustment process, δ rises in both cases, but Q falls when SS is negatively sloped.

in attaining the basic objectives of efficiency, equity and viability of the balance of payments. However, the step has not been small, nor have the results been quite simple. Even so, the analysis does yield unambiguous conclusions in some important respect and it is worthwhile to draw up a tentative balance sheet of the system though the sign, not to speak of the magnitude, of all the major entries cannot be fully ascertained. Since the promotion of efficiency through the free market mechanism has formed the basic refrain of the new economic policy of the government, let us examine first how far the trade policy initiated since July 1991 satisfies the efficiency criteria and whether violations, if any, of some of these criteria have been dictated by considerations of equity or other well defined objectives.

We abstract from learning by doing, scale economies, the presence of transnationals and related problems and assume that the operation of unfettered market forces ensure efficiency, though not equity. Again, we need to assume that the fiscal machinery of the government is incapable of effecting costless transfers of income and wealth or of imposing differential taxes or subsidies on <u>final</u> products so as to attain the first or the second best alternative : it is not very difficult to see that the first or the second best solution would involve the use of only the exchange rate, direct taxes on income and wealth[29] or at most of indirect taxes and subsidies on final products. Even under these assumptions the system of Eximscrips and special provisions relating to certain categories of exports and imports seem to violate efficiency conditions. For assessing the scope for improvement in the existing set-up, it is necessary to know how and to what extent the conditions of optimality are not satisfied.

Import Intensity, Exports and Domestic Demand

Our analysis of the system of Eximscrips suggests three main sources of violation of the optimality principle. First, since the cost of foreign inputs are lower under NEFS, the import intensity in the industries availing of the system will tend to be higher than that under the first best solution.

29. Ignoring income-leisure preference.

By the same logic the import intensity in other industries will also tend to differ[30] from its optimum level. For a particular industry the choice in respect of the substitution of domestic for foreign inputs (or vice versa) has been abstracted from in the formal models with the assumption of fixed coefficient technology; but for most sectors the substitution possibilities between the two types of inputs may be quite important in the medium and the long run.

Second, the composition of exports under the new trade regime will not generally be in accord with the principle of comparative advantage or that of minimizing resource costs in earning foreign exchange or meeting the import requirements of the economy. To see how, consider two industries, i and j, the first operating under NEFS and the second under FOBS. Given this specification, instead of 1 and 2 we shall use the subscripts i and j respectively to denote the relevant variables in the two industries. From our earlier analysis the price ratio of the two goods in the foreign market, p_e, is given by:[31]

$$(36)\quad p_e \left[\equiv \frac{P_{ei}}{P_{ej}}\right] = \frac{c_{di} + eP_m\hat{a}_i}{c_{dj}+e(1+\delta)P_m\hat{a}_j} \cdot \frac{1+\lambda_2\delta}{1+\lambda_1\delta}.$$

Assuming that c_d's and $e(1+\delta)$ reflect the (opportunity) cost to the economy of domestic inputs and foreign exchange respectively, the ratio of marginal resource cost in the production of the two goods, R, would be

$$(37)\quad R = \frac{c_{di} + e\ (1+\delta)P_m\hat{a}_i}{c_{dj} + e\ (1+\delta)P_m\hat{a}_j}.$$

Were the export demand perfectly elastic, p_e would have given the marginal rate of substitution between the two goods in the export market in respect of earning foreign exchange (or command over importables). In this

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30. It will be higher or lower according as $e(1+\delta)$ is lower or higher than the optimum e with no distortion in the system. Note that while δ is indeed market clearing, the demand for Eximscrips is reduced through restrictions on imports of final goods. The supply is of course reduced by bulk imports at the official rate of exchange.

31. Given the fixity of import prices in terms of foreign currency, P_m can be regarded as uniform for all importers through appropriate choice of units.

case the allocation of resources in the two industries for purposes of exports must be such that p_e equals R;[32] otherwise, a reallocation of resources between the two industries will yield a higher foreign exchange earning. When the elasticities of export demand for i and j in the foreign market differs, the efficiency condition becomes

$$(38) \quad R = p_e \frac{1-1/\epsilon_{xi}}{1-1/\epsilon_{xj}}.$$

It is thus clear that the intra-export sector allocation of resources will be inefficient so long as ϵ_{xi} and ϵ_{xj} are not the same or the two industries differ in their Eximscrips entitlement rates and the mode of financing their imports.

A somewhat similar misallocation of resources in meeting domestic demand can also be discerned. The domestic price ratio of the two products i and j, p_d, is given by (5) and (7):

$$(39) \quad p_d \left[\equiv \frac{P_{di}}{P_{dj}}\right] = \frac{c_{di} + eP_m\hat{\alpha}_i}{c_{dj}+(1+\delta)eP_m\hat{\alpha}_j}.$$

Unless p_d equals R, the basket of goods produced to satisfy domestic demand will not be optimum. Here it is the dual (or multiple) mode of financing imports and the difference in the Eximscrips rate across producers that creates inefficiency in the allocation of resources. Note also that bulk imports and imports under OGL (at the official exchange rate) also generate inefficiency; but such imports can perhaps be justified on grounds of equity.

