TRADE AND EXCHANGE RATE POLICY WITH A BINDING FOREIGN EXCHANGE CONSTRAINT

MIHIR RAKSHIT

NO. 5 JULY, 1992

TRADE AND EXCHANGE RATE POLICY WITH A BINDING FOREIGN EXCHANGE CONSTRAINT*

The economic history of most of the developing countries over the last four decades has been characterized by the chronic problem of balance of payments and external debt, though the severity of the problem has varied over time and across countries. During the fifties, when a number of Third World countries initiated development planning, there was a fairly general consensus among economists regarding the basic causes and remedies of low income and poverty in these economies. Given the small price and income elasticities of the demand for agricultural goods in the international market and the scale economies and learning-by-doing associated with manufacturing activities, industrialization was considered necessary to attain a high rate of growth and exploit the advantages of international trade. Hence the early emphasis on raising domestic saving and using it for investment in the industrial sector. However, this process of industrialization through the promotion of domestic saving was found to be difficult since the capital goods required for the purpose could not be produced domestically, nor could the excess of domestic output over consumption be easily converted into foreign exchange.[1] Shortage of domestic capital and absence of industries for producing investment goods were thus held responsible for low levels of income and investment in developing countries.

In India top priority was given since the mid-fifties to the rapid expansion of the capital goods sector and of basic industries, e.g., steel, cement, aluminium, etc. Such a strategy, it was believed, would reduce the dependence on imports for sustaining domestic production and investment so that the economy could enjoy a high rate of growth without running into the

---

* I have benefited from comments received in the seminars I gave on trade related issues at Presidency College, Calcutta; National Institute of Public Finance and Policy, New Delhi; Indian Statistical Institute, Delhi; Centre for Development Planning, Erasmus University, Rotterdam; and Institute of Social Studies, Hague.

1. See Chenery and Bruno (1962), McKinnon (1964), Chenery and Straut (1966), and Bacha (1984).

balance of payments problem. However, the expansion of the manufacturing sector including capital goods industries has over time been accompanied by excess capacity, trade deficits and growing foreign indebtedness. The balance of payments problem assumed such proportions in 1991 that the country was on the brink of defaulting on her dues to external creditors and the Government of India (under the IMF guidelines) took willynilly a series of measures to resolve the foreign exchange crisis, contain inflation and promote efficiency through reliance on the market mechanism. Without going into all aspects of the structural adjustment programme initiated by the government since July 1991 we try, in the present paper, to explore the economic logic behind the formulation of an appropriate trade policy in the context of the major forces perceived to operate in the domestic and international sphere.

Section I is devoted to a discussion of the nature of the foreign exchange constraint said to be in operation in India and quite a few other developing countries and poses the problem of choosing among alternative and feasible means of attaining the desired objectives. We examine in Sections II and III some features of the economy under the optimum trade regime when the objective is maximization of domestic absorption. Three alternative schemes for maximizing domestic absorption and minimizing prices are set forth in Sections IV to VI. Some problems in respect of the choice among alternative policy packages are briefly indicated in Section VII. In the final section we take stock of the main theoretical and policy conclusions of the paper. The focus throughout is on the short and medium run behaviour of the system and only at the concluding stage do we touch on one or two issues relating to the long run.

I. Nature of the Foreign Exchange Constraint

For judging the efficacy of a set of measures and suggesting suitable alternatives it is necessary to consider the structure of the economy and the constraints under which it functions. There is an influential section in both

academic and official circles which is of the view that it is the shortage of imported inputs which very often effectively prevents full capacity utilization in a number of LDCs including India.[2] In other words, the scarcity of imported raw material, components or spares is considered the binding constraint on domestic production and this constraint, it is assumed, cannot be relaxed in the short run. In India, some of the most important provisions of the trade policy adopted between July 1991 and March 1992 - e.g., the system of Advance Licensing, near total ban on imports of consumption and investment goods and the use of foreign exchange (both through the official channel and via Eximscrips) for financing primarily the import of intermediate inputs - appear to be based on such a perception concerning the constraint in force.[3] Hence it would be useful to examine the implications of the perceived constraint and discuss the corresponding optimal trade policy for attaining the desired goals.

For analytical purposes, we need to specify the nature of the foreign exchange constraint faced by the country. Consider first the balance of payments identity with all variables expressed in terms of foreign currency:

$$(1) \quad M_v \equiv X_v + T + A + L - D_s - \Delta F$$

where M_v = value of imports; X_v = value of exports; T = remittances; A = foreign aid; L = foreign loans (including equity investment); D_s = servicing of foreign debt; ΔF = increment in foreign exchange reserves per unit of time.

---

2. Consider for example Manmohan Singh's diagnosis of the poor performance of the Indian economy during 1991-92: "Shortage of foreign exchange had forced a massive import squeeze, which had halted the rapid industrial growth of earlier years and had produced negative growth rates from May 1991 onwards". (Government of India, 1992)

3. See Government of India (1991) and Rakshit (1992). Our discussion in the subsequent sections suggests how the provisions noted above fit in with the official diagnosis.

It may be of some interest to note that a symptom (as also a cause[4]) of the balance of payments crisis of the Indian economy in 1990-91 was the decline in foreign exchange reserves to too low a level to permit uninterrupted import of essential goods (in the face of day-to-day non-synchronization of receipts and expenditure of foreign currency) or to retain the confidence of foreign creditors regarding the country's ability to honour its external debt obligations. In short, while changes in F can (and necessarily does) accommodate variations in the other components of (1), the country would face serious difficulties if control is not exercised over the rest of the variables to keep foreign exchange reserves at an "adequate" level. Note that servicing of foreign debt is a parameter in the short run, but remittances and foreign loans (including NRI deposits) can conceivably be affected by trade and other policies pursued by the government. Short-run variations in remittances can occur due to changes in expectations regarding the exchange rate while foreign loans are influenced basically by expectations in respect of the balance of payments viability, rather than by expectations relating to the rate of exchange. However, both kinds of expectations, as we have already suggested, are themselves influenced significantly by the amount of foreign exchange reserves and their changes over time.

In analysing the problem of management of the external sector we shall assume that

i. the level and the change in foreign exchange reserves per unit of time have already been optimally set by the government; and

ii. given the target variables, remittances and foreign loans are exogenous to the system in the short run[5].

---

4. Since the precarious foreign exchange reserves position led to downgrading of the country's credit rating; postponement of remittances and of the realization of export earnings; and withdrawal of deposits by non-resident Indians.

5. In other words, we do not go into a discussion of the determinants of the "optimal" foreign exchange reserves for the country. Flow of foreign equity capital and repatriation of profits have been ignored; and so have been the domestic interest rate and the gap between the black market and the official rates of foreign exchange in determining loans and remittances.