Bulk Imports and Indirect Import Intensity

There are, however, important problems with the system of bulk imports that need to be recognised at this stage. The overwhelming part of such

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32. A gap between R and p_e also implies inefficiency from the viewpoint of attaining Pareto optimality for the world as a whole; it is then possible to satisfy foreign demand more efficiently through a reallocation of resources in the export sector. However, we propose to consider the problem of efficiency only from the viewpoint of the domestic economy.

imports consists of universal intermediates like petroleum products subsidization of which creates inefficiency (without necessarily promoting equity). In laying down the optimality conditions it is then necessary to take into account both the direct and the indirect cost of these inputs. The relative resource cost, R_u, in the presence of universal intermediates would be

$$(37a)\quad R_u = \frac{c_{di} + e(1+\delta)\, P_m\, [\hat{a}_i + \hat{a}_{ui}]}{c_{dj} + e(1+\delta)\, P_m\, [\hat{a}_j + \hat{a}_{uj}]}$$

where $\hat{a}_{ui}$ and $\hat{a}_{uj}$ represent the direct-cum-indirect import-content of the universal intermediates in the two industries. The price-ratios of the two goods in the foreign and the domestic markets, denoted by p_{fu} and p_{du} respectively, are

$$(36a)\quad p_{fu} = \frac{c_{di} + eP_m\, (\hat{a}_i + \hat{a}_{ui})}{c_{dj} + eP_m\, [(1+\delta)\hat{a}_j + \hat{a}_{uj}]} \cdot \frac{1+\lambda_2\delta}{1+\lambda_1\delta}$$

$$(39a)\quad p_{du} = \frac{c_{di} + eP_m\, (\hat{a}_i + \hat{a}_{ui})}{c_{dj} + eP_m\, [(1+\delta)\hat{a}_j + \hat{a}_{uj}]}.$$

Import of universal intermediates at the official rate of exchange, it is thus clear, creates distortions in the use of resources within a sector as also in the composition of exports and the pattern of domestic absorption. In respect of industries under NEFS, the inefficiency in the use of resources will take the form, not of a substitution between universal intermediates and other imported inputs, but of a greater use of both these categories of inputs relatively to domestic resources. In other industries $\hat{a}_u$ will tend to be higher than its optimum level. The relation (37a), (36a) and (39a) also underline how bulk imports of universal intermediates create distortions in the allocation of resources among exportables and in the composition of domestic demand.

Again, producers who supply intermediate inputs to exporters are not entitled to Eximscrips and have to buy them from the market in order to finance their import requirements (see Appendix III). This creates two types of distortions in the system. First, prices of such domestically produced

inputs tend to rise so that there is a tendency for the substitution of foreign for domestic inputs. Such an increase in the import intensity of exportables violates the optimality condition for minimizing the resource cost of earning foreign exchange.[33] Second, the system of Eximscrips favours vertical integration of units producing exportables and intermediate inputs to enable firms to avail of the facility for cheap imports under NEFS. But this will generally create inefficiency in industrial organization by way of a suboptimal degree of vertical differentiation between different stages of production.

Equity Considerations

While the new export-import policy is based by and large on the principle of free market mechanism, some departures from the principle have been made on grounds of equity. The most important deviation from the principle consists in bulk imports and imports under OGL. However, most of the goods imported under these two heads are intermediate inputs and not items of final demand. Now, the direct-cum-indirect content of universal intermediates in the production of most commodities is far from transparent so that the beneficiaries of subsidization of these inputs could be quite different from the targeted ones. To the extent intermediate inputs permitted on concessional terms can be used for producing only "essential goods", the scheme may partly be justified on equity considerations. But if it is not difficult to identify the industries producing essential goods, the twin objectives of efficiency and equity are served better through output subsidy with no preferential treatment in respect of imports: there would then be no distortion in the use of domestic and foreign resources in the subsidized sectors.

Again, while import of almost all consumer goods is banned under the new trade regime, there is nothing to prevent the producers of durable consumer goods or other luxury items from importing intermediate inputs through Eximscrips. Indeed, such imports can have a crowding-out effect on the

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33. Compare (6) and (8) with (A.8) in Appendix III.

production of both essential goods and exportables (under FOES). The adverse impact of the diversion of imports for producing superfluities is likely to be magnified by the sharp reduction in import duties on a number of items which were previously subjected to very high tariffs and many of these items are in fact not used for producing goods for mass consumption.

It is generally recognised that taxes or subsidies on intermediate inputs, domestic or foreign, is always an inefficient way of promoting equity. Even when nothing can be done to make the system of direct taxes effective, the second best solution would be to impose differential taxes (or provide subsidy) on final products on the basis of their importance in meeting social needs. However, when administrative bottlenecks rule out taxation of, or subsidies on, final products, a third best solution could be tariffs or import subsidy. But then the differential customs duties or subsidies on imports have to be consistent with the structure of excise duties or sales tax levied in the domestic sector.

IX. Balance of Payments : Some Observations

A number of measures under the new trade regime have been adopted with a view to tackling the critical balance of payments situation faced by the country. The problem can be solved in a number of ways including a cutback in domestic absorption; but a satisfactory discussion of the subject cannot be undertaken without an open economy macroeconomic model.[34] In the present paper we propose to concentrate exclusively on the measures relating directly to the external sector and touch on macroeconomic or other considerations only to the extent the trade policies are (or seem to be) based on the government's presumption about the nature of the macroeconomic constraint in force.

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34. A project which we undertake as a complement to the current study.

Exchange Rate and Eximscrips Rates

The natural question to ask at this stage is, wherein lies the advantage of the system of Eximscrips over exchange rate adjustments for promoting exports and containing imports? While both the instruments can maintain a balance between imports and exports, a uniform exchange rate would eliminate the various types of distortions noted in Section VII. A uniform exchange rate needs no doubt to be supplemented by an appropriate structure of tariffs and export subsidies for taking advantage of differences in the elasticities of demand for various exportables, but such taxes or differential λ's across sectors are also necessary under the system of Eximscrips. Finally, the amount of information required to predict the outcome of changes in 's seems too large to make them reliable policy parameters for attaining the desired objectives.

However, there are advantages of the new policy instrument and in order to appreciate them it is useful to take stock of some of its major differences from the system where the exchange rate is used as the principal means of tackling the balance of payments problem. Eximscrips, let us note, creates a difference between the effective rate of exchange on exports and imports on the one hand and all other transactions on the current and capital account on the other hand. To be more specific, the effective exchange rate is lower for mittances and for repatriation of profits on foreign capital. A low official hange rate on remittances tends to contain domestic demand and the balance payment effect would not be adverse if the inflow of total remittances is t sensitive to the variation in the exchange rate. The problem, however, is that a wide gap between the black market rate of foreign exchange and the official exchange rate causes a diversion of remittances away from the official channel and enlarges thereby the deficit in the current account of the balance of payments. So far as repatriation of profits is concerned, the economy does save foreign exchange by keeping the official exchange rate at a low level, but this may discourage the flow of foreign equity capital so eagerly solicited by the government.[35]

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35. In respect of loan capital denominated in foreign currency, what is important is the perception regarding the balance of payments viability of the economy and not the expected movement in the exchange rate.

The main justification of the system of Eximscrips appears to be that while ensuring equilibrium in the balance of trade, it (the system) enables the government to maintain essential imports and prevent an increase in the prices of mass consumption goods. There is a built-in mechanism for limiting the amount of foreign exchange used for relatively less essential imports and the equilibrium in the balance of trade is attained through the market mechanism without bureaucratic controls or quantitative restrictions. Indeed, for maintaining a balance between exports and imports, not much reliance needs now to be placed on the efficiency of the Ministry or/and the Reserve Bank in monitoring the behaviour of the external sector and taking appropriate steps at the right moment. Note also that the system avoids the destabilizing tendencies of a freely fluctuating exchange rate generated through expectations regarding its change in the near future. The reason is that these destabilizing tendencies operate primarily through short-term capital movements and the changes in the premium on Eximscrips are not directly relevant to transactions other than merchandise trade.[36] Finally, the new trade policy seems to incorporate an effective means of providing subsidy on essential goods without any added burden on the Exchequer.

It is important to note, however, that the scheme does not provide a free lunch: the cost of subsidizing essential imports (including a number of items under OGL) is borne by exporters and importers[37] or by the domestic buyers of goods requiring foreign inputs. The system does not thus satisfy either the efficiency or the equity criterion. If food, transport or other necessities are to be subsidized, it is more efficient, as we have noted, to provide a subsidy on their output rather than on imported inputs. Even when the bulk imports consist of final goods, the cost of subsidy should be borne by the nation at large, and not by a particular group. In the absence of an

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36. However, the market for Eximscrips, as our analysis suggests, can be unstable even without any strong speculative forces at work.

37. While exporters can sell only a fraction of their foreign exchange earnings at the "market" price, the scarcity of Eximscrips probably raises their premium above what would have prevailed with 100 per cent entitlement.

effective system of direct taxes, the next best alternative of meeting the cost would be to raise both excise and customs duties[38] and not to opt for schemes of implicit taxes and subsidies — schemes which have constituted an important source of inefficiency of the Indian economy.

Foreign Exchange Constraint

While assessing the efficacy of the system of Eximscrips in ensuring external balance we have to recognise that limiting imports to export earnings cannot be the only consideration in devising trade policy. The policy has to be framed in the context of the major constraints under which the economy operates and of the distortions produced by the feasible instruments at the disposal of the government. Now, the presumption behind the export-import policy of the government seems to be that domestic production is limited by the availability of foreign inputs. In fact, both the government and an influential body of economists in India seem to think that the decline in, or stagnation of, industrial production cannot be avoided in the face of the foreign exchange crisis and the consequent shortage of imported inputs. What is more revealing for our purpose, the near total ban on the import of consumption and investment goods makes economic sense only when the availability of foreign inputs is the binding constraint on domestic production. Quite clearly, the objective of the ban cannot be protection which of necessity has to be selective. Nor can it otherwise be argued that the cost of importing the whole host of final goods is higher than that of producing them with intermediate inputs procured from abroad.

When imports of intermediate goods are insufficient to ensure full capacity utilization in the economy, any diversion of foreign exchange for buying final goods from outside the country causes a cutback in domestic production and employment. However, if the availability of foreign inputs is indeed the constraint limiting domestic output, quite a few changes in the current set of measures are perhaps called for. But apart from the overall

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38. Unless the prevailing rates of tariff, in relation to taxes on domestic goods, are above their optimum levels.

ban on the import of consumer goods, other measures under the new trade regime, e.g., the system of Eximscrips or the facility for import of capital goods against "foreign line of credit", do not appear designed for the optimal utilisation of the country's resources subject to the constraints operating in the foreign and the domestic sectors.[39]

X. Conclusion

The main objectives behind the new trade policy initiated by the Government of India are to

i. maintain equilibrium in the balance of trade;

ii. ensure the supply of essential imports without a steep rise in their prices in the domestic market; and

iii. promote efficiency through elimination of discretionary controls and reliance on market forces.

Though the exchange rate is fixed below the market clearing level, the existence of a fairly high premium on Eximscrips generally tends to provide a boost to exports at the expense of sales in the domestic market. Also, variations in the premium on Eximscrips in response to the forces of demand and supply provide a built-in mechanism for limiting imports to the foreign exchange earnings from exports without any active intervention by the authorities on the export-import front. At the same time, the use of a part of export earnings for financing essential imports at the official rate of exchange enables the government to keep their prices down in the domestic market without adding to the budgetary deficit.

However, the system of Eximscrips does not generally ensure maximization of net foreign exchange earnings through "promotion of exports". Indeed, even with an elastic demand for exportables in the foreign market, a steep rise in the premium on Eximscrips may cause a decline in both foreign exchange

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39. We examine the problem in some detail in the paper entitled "Trade Policy with a Binding Foreign Exchange Constraint".

accruing to the government and in the net supply of Eximscrips. Hence arises the necessity of adjusting the exchange rate and the Eximscrips rates in order to attain the desired goals.