These assumptions turn the balance of payments identity (1) into the constraint operating on exports and imports:

(1a) $M_v = X_v + \bar{R}$

where $\bar{R} = (\bar{T} + \bar{A} + \bar{L} - \bar{D}_S - \Delta F)$ and denotes the (given) amount of foreign exchange over and above export earnings that the country can use for financing its import bill.

While the constraint requires imports to be limited to $X_v + \bar{R}$, the requirement can be met by a whole host of alternative policies. Quantitative controls on exports and imports, tariffs and export subsidy, multiple exchange rates including the system of Eximscrips, a freely fluctuating exchange rate, management of effective demand - all these measures or their various combinations can in principle be used to satisfy (1a). However, the outcome of the alternative policies on the volume and the pattern of domestic absorption, exports and prices will generally be quite different. Hence arises the problem of choosing the optimal set of measures to attain the desired goals subject to (1a) and other constraints faced by the economy and the government.

While equity is an important objective in any developing country, promotion of this objective through fiscal policy is extremely difficult since administrative constraints make direct taxes as also taxes on <u>final</u> goods produced in the domestic sector quite ineffective as a means of redistribution of income. Further, the government machinery is incapable of enforcing schemes of rationing and quantitative controls without creating black transactions and gross inefficiency in the system of production and distribution. Given these considerations the problem consists in devising an administratively feasible optimum programme in order to attain some desired goals like maximizing domestic absorption or minimizing the rise in prices subject to

i. the external payments constraint (1a);

ii. maintenance of the supply of some essential goods at a predetermined price (which is less than what would prevail without government intervention); and

iii. no additional taxation or borrowing to meet the cost on account (ii).

Note that, except for the supply of some essential goods, we have left out the composition of domestic absorption as an intermediate target variable on the presumption that for any given level of final goods used in the domestic sector, the optimal division between consumption and investment is solved through financial and other measures.

II. Some Features of the Optimal Trade Policy

Before turning to the policy instruments through which the objectives noted above can be attained, it is useful to indicate some characteristics of the optimal solution. Consider first the problem of maximizing domestic absorption satisfying (1a). Assume that the country produces one commodity; technology is fixed coefficient; and the cost of foreign input required per unit of output is α dollars. Imports consist of intermediate inputs and final goods. With prices of imported articles fixed in terms of dollar, α is a constant and the price per unit of consumption and investment goods obtained from abroad is taken, by suitable choice of units, to be $ 1. The foreign exchange constraint (1a) now implies

$$(2) \quad \alpha(C_d+I_d+X) = P_x.X + \bar{R} - (C_m+I_m).$$

Where C_d = consumption of domestically produced goods; I_d = accumulation of domestic goods; X = exports; P_x = export price in terms of dollar; C_m = import of consumption goods; and I_m = import of investment goods. C_d, I_d and X are expressed in physical units, while C_m and I_m represent imports of final goods in both dollar and physical terms (by choice of units).

The implications of the availability of foreign exchange limiting domestic production are that

i. $\alpha Y_{fu} > P_f X + \bar{R} - (C_m+I_m)$; and

ii. $E_u < Y_{fu}$

where Y_{fu} = full capacity output; and E = aggregate demand for domestically produced goods when output is at the full capacity level.[6] The first inequality states that foreign exchange available (after meeting C_m and I_m) is insufficient to finance imports of intermediate goods required for full capacity utilization in the domestic economy. Inequality (ii) rules out demand deficiency as a source of underutilization of capacity.

When domestic absorption is maximized through a feasible set of measures subject to the foreign exchange constraint, the following two propositions hold:

Proposition I: Net earnings from exports, $F_n \equiv (P_f - \alpha)X$, is maximized (subject to administrative constraints).

The proposition is immediate from a slight variant of (2):

(3) $\alpha(C_d+I_d) + (C_m+I_m) = (P_f-\alpha)X + \bar{R}$.

Any policy which raises net exports will enable the economy to enjoy a higher level of absorption either directly through import of final goods or through an increase in C_d or I_d with additional imports of intermediate goods.

Proposition II: Imports of final goods are minimized.
If feasible, $C_m + I_m$ is set equal to zero for maximizing domestic absorption. This also follows from (3) since, given the net export earnings and $\bar{R}$, for each unit increase in C_m or I_m, the country forgoes $1/\alpha$ units of consumption

---

6. In other words, $E_u = C_d + I_d + X$ when aggregate output, Y_o, equals Y_{fu}. Note that Y_o does not equal gross domestic product Y and the relation between the two variables is given by
$$Y = [1-(e\alpha)/P_d]Y_o$$
where e = exchange rate (expressed in domestic currency) and P_d = the domestic price level.

or investment from domestic sources. The net decline in absorption at the margin in terms of domestic currency is

$$P_d (1-e\alpha) > 0$$

where P_d = domestic price level and e = exchange rate expressed in domestic currency per dollar.[7]

Taking X to be a function only of P_f, maximization of net foreign exchange earning, F_n, involves setting X or P_f such that[8]

$$(4) \quad P_f = \frac{\alpha}{1-1/\epsilon x} = (say)\ P^*_f$$

where ϵx = price-elasticity of export demand. This is nothing but the condition that the marginal revenue from exports to the economy must equal the marginal cost of foreign inputs, α. Quite clearly, domestic production will not be constrained by foreign exchange availability if

$$F_n \geq \alpha\ Y_{du} + C_m + I_m - \bar{R}.$$

A sufficiently high elasticity of export demand, it is obvious, rules out underutilization of capacity due to the shortage of imported inputs provided the government can effect the necessary change in the volume of exports and contain $C_m + I_m$ at the appropriate level. We assume that the import intensity α and the external environment relating to export demand, foreign aid, etc. are such that in spite of its best efforts the government cannot ensure full capacity utilization in the economy. The problem then is to device suitable schemes for attaining the optimum level of exports and the composition of domestic absorption.