Our analysis of the working of the market for Eximscrips suggests that the impact of changes in policy parameters on the premium or the quantity of Eximscrips is by no means easy to predict even when the changes in parameters are small. The information required for this turns out to be too detailed to permit effective policy intervention in the face of external or internal shocks. Again, in the absence of knowledgeable dealers the market for Eximscrips may be volatile and this in its turn will create disturbances in the trading sector. The problem is compounded by the existence of two systems of Eximscrips with the possibility of switching and reswitching from one system to another with variations in the premium on Eximscrips.

While the elimination of bureaucratic controls and quantitative restrictions have reduced transactions costs and market distortions, the dual system of Eximscrips violates some of the elementary principles of allocative efficiency. Under the prevailing system there is intra-export sector misallocation of resources in earning foreign exchange for the rest of the economy. There are also distortions in the use of resources for meeting domestic final demand. What is no less important, universal intermediates like petroleum are subsidized and there is discrimination between direct and indirect use of foreign inputs. This leads to misallocation of resources within and across industries and to a suboptimum degree of vertical differentiation among different stages of production.

In any overall assessment of the efficacy of the system of Eximscrips one has to take into account the constraints under which the economy functions. The perception of the government in this regard seems to be that the availability of foreign exchange is the binding constraint in meeting the demand for essential consumption goods and in financing the import of intermediate inputs for full capacity utilization in domestic industries. The operation of the market for Eximscrips maintains a balance between imports and

exports, but does not ensure that the amount of net foreign exchange available for meeting domestic consumption and investment is maximized, or that this amount is optionally allocated among competing requirements.

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Appendix

I

I. Supply of Eximscrips Under FOBS

Consider the case where at $\delta=\delta_1$ (Fig. A.1)

$$\frac{\alpha_2}{k_2} < \lambda_2; \quad \frac{dS_2}{d\delta} < 0; \text{ but } \epsilon_x + \alpha_2 \epsilon_d < \frac{1}{(1-k_2)} .$$

By (16) and (24) of the text, the supply of Eximscrips is positive at $\delta=\delta_1$, but with an increase in δ the supply tends to fall along with a rise in α_2/k_2, as shown in Fig. A.1. There may then be a value of δ ($=\delta_2$ in Fig.A.1) at which α_2/k_2 crosses λ_2 so that at $\delta>\delta_2+\tau_1$ (with τ_1 sufficiently small) the exporters become net buyers of Eximscrips. However, from (25) and (24) it is obvious that at sufficiently large values of δ, α_2/k_2 must rise and tend towards λ_2 so that in this range of δ, the value of α_2/k_2 must be less than λ_2. Hence, there must be some value of $\delta=\delta_3$ (Fig.A.1) such at $\delta+\tau_2>\delta_3>\delta_2$ (with τ_2 sufficiently small) $S_2>0$. Finally, as $\delta\to\infty$, by (25) and (21)

$$\text{sign} \left| \frac{dS_2}{d\delta} \right| = \text{sign} \mid -k_2 \lambda_2 \mid < 0, \quad \text{but } S_2>0.$$