Composition of Domestic Absorption

As we have noted earlier, under the trade policy in force between July 1991 and February 1992, there was a near total ban on the import of consumer

---

7. For production to be undertaken it is necessary that $e\alpha<1$.

8. See Rakshit (1990).

goods and capital goods imports were permitted mainly against "foreign line of credit" or equity investment from abroad. Such restrictions are in accord with the principle of maximizing domestic absorption under the constraints faced by the economy. However, the policy provided for exceptions relating to imports of essential consumption goods and of a few items of capital good. Our earlier analysis suggests a general principle for determining the optimum use of the net foreign exchange, $F_n+\bar{R}$, available for imports of inputs and final goods. If the government is to permit the import of some consumption good, it should yield at the margin no less than $1/\alpha$ times the social benefit obtained from domestic goods. Note that this principle rules out the import of all consumption goods so long as they can be produced in the economy. Some rough and ready judgment is of course required in applying the principle to "essential" consumption goods which cannot be produced domestically. The principle is much easier to apply to capital goods. If the import content of domestic machinery and equipment is (say) 33 per cent, their purchase from abroad is justified only if foreign machines are at least three times more productive than their indigenous counterparts. Thus the use of Eximscrips or of foreign credit for financing capital goods imports would in most cases be a costly device for capital accumulation. Such imports should generally be permitted only when domestic production is at the full capacity level.[9]

Do the above considerations justify curbs on the export of essential goods when $X \leq X^* = X(P_x^*)$ obtained from (4), where $X(.)$ denotes the export demand function? Given the specification of the economy the answer is clearly in the negative. With a positive import content and no capacity constraint in the export sector, any violation of (4) reduces the amount of final goods, <u>including exportables</u>, that can be produced to satisfy domestic needs. If exportables constitute items of essential consumption, what is called for is a relatively large allocation of F_n in the export sector to meet domestic demand. However, if the excess of installed capacity in the export sector

---

9. In respect of tied loans and foreign equity investment the problem is more complex and its resolution involves issues concerning future costs and benefits to the economy - issues which lie outside the scope of the present paper.

over X^* is not enough to meet the requirement at home, there arises the problem of determining the optimum allocation of the capacity output between the export and the domestic markets. Since transfer of a unit of exportable from the foreign to the domestic market involves a net foreign exchange loss[10] of $P_f(1-1/\epsilon x)$, the transfer is justified only when the gains to the economy from the consumption of a unit of exportable is, at the margin, not less than that from $[P_f(1-1/\epsilon x)]/\alpha$ units of consumption of other goods.[11] Such could indeed be the case for agricultural and other products, but for the present our purpose is to explore the policy implications for an economy where capacity is not the binding constraint in any sector.

Let C^*_m and I^*_m be the imports of essential consumption and investment goods fixed on the basis of the criteria discussed above.[12] The government then has to devise measures for securing two proximate objectives:

First, condition (4) has to be met so that $X = X(P^*_f) \equiv X^*$; and $F_n = (P^*_f - \alpha)X^* \equiv F^*_n$.

Second, production for domestic absorption must be such that

$$(5) \quad C_d + I_d = \frac{1}{\alpha}[F^*_n - V^*]$$

where $V^* \equiv C^*_m + I^*_m - \bar{R}$.

The third element of trade policy consists in influencing the pattern of C_d and I_d. Normally, the task should be assigned to the fiscal and the

---

10. Since the import of intermediate inputs for full capacity utilization in the export sector remains unchanged.

11. Note that with fixed coefficient production functions, units of different goods can be so chosen that in all lines of production the import content becomes α.

12. The relative marginal benefit from C^*_m and I^*_m will depend no doubt on C_d and I_d, but we do not want to make life difficult by bringing such considerations explicitly into the model.

financial authorities; but since trade policy is somewhat easier to implement, governments in most developing countries accord preferential treatment to the import of some items required for producing essential goods.[13]

III. Alternative Schemes of Managing External Sector : Some Preliminaries

Let us ignore the problem of determining the import of essential inputs on a priority basis; examine some alternative schemes for meeting both (4) and (5); and indicate their relative efficacy from the administrative and other viewpoints. In our discussion we shall take the macroeconomic policy parameters as also the structure of domestic taxes to be given; assume competitive conditions and no rationing in the commodity markets; and take money wages to be given even though there is excess supply of labour in the economy. These features of the economy along with under-utilization of capacity ensure that (commodity) prices are market clearing and equal average (and marginal) variable cost, and the domestic resource cost (in nominal terms) for producing a unit of output is fixed.

The requirement of administrative feasibility implies that quantitative and discretionary controls on exports, imports and domestic demand and supplies should be avoided as far as possible. It may perhaps be suggested that apart from mopping up enough foreign exchange to maintain imports of some essential consumption and investment goods, the government should allow the exchange rate to adjust freely in order to maintain the balance between the supply of foreign exchange and its demand by producers. However, it is not very difficult to see that under such a scheme the market clearing exchange rate will not generally yield the optimum. We give a brief sketch of the solution under this scheme since it can serve as a point of departure for discussing alternative proposals.

---

13. See in this connection Rakshit (1992).

We distinguish between two types of commodities in the domestic sector, exportables and other goods. We list below the notations to be used (apart from P_e, X and the symbols already employed):

P_{dx} = domestic price of exportables;

P_{dm} = domestic price of other goods;

$p = \frac{P_{dx}}{P_{dm}}$;

P = domestic price level;

c_{dx} = cost of domestic resources per unit of exportables;

c_{dm} = cost of domestic resources per unit of other goods;

D^x = domestic demand for exportables;

D^m = domestic demand for other goods.

The equality of prices and marginal (and average variable) cost implies that[14]

$$(6) \quad P_e = \frac{c_{dx}}{e} + \alpha$$

$$(7) \quad P_{dx} = c_{dx} + e\alpha$$

$$(8) \quad P_{dm} = c_{dm} + e\alpha.$$

Given the macroeconomic policy parameters we shall take D^x and D^m to be functions of only p and the general price level which may conveniently be expressed as

$$(9) \quad P = (P_{dx})^{\tau} (P_{dm})^{1-\tau}$$

where τ is a proper fraction and represents the weight attached to the domestic prices of exportables in the estimation of the cost of living index.

---

14. As we have already noted, with suitable choice of units, α would be the same for both goods, but c_d's would then be different.

Demand functions of the two goods may thus be represented by

$$(10)\quad D^{x} = D^{x}(\underset{-}{p}, \underset{-}{P})$$

$$(11)\quad D^{i} = D^{i}(\underset{+}{p}, \underset{-}{P}).$$

The assumption that money wages do not change with capacity utilization is generally enough to make the partial derivatives of D^{x} and D^{i} with respect P negative. Again, given the macroeconomic, including financial, parameters, an increase in the price level tends to reduce demand through the interest rate mechanism, a decline in the real amount of credit generated in the system, or the Pigou effect, if any.[15]

The market clearing value of e, (say) e_{r}, is obtained from the equilibrium condition

$$(12)\quad P_{f}X(P_{f}) - V^{*} = \alpha[X(.) + D^{x}(.) + D^{i}(.)]$$

after plugging the values of P_{f}, P_{dx}, P_{di} and P, as given by (6) to (9). Since our focus is on policy prescription, we do not go into the details of the system and underline only the following two features of the equilibrium configuration:

First, all prices - P_{f}, P_{dx}, P_{di} and e - are market clearing.

Second, the market clearing exchange rate e_{r} will generally be different from e^{*}, the rate at which F_{n} is maximized. From (6) and (4), e^{*} is given by

$$(13)\quad e^{*} = \frac{C_{dx}}{\alpha}\,(\epsilon_{x}-1)$$

---

15. Gross domestic product will no doubt also be a factor affecting D^{x} and D^{i}. We neglect this factor partly because the nature of the solution is not significantly affected by this factor, but mainly because our purpose is to examine alternative schemes where F_{n} and hence domestic capacity utilization is maximised.

where ϵ_x is evaluated at P^*_d. While the market clearing e under (12) is affected by V^* and the domestic demand conditions, these factors play no role whatsoever in determining e^*.