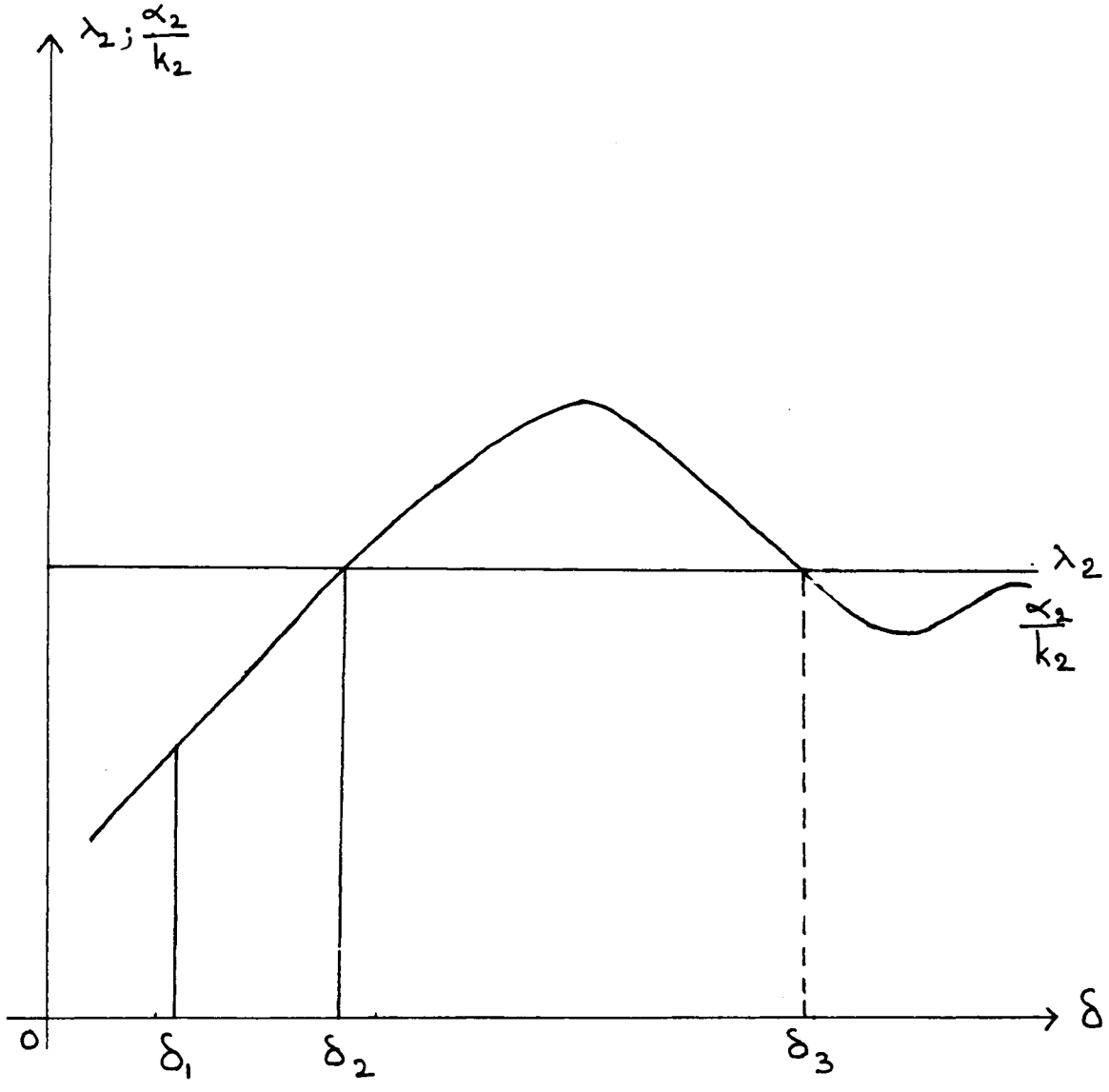

Fig A.1

Appendix
II

Transition Between NEFS and FOBS

Switching From NEFS To FOBS

Consider the case where NEFS is chosen [with $(\alpha_1/k_1) > (\lambda_2-\lambda_1)/(1-\lambda_1)$ and $\alpha_1<k_1$] at $\delta\approx 0$. Using (5), (6) and definitions of α_1 and k_1 we have the condition

(A.1) $\dfrac{d}{d\delta}\left[\dfrac{\alpha_1}{k_1}\right] \gtrless 0$ according as $\epsilon_w \lesssim \dfrac{1}{1-k_1}$.

From (A.1), (3), (12), (14) and (15) we may put forth a few simple propositions regarding the possibilities of the switchover from NEFS to FOB as δ assumes larger and larger values:

i. As already indicated in the text, there must exist a value of δ above which exporters become ineligible for NEFS and hence have to operate under FOBS.

ii. If $\epsilon_w < 1/(1-\alpha_1)$ at $\delta\approx 0$, i.e., S_1S_1 is negatively sloped, switchover to FOBS cannot occur with a rise in δ before α_1 equals k_1 (at B in Fig.1b).

iii. If $1/(1-k_1)>\epsilon_w>1/(1-\alpha_1)$ at $\delta\approx 0$, switchover with positive S_1 is still not possible. Note that in this case before the switchover takes place, by (13) and (14), the slope of S_1S_1 turns from positive to negative at some value of δ.

Propositions (ii) and (iii) together imply that $\epsilon_w<1/(1-k_1)$ at $\delta\approx 0$ is sufficient to rule out any switchover with an increase in δ until exporters become ineligible for NEFS.

iv. If $\epsilon_w>1/(1-k_1)$ at $\delta\approx 0$, switchover (with $k_1>\alpha_1$) <u>may</u> occur with α_1/k_1 falling below $(\lambda_2-\lambda_1)/(1-\lambda_1)$ at some positive δ. However, even in

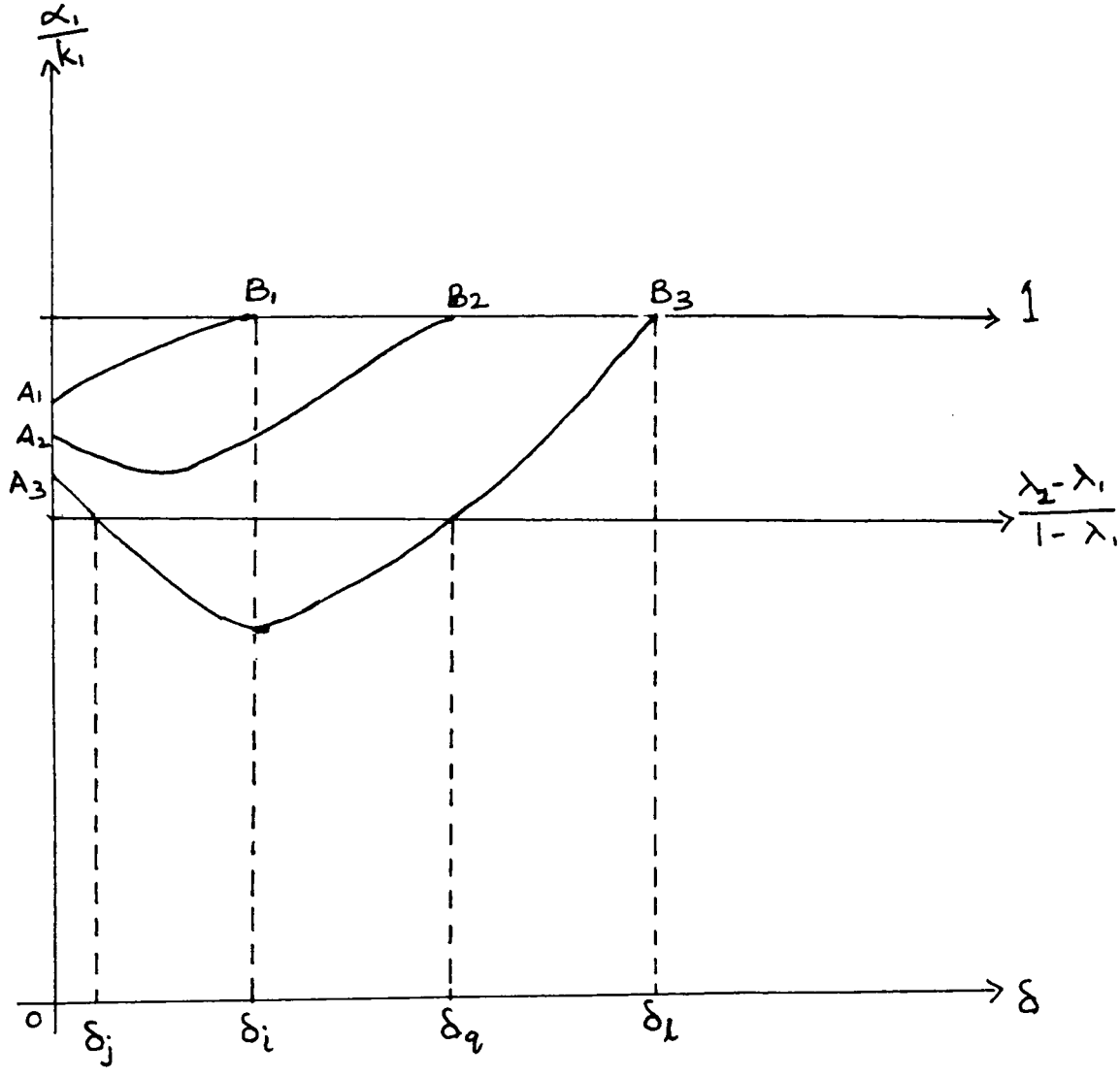
$\frac{\alpha_1}{k_1}$
B_1
B_2
B_3
1
A_1
A_2
A_3
$\frac{\lambda_2 - \lambda_1}{1 - \lambda_1}$
0
δ_j
δ_i
δ_q
δ_l
δ