Note that the optimum cannot be attained by simply fixing e at e^* without quantitative controls. Also, at this rate of exchange, the cost to the Exchequer of making C_m and I_m available in the domestic market at a "reasonable" price may be too high to be met by the existing fiscal instruments. Hence arises the problem of attaining the optimum level of exports and domestic absorption without adding to the revenue deficit of the government.[16]

There are a number of ways in which the problem can be solved. What we do here is to discuss the nature of the solution under three alternative schemes which appear feasible and are not widely at variance with the system currently in force.

IV. Scheme I: Export Subsidy with Auctioning of Foreign Exchange

Consider a situation where all foreign exchange earning is to be surrendered to the government; the official exchange rate is fixed at e; exporters get a subsidy at an ad valorem rates; and the entire foreign exchange in excess of $C^*_m+I^*_m$ (and servicing of external debt) is sold in the open market to the buyers of foreign inputs and fetches a premium q over the official exchange rate. Since q is market clearing, the problem consists in finding out the optimum values of e and s.

Since prices equal marginal costs, P_{dx} and P_{d1} under this scheme are given by

(14) $P_{dx} = c_{dx} + e(1+q)\alpha$

16. We do not examine here the problem of determining the optimum mix of budgetary and trade policies.

(15) $P_{d1} = c_{d1} + e(1+q)\alpha.$

The quality of marginal revenues from the domestic and foreign sale of exportables ensures that

(16) $$P_x = \frac{1}{(1+s)}\left[\frac{c_{dx}}{e} + (1+q)\alpha\right].$$

Since optimization involves $P_x = P^*_x$ [as given by (4)], the following relation has to be satisfied:[17]

(17) $$\frac{1}{(1+s)}\left[\frac{c_{dx}}{e} + (1+q)\alpha\right] = \frac{\alpha}{1-1/\epsilon_x} \quad (\equiv P^*_x).$$

Let us first consider how s or e is to be fixed under Scheme I when the problem is simply to maximize F_n subject to a constant $V=V^*$. In order to show the relationship between e, q and s when net foreign exchange earnings are maximized, it is useful to recast (17) in the following form:

(17a) $e(1+s)P^*_x = c_{dx} + e(1+q)\alpha.$

$P_xP^*_x$ (Fig.1), obtained from (17a), shows how, under the optimal programme, the effective rate of exchange e(1+s) for exports is to be related to the effective rate of exchange for imports, e(1+q), determined through the market mechanism.

For $P_x=P^*_x$, the market clearing value of e(1+q), r^* (Fig.1), is obtained from the equilibrium condition

(18) $F^*_n - V^* = \alpha[D^x(.)+D^1(.)]$

where the arguments of D^x and D^1 are, by (14), (15) and (9), functions only of e(1+q). Given $F^*_n-V^*$, the stability in the market for foreign exchange requires that

---

17. Note that ϵ_x is a constant since it is evaluated at P^*_x.

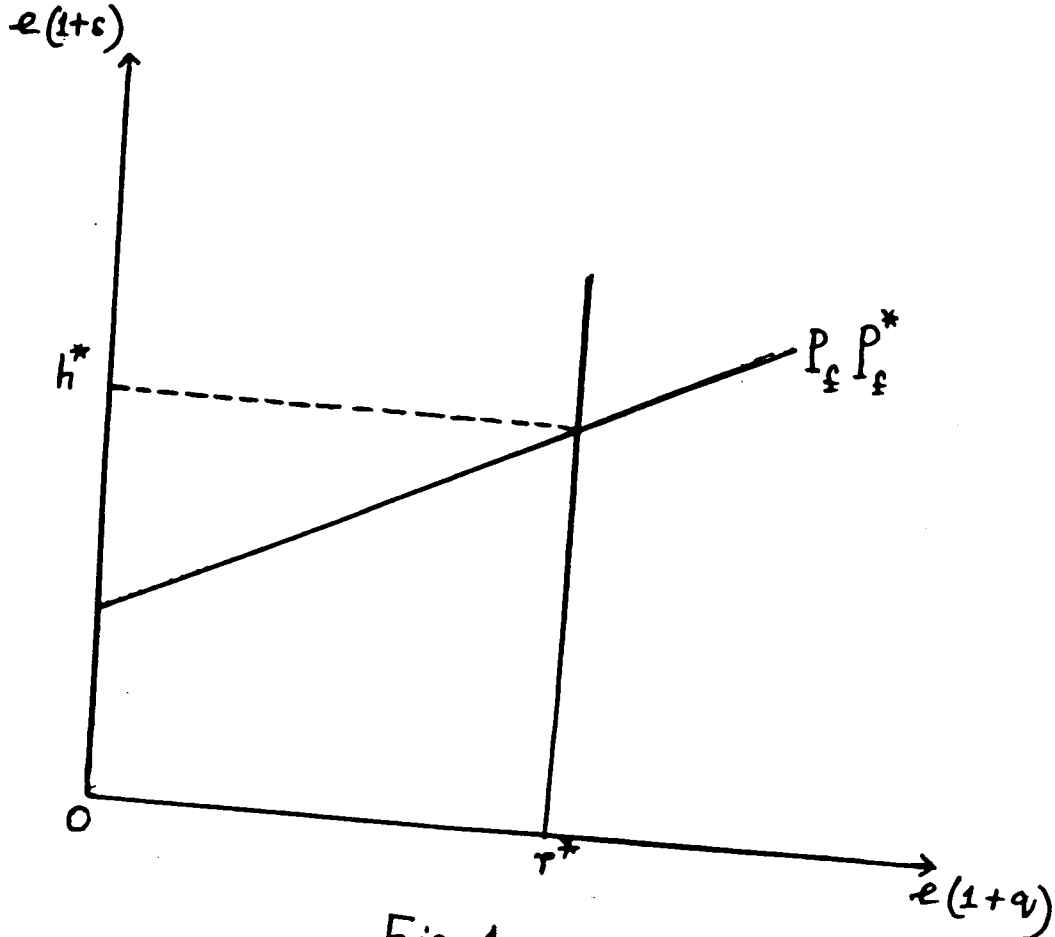

Fig. 1

$$(19)\quad \frac{d}{d[e(1+q)]}\,[D^{x}(.)+D^{d}(.)]<0$$

and this will generally be satisfied.[18] Plugging $r^{*} = e(1+q)$ in (17a) we obtain the optimum value of $e(1+s)$, h^{*} (Fig.1).

A few characteristics of the economy under Scheme I may be worth noting.

First, when P_{f} does not equal P^{*}_{f}, the domestic price level will be higher and output available for consumption and investment lower. This is immediate from (18) and (19). If $P_{f}\neq P^{*}_{f}$, the l.h.s. of (18) is lower and hence the equilibrium $e(1+q)$ higher. The result, by (14), (15) and (19), will be an all round increase in P_{dx}, P_{dd} and P. Thus while the optimum policy was designed for only maximizing net foreign exchange earnings (subject to V^{*}), $P_{f} = P_{f}^{*}$ also turns to be a necessary condition for minimizing the general price level, given the constraints operating in the system.

Second, the solution does not specify a unique optimum value for e. With an initial $e(1+s)=h^{*}$ (Fig.1), any increase (decrease) in e matched by a proportionate decrease (increase) in export subsidy will keep absorption at its maximum level. The reason of course is that when $e(1+s)=h^{*}$, by (18), changes in the official exchange rate will have no effect on $e(1+q)$ and hence on domestic production and prices.

Third, when P_{f} is kept fixed at P^{*}_{f}, the invariance property of production and prices holds (with only a minor proviso) even when commodity prices are set on a mark up basis or there are autonomous or (income) induced changes in c_{dx} and c_{dd}. It is easy to appreciate the nature of the invariance property by considering a situation where commodity prices are fixed on a mark

---

18. Verify that an increase in $e(1+q)$ raises P and hence tends to reduce D^{x} and D^{d} through what may be called the general price (level) effect. However, $dp/d[e(1+q)] \gtrless 0$ according as $c_{dd} \gtrless c_{dx}$. If (say) $c_{dd} > c_{dx}$, p raises with an increase in $e(1+q)$ so that because of the relative price effect, D^{x} falls, but there is an increase in D^{d}. Thus (19) will be satisfied unless the general price effect is small, the discrepancy between c_{dd} and c_{dx} is large, and both the weight of D^{d} and its (relative) price elasticity are larger than that of D^{x}.

up basis, but the mark up is the same in both sectors. With D^x and D^1 remaining functions of p and P, market clearing $e(1+q)$ ensures that all the prices will be the same as under (18). With a uniform mark up of (say) β, prices of exportables and other goods, denoted by P^m_{dx} and P^m_d respectively, will now be given by

(14a) $P^m_{dx} = (1+\beta)[c_{dx}+e(1+q)\alpha]$

(15a) $P^m_{d1} = (1+\beta)[c_{d1}+e(1+q)\alpha]$.

Hence the competitive and the mark-up prices are the same and the only difference will be in the equilibrium value of $e(1+q)$ which will now be lower than that under (14) and (15). The point to note here is that, though commodity prices are administered, adjustments in the premium on the exchange rate eliminate excess demand or supply in not only the market for foreign exchange, but in the commodity markets also. With no changes in commodity prices, a positive mark up will now imply only a lower effective exchange rate for importers. Note also that the optimum value of $e(1+s)$ does not change, since it depends on only the domestic price of exportables and P^*_f.

It may similarly be verified that if changes in c_{dx} and c_{d1} due to exogenous factors or variations in output leave the relative costs unaffected, the domestic price-output configuration as also the effective exchange rate for exports remains unaltered and the effect will be confined to the equilibrium value of $e(1+q)$. If the mark-ups or c_d's and their (proportional) changes in the two sectors are different, the composition of domestic consumption and the relative price will differ from those obtained from (14) to (18).

Note finally that even if income were introduced as an additional factor affecting D^x and D^1, the <u>nature</u> of the equilibrium configuration with $P_f=P^*_f$ does not change since income itself would be governed entirely by F^*_n, V^* and the prices prevailing in the system.

Revenue and Prices

While both the production and the price objectives may seem to be realized by keeping e(1+s) at the appropriate level (h^*), the solution discussed above does not take into account the budgetary implications of maintaining three effective rates of exchange - e, e(1+s) and e(1+q). An important objective of many developing countries, especially those desperately in need of fulfilling IMF conditionalities, is reduction in fiscal deficit so that any policy for attaining the more basic goals is also judged from the viewpoint of its impact on the Exchequer. Since the model contains two policy instruments at the disposal of the government, e and s, it appears feasible to maximize domestic absorption and the net revenue to the government through a manipulation of the exchange rate and subsidy on export.

While incorporating the revenue objective in the framework presented above, it is important to recognise that the basic reason for raising revenue or reducing fiscal deficit is to keep down prices (given the level of government expenditure). We have noted how maximization of net foreign exchange earnings also promotes the objective relating to the price level. However, if revenue and price considerations are to be brought explicitly into the picture, some modification of our earlier model appears necessary. Note that budgetary operations do not figure as an argument in D^x and D^a on the tacit assumption that government expenditure, taxes, etc. remain unchanged when there are changes in e or s. But variations in e, q and s would themselves affect the net revenue of the government even when other fiscal instruments are not changed. Hence it is instructive to examine how the working of the system and the optimum policy are affected when the net revenue of the government, N, is (explicitly) assumed to have a negative impact on domestic demand.

Since our focus is on aggregate output and the price level, we assume, without any loss of generality, that domestic output consists of a homogeneous commodity whose price is denoted by P, domestic cost component by c and

domestic demand by D. The price equations and the domestic demand function now assume the following form:

$$(20)\quad P = c + e(1+q)\alpha$$

$$(21)\quad P_f = \frac{1}{1+s}\left[\frac{c}{e} + (1+q)\alpha\right]$$

$$(22)\quad D = D(\underset{-}{P}, \underset{-}{N})$$

where N is the net revenue of the government from the policies under investigation.[19]

Assume that essential imports, $C^*_m+I^*_m$, are sold at a price P_d which need not equal e. Indeed, since one of the objectives of the government is to make these imports available at a "reasonable" price while e and s are manipulated to maximize output and minimize P, P_d should not normally be adjusted to changes in e. The net revenue N is then given by

$$(23)\quad N = eq[P_f X-(C^*_m+I^*_m-\bar{R})]-(e-P_d)(C^*_m+I^*_m)-esP_f X.$$

The three factors entering into N are shown on the r.h.s. of (23). The first expression gives the revenue earned by the government from the sale of foreign exchange. The second gives the loss (gain) on account of essential imports when P_d is less (more) than e. The third shows the amount of subsidy given to exporters. Since domestic output is maximized only if $P_f = P^*_f$, any policy package will have to fulfil this condition. Hence we shall evaluate N at $P_f = P^*_f$ and $X = X^*$. Plugging these values in (23) and rearranging terms we have

$$(23a)\quad N = e(1+q)[P^*_f X^*-(C^*_m+I^*_m)]-e(1+s)P^*_f X^*+eq\bar{R}+P_d(C^*_m+I^*_m).$$

The equilibrium condition in the market for foreign exchange is given by

$$(24)\quad F^*_n - V^* = \alpha D(P,N).$$

---

19. All other budgetary operations of the government are assumed to be given and hence are ignored. This involves some inaccuracy since changes in P are likely to have some impact on other types of government expenditures and revenue. Note also that we have ignored the effects of essential imports on the domestic demand for other goods.