Fig A.2

this case, α_1/k_1 must rise eventually with an increase in δ so that if producers do not opt for FOBS though π_2 has exceeded π_1, at some large enough value of δ they will find NEFS more attractive.

The propositions are illustrated in Fig.A.2 where A_1B_1, A_2B_2 and A_3B_3 show the possible behaviour of α_1/k_1 at different values of δ. A_1B_1 corresponds to proposition (ii) where $\epsilon_x<1/(1-k_1)$ at $\delta\approx 0$. In this case, by (A.1), (14), (15) and by virtue of the fact that $(dk_1/d\delta)>0$, as δ rises, there will be a monotonic increase in α_1/k_1 until it equals unity at some finite value of δ (at B_1). A_2B_2 and A_3B_3 show two possibilities when $\epsilon_x>1/(1-k_1)$ at $\delta\approx 0$. In this case by (A.1), (14) and (15), α_1/k_1 falls initially and then rises till α_1 equals k_1. A_2B_2 depicts the case where the minimum value attained by α_1/k_1 is larger than $(\lambda_2-\lambda_1)/(1-\lambda_1)$ so that no switchover to FOBS occurs before B_2. The other possibility is illustrated by A_3B_3 where at $\delta>\delta_3+\tau$ (with τ positive but close to zero) exporters opt for FOBS; but no such change of regime occurs if there is a jump in δ from $\delta_3-\tau$ to $\delta_4+\tau$. Needless to say, exporters have to be under FOBS at $\delta=\delta_1+\tau$.

<u>Switching from FOBS to NEFS</u>

Assume that FOBS is preferred at some $\delta=\delta_1$ (Fig.A.3). Using (22), (23) and (25) we indicate in Fig.A.3 the behaviour of α_2, $k_2\lambda_2$ and $[k_2(\lambda_2-\lambda_1)]/(1-\lambda_1)$ with variations in δ. It is clear that there exists some finite value of $\delta=\delta^*>\delta_1$ such that at $\delta=\delta^*+\tau$

$$(A.2)\quad \lambda_2 > k_2\lambda_2 > \alpha_2 > k_2\frac{\lambda_2-\lambda_1}{1-\lambda_1}$$

so that exporters prefer NEFS and would be eligible for it. So far as the behaviour of S_2 in the range $\delta_1 \le \delta \le \delta^*$ is concerned, it may easily be checked [from (21), (22), (25) and (A.2)] that S_2S_2 will be positively sloped[40] (till the switchover occurs) if $\epsilon_x \ge [\{\lambda_2(1-\lambda_1)\}/\{\lambda_1(1-\lambda_2)\}]$ (>1). However, even if this condition is not satisfied, $(dS_2)/(d\delta)$ could still be

40. For $(dS_2/d\delta)>0$, it is sufficient, by (21), that $\epsilon_x \ge \lambda_2/(\lambda_2-\alpha_2)$. At $\delta=\delta^*$, $\alpha_2=[k_2(\lambda_2-\lambda_1)/(1-\lambda_1)] < (\lambda_2-\lambda_1)/(1-\lambda_1)$. Hence if $\epsilon_x \ge \lambda_2/[\lambda_2-(\lambda_2-\lambda_1)/(1-\lambda_1)] = [\lambda_2(1-\lambda_1)]/[\lambda_1(1-\lambda_2)]$, $\epsilon_x \ge \lambda_2/(\lambda_2-\alpha_2)$ for $\delta_1 \le \delta \le \delta^*$[by (22)].

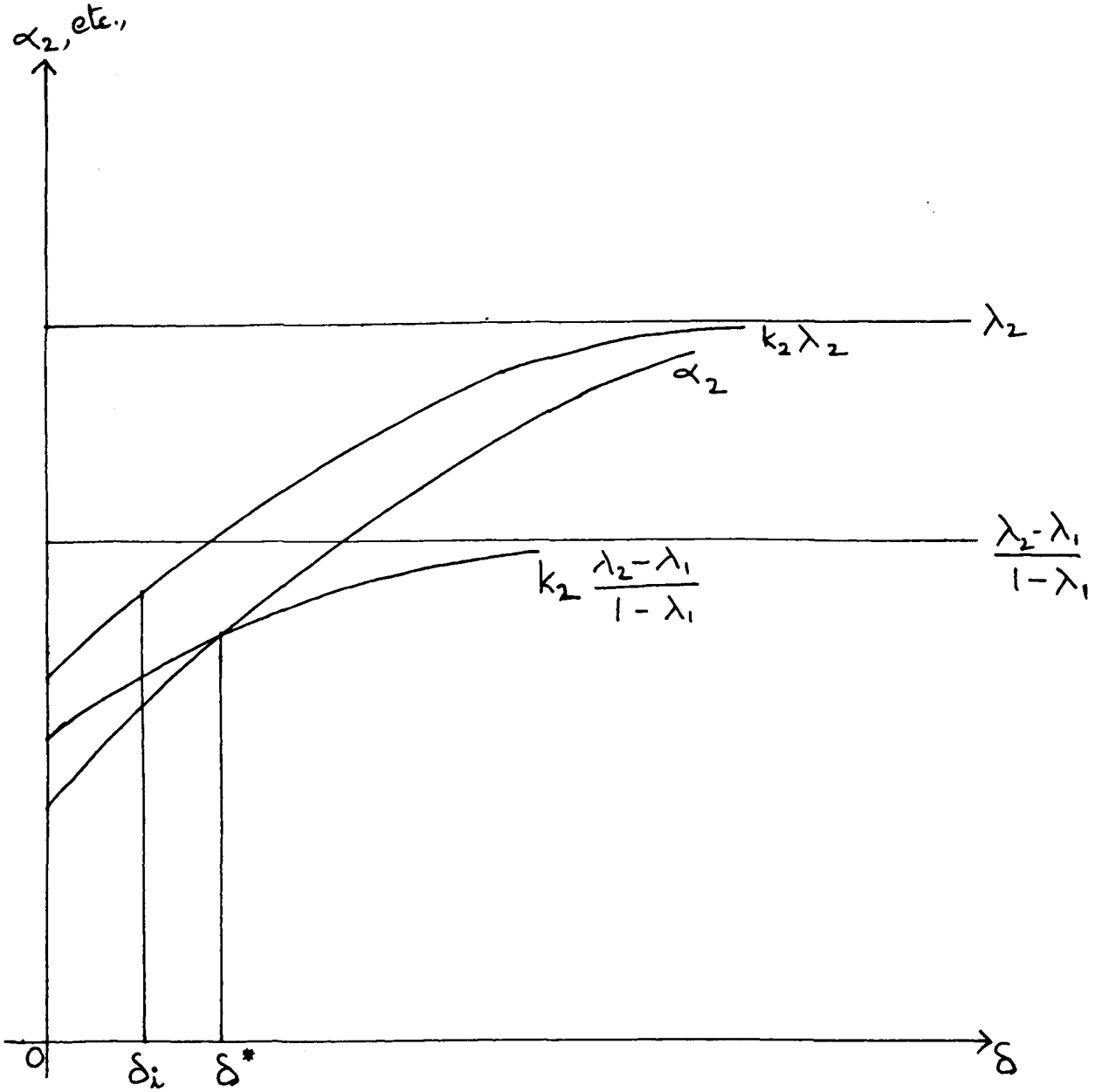
α_2, etc.,
λ_2
$k_2\lambda_2$
α_2
$\frac{\lambda_2-\lambda_1}{1-\lambda_1}$
$k_2 \frac{\lambda_2-\lambda_1}{1-\lambda_1}$
0
δ_i
δ^*
δ

Fig. A.3

positive, but the possibility of S_2S_2 bending backward (before the switchover occurs) cannot be ruled out.

Reswitching of NEFS and FOBS

As we have indicated in the text, the relative attractiveness of a system may change after the switchover to its alternative when prices have adjusted to the new system. Let δ^*_{12} be the switchover value of δ from NEFS to FOBS. There are then two possibilities:

(a) the switchover is preferred (and not obligatory) so that at δ^*_{12},

$$\frac{\alpha_1}{k_1} = \frac{\lambda_2 - \lambda_1}{1 - \lambda_1} \text{ and } \frac{d}{d\delta}\left[\frac{\alpha_1}{k_1}\right] < 0; \text{ and}$$

(b) the switchover is forced, i.e., at δ^*_{12}, $\alpha_1 = k_1$ and $d(\alpha_1/k_1)/d\delta > 0$.

Let h and r denote the proportional rates of change of P_f and P_d respectively when exporters switch from NEFS to FOBS. From (5) to (8) it is clear that

$$\text{(A.3)} \quad h \equiv \frac{P_{f2} - P_{f1}}{P_{f1}} = \frac{\delta^*_{12}}{1 + \lambda_2 \delta^*_{12}} [\alpha_1 - (\lambda_2 - \lambda_1)] \gtrless 0 \text{ according as } \alpha_1 \gtrless \lambda_2 - \lambda_1$$

$$\text{(A.4)} \quad r \equiv \frac{P_{d2} - P_{d1}}{P_{d1}} = \frac{\delta^*_{12} e P_m \hat{\alpha}}{c_d + e P_m \hat{\alpha}} > 0.$$