Since D is monotonic in both P and N, by (24) P can be expressed as a function of N or vice-versa:

(24a) $P = P(N)$ or $N = N(P)$

where $\frac{dp}{dN} = -\frac{D_2}{D_1} < 0.$

Thus any policy which ensures $P_\phi = P^*_\phi$ and minimizes N will secure the objectives of output maximization and price minimization subject to (20), (21), (23a) and (24). Expressing (1+s) as a function of e and q from (21) with $P_\phi = P^*_\phi$, plugging this value of (1+s) in (23a), and using (23a) and (24a) after substituting the value of P from (20), we have

(25) $N\,[c+e(1+q)a] = e(1+q)S + eq\bar{R} + P\,(C^*_m+I^*_m) - cX^*$

where $S = (P^*_\phi - a)X^* - (C^*_m+I^*_m)$.

Relation (25) gives q as a function of the policy parameter e when

a) s is adjusted to make $P_\phi = P^*_\phi$;

b) prices equal costs, as given by (20) and (21); and

c) q is the equilibrium premium on foreign exchange sold through auction.

Hence the government can set e in order to minimize N and hence P. Note, however, that the government's freedom of choosing e (subject to the conditions noted above) rests on $\bar{R}$ being non-negative. If $\bar{R} = 0$, (25) yields a unique value for e(1+q) and for N: if P_ϕ is to equal P^*_ϕ, an increase in e will cause a proportionate decrease in (1+q) while N, P and other variables in the system remain unaffected.

If $\bar{R} \neq 0$, e(1+q) is not uniquely determined by (25) and variations in e can affect N positively or negatively. Using (25) we can write q as a function of e:

(25a) $q = q(e)$

where the value of dq/de is given by

$$(26)\quad \frac{dq}{de} = \frac{Rq+S(1+q-N')}{N' - V^*} < 0$$

since, by (24a), $N' = -D_1/D_2 < 0$.

Note that the change in q with respect to a variation in e depends on the relative sensitivity of demand to changes in P and N. Hence an increase in e need not cause a proportionate decline in (1+q) so that there will generally be an impact on the price level (and N).

The problem then boils down to the minimization of

$$P = c+e[1+q(e)]\alpha$$

with e as the instrument variable. The first order condition for minimization is[20]

$$(27)\quad -e\frac{dq}{de} = (1+q).$$

In other words, at the optimum value of e, (say) e^*, an increase in e will effect an equiproportionate decrease in (1+q). The optimum subsidy on exports, s^*, is then obtained from (21) with $P_f = P_f^*$:

$$(28)\quad 1+s^* = \frac{1}{P^*_f}\left[\frac{c}{e^*} + (1+q^*)\alpha\right].$$

V. Scheme II : Advance Lincensing With Subsidy on Net Exports

The objective of maximizing domestic absorption under the administrative and other constraints faced by the government can also be attained through a

---

20. The second order condition for minimization is

$$e\frac{d^2q}{de^2} > -2q'$$

so that at the optimum value of e, the rate of decline in dq/de has to be sufficiently small (in absolute terms).

variant of the system of Advance Licensing widely availed of by exporters during 1991-92.[21] The basic feature of Advance Licensing is that import of inputs at the official exchange rate is permitted to the extent these inputs are used in production for export. The amount of foreign exchange sold through auction under Scheme II consists of net export plus remittances and foreign loans less servicing of external debt. Purchase of inputs from abroad in order to produce goods for the home market has to be financed through foreign exchange bought from the auction. The exporters are, however, given a subsidy on their net foreign exchange earning at the rate s_n. The policy parameters are then e and s_n while the premium on foreign exchange, q, is determined by market forces.

In order to focus on the essential elements of the scheme we consider a one-commodity model for the domestic sector or assume that the ratio of the foreign to domestic inputs is the same for all industries. Under competitive conditions the marginal revenue from sale in the foreign market to an exporter equals

$$eP_f + s_n e\,(P_f - a)$$

where the second part denotes the amount of subsidy received per unit of export. The zero-profit condition from exports ensures that

$$(29)\quad eP_f + s_n e\,(P_f - a) = c + ea$$

or

$$(29a)\quad P_f = \frac{c}{e(1+s_n)} + a.$$

The relation for the domestic price P is the same as that under Scheme I:

$$(30)\quad P = c + e(1+q)a.$$

---

21. For a discussion of the system prevailing between July 1991 and February 1992 see Government of India (1991) and Rakshit (1992).

Since production is maximized when $P=P^*_{\phi}$, the optimum value of $e(1+s_n)$ is immediately obtained from (29a):

$$(31) \quad e^*(1+s^*_n) = \frac{c}{P^*_{\phi}-a}$$

where e^* and s^*_n denote the optimum values of e and s_n respectively. [Note, however, that (31) does not yield the optimum values of the two parameters separately.]

With $P_{\phi}=P^*_{\phi}$, the equilibrium condition in the market for foreign exchange is given once again by (24) or (24a), but the net revenue to the government, N_n, would now be

$$(32) \quad N_n = eq[P^*_{\phi}X^*-(C^*_m+I^*_m-\bar{R})-aX^*]-(e-P_d)(C^*_m+I^*_m)-es_n(P^*_{\phi}-a)X^*$$

where the first expression on the r.h.s. denotes profits from the auctioning of foreign exchange, the second the total subsidy on the import of final goods and the third the subsidy to exporters on their net foreign exchange earnings. In order to compare N_n with N, as given by (23a), it is useful to rearrange (32):

$$(32a) \quad N_n=e(1+q)[P^*_{\phi}X^*-(C^*_m+I^*_m)]+eq\bar{R}+P_d(C^*_m+I^*_m).$$

It is thus clear that the net revenue to the government and hence the levels of domestic absorption and prices are the same under both the schemes. So far as the policy instruments are concerned, while the optimum value of e under Scheme I is identical with that in Scheme II, the optimum subsidy on <u>net</u> exports, s^*_n, as obtained from (31), is given by

$$(33) \quad 1+s^*_n = \frac{c}{e^*(P^*_{\phi}-a)} .$$

VI. <u>Scheme III : Eximscrips Entitlement</u>

The objectives of maximizing domestic absorption and minimizing the price level under the constraints faced by the economy and the government may also be attained through a modification of the system of Eximscrips prevailing in India between July 1991 and February 1992.[22] Instead of providing subsidy

on gross or net exports (as proposed under Schemes I and II), exporters may be permitted to retain a fraction, (say) λ , of the value of their exports and sell it in the open market for financing the import of foreign inputs. The amount of export earning surrendered (at the official exchange rate) along with remittances, etc. is also sold by the government in the open market after meeting the cost of essential imports and debt servicing. Considering once again a homogeneous output in the domestic sector, under competitive conditions P will be given by

$$(34) \quad P = c+e(1+\delta)a$$

where δ is the premium on foreign exchange (in the open market) over the official rate of exchange.