Note that $r - h > 0$, i.e., after the switchover domestic prices rise in relation to foreign prices. Linearlizing

$$\alpha = \frac{P_m \hat{\alpha}}{P_f} \text{ and } k = \frac{X(P_f)}{X(P_f) + D(P_d)},$$

we obtain the difference between the proportionate changes in α and k as a result of switch:

$$\text{(A.5)} \quad q \equiv \frac{\alpha^*_2 - \alpha^*_1}{\alpha^*_1} - \frac{k^*_2 - k^*_1}{k^*_1} = h[\epsilon_x(1 - k_1^*) - 1] - r\epsilon_d(1 - k^*_1)$$

where α^*_i and k^*_i denote the values of the two variables at δ^*_{12} (with i=1,2). In case (a), where the switch appears profitable ex ante, by (26), $\epsilon_x > 1/(1 - k^*_1)$. Hence $h < 0$ is sufficient to make $q < 0$ so that even at δ^*_{12} there

is a decline in α/k after the switchover: the relative profitability of FOES is then higher at prices corresponding to FOES than at those prevailing under NEFS. Even if $h>0$, it is possible for α/k to decline under the new system. However, if α/k becomes less than $(\lambda_2-\lambda_1)/(1-\lambda_1)$ at δ^*_{12} <u>after</u> the switchover, there must be values of δ in some range $\delta^*_{12}-\tau<\delta<\delta^*_{12}$ at which FOES will appear more profitable after the switch, but at prices prevailing under NEFS, its (NEFS') relative profitability is higher. Thus in this range of δ the choice of any system will be justified <u>ex post</u>.

If $q>0$, NEFS will seem more attractive after the switchover to FOES. Hence, there exists some range of δ, $\delta^*_{12}<\delta<\delta^*_{12}+\tau$ at which the grass appears greener on the other side of the fence: whichever system exporters happen to operate under, the alternative will seem more attractive. It is only when $q=0$ and $\epsilon_x+\alpha^*_2\,\epsilon_d > [1/(1-k^*_2)]$ [see (24)] that in the range around δ^*_{12} do the ex ante and the ex post ranking of the two systems by the exporters remain the same.

When the switchover point is characterized by $\alpha^*_1=k^*_1$ and $d(\alpha_1/k_1)/d\delta>0$, S_1S_1 is negatively sloped [with $\epsilon_x<\{1/(1-k^*_1)\}$]. Hence the condition $\alpha^*_1>(\lambda_2-\lambda_1)$ is sufficient to make $q<0$, i.e., to reduce α below k after the switchover to FOES. In the unlikely case of α^*_2/k^*_2 becoming less than $(\lambda_2-\lambda_1)/(1-\lambda_1)$, FOES becomes the preferred system and exporters become net suppliers of Eximscrips. But then for δ lying in some range $\delta^*_{12}-\tau<\delta<\delta^*_{12}$ the switchover to FOES will be justified <u>ex post</u> and both the systems can prevail in this range. In most cases even when α^*_2 becomes less than k^*_2 after the switch to FOES, α^*_2/k^*_2 is likely to be larger than $(\lambda_2-\lambda_1)/(1-\lambda_1)$ so that we have a range, $\delta^*_{12}<\delta<\delta^*_{12}+\tau$ where the prevailing system will appear less attractive than its alternative. When $q>0$, producers have to be under FOES after the switchover and it is not very difficult to see that there exists some range, $\delta^*_{12}-\tau<\delta<\delta^*_{12}$, at which both the systems can prevail.

Appendix

III

Indirect Demand for Eximscrips

Consider an industry producing an intermediate input n required for the production of exportables. The price P_{dn} of n would equal its marginal cost under competitive conditions:

$$(A.6)\quad P_{dn} = c_{dn} + (1+\delta)\, e\, \hat{a}_n\, P_m$$

where c_{dn} = domestic cost per unit of n and $\hat{a}_n$ = amount of foreign input required[41] per unit of n. Let $\hat{a}_d$ be the amount of n required for producing one unit of exportable. The domestic and the foreign price of the exportable, denoted by P_{d4} and P_{f4} respectively, would then be

$$(A.7)\quad P_{d4} = c_d + [c_{dn} + (1+\delta)\, e\, \hat{a}_n\, P_m]\, \hat{a}_d$$

$$(A.8)\quad P_{f4} = \frac{1}{(1+\delta\lambda_2)e}\,[c_d + c_{dn}\,\hat{a}_d + e(1+\delta)\,\hat{a}_n\hat{a}_d\,P_m]$$

where c_d is the direct domestic cost component of the exportable.[42] It is easy to verify that while $[dP_{d4}/d\delta] > 0$,

$$(A.9)\quad \frac{dP_{f4}}{d\delta} \gtrless 0 \text{ according as } \frac{eP_m\hat{a}_n\hat{a}_d}{c_d + c_{dn}\hat{a}_d} \gtrless \frac{\lambda_2}{1-\lambda_2},$$

i.e., according as the indirect import-intensity of the exportable is greater or less than λ_2. Again, the change in the net supply of Eximscrips, S_n, with respect to a change in δ is given by

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41. Note that the small country assumption in respect of imports permits us to treat all foreign inputs as homogeneous by suitable choice of units.

42. Note that in this case producers of exportables will necessarily be under FOBS.

$$(A.10)\quad \frac{dS_n}{d\delta} = X(.)\left[\lambda_2 - \epsilon_x\left(\lambda_2 - \frac{\hat{a}_n\hat{a}_{cd}P_m}{P_{f4}}\right)\right]\frac{dP_{f4}}{d\delta} - P_m\hat{a}_n\hat{a}_{cd}\frac{dD}{dP_{d4}}\frac{dP_{d4}}{d\delta}.$$

With $\frac{dP_{f4}}{d\delta} < 0$, a sufficient condition for $\frac{dS_n}{d\delta} < 0$ is that $\epsilon_x > \frac{\lambda_2}{\lambda_2 - \alpha}$ where

$\alpha = (\hat{a}_n\hat{a}_{cd}P_m)/P_{f4}$.

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