The revenue to the producer at the margin from export consists of the price at the official exchange rate plus the premium on the foreign exchange sold in the open market, i.e.,

$$e(1-\lambda)P_f+\lambda e(1+\delta)P_f$$

and this must equal P under conditions of competition since otherwise a diversion of supply from the home to the foreign market or vice versa will appear profitable. Hence the equilibrium P_f is given by

$$(35) \quad P_f = \frac{P}{(1+\lambda\delta)e} = \frac{c+e(1+\delta)a}{(1+\lambda\delta)e} .$$

Under this scheme the policy parameters before the government are e and λ while δ is determined by market forces. If the net foreign exchange earning is to be maximized, P_f has to equal P_f^* and the relationship between λ , e and δ is then given by (35) with $P_f = P^*_f$:

$$(36) \quad \lambda = \frac{1}{\delta eP^*_f}\,[c+e(1+\delta)a-eP_f^*].$$

The net revenue to the government, N_G, with $P_f=P^*_f$ under this scheme will be

22. See GOI (1991) and Rakshit (1992).

(37) $N_b = e\delta[(1-\lambda)P^*_x X^* - (C^*_m + I^*_m - \bar{R})] - (e - P_a)(C^*_m + I^*_m)$.

Plugging the value of λ from (36) into (37) we have on simplification:

(37a) $N_b = e(1+\delta)(P^*_x - \alpha)X^* - e(1+\delta)(C^*_m + I^*_m) + \bar{R}e\delta + P_a(C^*_m + I^*_m) - cX^*$.

As expected, the net revenue to the government is the same as that under the other two schemes when the policy parameters are set at levels that maximize net foreign exchange receipts from exports. In this scheme also (24) gives the equilibrium condition in the market for foreign exchange and equation (25), with q replaced by δ, shows how δ depends on e for maintaining this equilibrium. The equilibrium value of δ under Scheme III, it is thus clear, equals q^* under Schemes I and II. The optimum value of the Eximscrips rate λ^* is obtained by putting $e=e^*$ and $\delta = \delta^*$ in (36):

$$(38) \quad \lambda^* = \frac{1}{\delta^* e^* P^*_x}\,[c + e^*(1+\delta^*)\alpha - e^* P^*_x].$$

VI. Choice Among Alternative Policy Packages

We have considered three schemes for maximizing domestic absorption and minimizing prices subject to the foreign exchange and other constraints. The list is by no means exhaustive and one can device a variety of other policy packages that would yield the same values of the objective functions. The choice among alternative programmes for attaining the desired objectives depends crucially on the difficulty of gathering the information required in fixing the policy parameters, manoeuvrability of different instrument variables at the disposal of the government and the cost to the economy of the deviation of the policy parameters from their optimum values. A discussion of the issues involved in this connection will take us too far afield and we propose no more than to touch on one or two issues that have a bearing on the choice among the three schemes suggested above.

In the models presented above there is no trade-off between the two objectives, given the constraints operating in the system. However, with differences in the cost of gathering information relating to the relevant variables and the degree of uncertainty in respect of their behaviour over

time, there will generally be a trade-off between the two objectives. To be more concrete, for maximization of the net foreign exchange earning, the crucial information required under all the Schemes is that relating to P^*_e. But in order to ensure that $P_e=P^*_e$, the government needs to know under the three schemes the optimum values of

$$[e(1+s)]^* = \frac{c+e^*(1+q^*)\alpha}{P^*_e} \qquad \text{[from (17a)]}$$

$$[e(1+s_n)]^* = \frac{c}{(P^*_e-\alpha)} \qquad \text{[from (33)]}$$

and

$$e^*(1+\lambda^*\delta^*)P^*_e = c+e^*(1+\delta^*)\alpha \qquad \text{[from (35)]}$$

respectively. Thus if maximization of domestic absorption were the only objective, Scheme II would appear to be the best and Scheme III the worst, since under Scheme II it is possible to fix only $e(1+s_n)$ and variations in domestic demand or other conditions leading to changes in q or δ do not affect the optimal value of $e(1+s_n)$.

However, there is nothing to ensure that Scheme II is the most efficient in containing the level of domestic prices. Under changing condition the estimation of the two policy parameters <u>separately</u> may be more difficult and the inflationary impact of the departure of their values from the optimum may be more adverse under this scheme than under its alternatives. Again, it is far from easy to prevent the seepage of imports under Advance Licensing for meeting domestic demand. With $e(1+s_n) = [e(1+s_n)]^*$, such seepage would not stand in the way of maximizing net exports and hence domestic absorption. But this will have a serious effect on the net revenue of the government through a reduction in the amount of foreign exchange available for sale through auctioning. Thus even when the Tinbergen principle (of the number of policy instruments being equal to the number of objectives) is satisfied, the choice among alternative schemes will generally depend not only on the relative difficulty of their administration (which is not considered in the formal framework), but also on the weights attached to different objectives.

VII. Conclusion

1. Shortage of foreign exchange would not be a binding constraint on domestic production if the elasticity of export demand is sufficiently high and the government follows an appropriate trade and exchange rate policy.

2. When domestic output is limited by the availability of imported inputs, for each unit of import of consumption or investment goods there will be a decline in gross domestic product by more than one unit. The absolute value of this (negative supply-side) multiplier varies inversely with the import-content of domestic output.

3. Maximization of net foreign exchange earning is a necessary condition for attaining the objectives of maximizing the level of domestic absorption and minimizing prices. Market mechanism by itself (without any active government intervention) does not ensure the fulfilment of these objectives.

4. It follows from (2) that the "domestic availability" criterion regarding imports is eminently sensible irrespective of whether the prices of final products reflect their marginal contribution to social welfare or not. Only when some final goods cannot be produced domestically and the prevailing prices do not reflect the relative net social benefit from indigenous and foreign goods, is it necessary to modify the criterion and permit the import of some "essential" consumption and investment goods. These considerations remain valid even when foreign credit is available for capital goods imports.

5. The objectives of maximizing domestic production and minimizing the rate of inflation (subject to the constraints operating in the system) can generally be met through alternative pairs of policy parameters. In a deterministic framework with full information there is nothing to choose

among these pairs. However, the cost of information and administration, the degree of uncertainty and the relative importance of the objectives should be important in the choice among alternative options. When the dominant objective is domestic absorption and the government machinery is fairly efficient, a system of Advance Licensing with subsidy on net export and auctioning of foreign exchange after meeting essential imports seems to have an edge over its alternatives. However, when the cost of implementation and the price effect are taken into account, export subsidy along with auctioning of foreign exchange should generally be the most effective system.

6. For given amounts of net export earnings and net revenue accruing to the government, domestic prices and production are invariant with respect to changes in the degree of monopoly in the market for final goods, in domestic factor costs and in taxes. A reduction in customs duties will, through adjustments in the market clearing value of the available foreign exchange and a reduction in government revenue, tends to raise the prices of both imported inputs and domestic goods. Substitution of tariffs by excise duties will in general have no effect on the prices of indigenous and foreign goods. There will thus be no change in the effective degree of protection enjoyed by industries producing final goods but the profitability of their production will fall relatively to that of industries producing substitutes of foreign inputs. However, this will have an impact only in the long run through a change in the pattern of domestic investment.

7. The paper concentrates on the behaviour of the economy and policy options in the short and the medium run when the structure of the production sector does not undergo a significant change. When long-run considerations are brought into the picture, the optimum package of policies must include some new instruments for controlling the volume and the pattern of domestic investment. It is also possible that the policy instruments which are optimal in the short and the medium run, have to be drastically changed, if not abandoned altogether. We have

already noted how some variant of the domestic availability criterion has to form an integral part of the import policy. However, the application of the criterion generally involves protection of inefficient units or industries and effects thereby a misallocation of investment and a reduction in the long-term growth potential of the economy. Since the short-run cost of production to the economy equals only the cost of imported inputs (when foreign exchange is the binding constraint), the problem consists in finding the optimum mix of instruments such that while the installed capacity is fully utilized, investment is undertaken in only those sectors or units which can become competitive in the international market. From this viewpoint of attaining both the short and the long-term objectives, Scheme I (export subsidy with auctioning of foreign exchange) may be easier to supplement than Scheme II (Advance Licensing with auctioning of foreign exchange) since the latter causes significant distortion (a) in relative profitability of investment in industries producing final products and intermediate goods; and (b) in the choice of the degree of vertical integration in setting up production units.

REFERENCES

1. Bacha, E. (1984), "Growth with Limited Supplies of Foreign Exchange : A Reappraisal of the Two Gap Model", in M. Syrquin, L. Taylor and W. Westphal (eds.), Economic Structure and Performance : Essays in Honour of Hollis Chenery (Academic Press: New York).

2. Chenery, H. and M. Bruno (1962), "Development Alternatives in an Open Economy : The Case of Israel", Economic Journal.

3. Chenery, H. and A. Straut (1966), "Foreign Assistance and Economic Development", American Economic Review.

4. Government of India, Ministry of Commerce (1991), Statement of Trade Policy, August 13.

5. Government of India, Ministry of Finance (1992), Budget Speech.

6. McKinnon, R. (1964), "Foreign Exchange Constraints in Economic Development", Economic Journal.

7. Rakshit, M. (1990), "Aspects of Foreign Trade in a Developing Country", in A. Guha (ed.), Economic Liberalization, Industrial Structure and Growth in India (Oxford University Press: Delhi).

8. Rakshit, M. (1991), "The Macroeconomic Adjustment Programme : A Critique", Economic and Political Weekly, August 24.

9. Rakshit, M. (1992), "Some Simple Economics of Eximscrips", Working Paper, National Institute of Public Finance and Policy, February.

TERFEC.MKR/3307/6-5-1992

NIPFP WORKING PAPER SERIES : 1991-92

Working Paper No.	Title	Author's Name
1/91	Do Rate Schedules Affect Sensitivity of Personal Income Tax? An Evidence from a Developing Country	Pawan K Aggarwal (January, 1991)
2/91	Effect of Domestic Government Debt on Private Consumption And Saving in India	S Gopalakrishnan (April, 1991)
3/91	Reforms in Indian Sales Tax System	Mahesh C Purohit (June, 1991)
4/91	Monitoring Budget Deficits with Time Series Models Some Observations	JVM Sarma (June, 1991)
5/91	Public Expenditure in India: Emerging Trends	M Govinda Rao V B Tulasidhar (June, 1991)
6/91	A New Global Measure of Tax Progressivity	Pawan K. Aggarwal (August, 1991)
7/91	A New Hybrid Measure of Tax Progressivity	Pawan K. Aggarwal (August, 1991)
8/91	Priorities in Resource Allocation for Health Care in India: A Basic Needs Approach	K.N. Reddy K.K. Tripathy (August, 1991)
9/91	Domestic Market Structure And Exports in a Developing Country	Murali Patibandla (October, 1991)
10/91	Tax Reform in Developing Countries Agenda for the 1990s	Amaresh Bagchi (November, 1991)
11/91	Foreign Collaborations, Foreign Direct Investment And Taxation of Foreign Companies in India : Some Policy Issues	Manoj Pant (December, 1991)

12/91	Protection, Growth And Competitiveness : A Study of the Indian Capital Goods Industry	Sudipto Mundle Hiranya Mukhopadhyay (December, 1991)
1/92	Containment of Food Subsidy in the Context of Revenue Deficit	K.N. Reddy V. Selvaraju (January, 1992)
2/92	Some Simple Economics of Eximscrips	Mihir Rakshit (February, 1992)
3/92	Horizontal Equity and Disequalising Intergovernmental Transfers: An Example	A. Das-Gupta (April, 1992)
4/92	Analysing Progressivity of Personal Income Taxes: A Case Study of India	Pawan K. Aggarwal (May, 1992)

NATIONAL INSTITUTE OF PUBLIC FINANCE AND POLICY
NEW DELHI

LIST OF PUBLICATIONS

1. **Incidence of Indirect Taxation in India 1973-74** R.J. Chelliah & R.N. Lal (1978) Rs 10.

2. **Incidence of Indirect Taxation in India 1973-74** R.J. Chelliah & R.N. Lal (Hindi Version) (1981) Rs 20.

3. **Trends and Issues in Indian Federal Finance** R.J. Chelliah & Associates (Allied Publishers) (1981) Rs 60.

4. **Sales Tax System in Bihar*** R.J. Chelliah & M.C. Purohit (Somaiya Publications) (1981) Rs 80.

5. **Measurement of Tax Effort of State Governments 1973-76*** R.J. Chelliah & N. Sinha (Somaiya Publications) (1982) Rs 60.

6. **Impact of the Personal Income Tax** Anupam Gupta & Pawan K. Aggarwal (1982) Rs 35.

7. **Resource Mobilisation in the Private Corporate Sector** Vinay D. Lall, Srinivas Madhur & K.K. Atri (1982) Rs 50.

8. **Fiscal Incentives and Corporate Tax Saving** Vinay D. Lall (1983) Rs 40.

9. **Tax Treatment of Private Trusts** K Srinivasan (1983) Rs 140.

10. **Central Government Expenditure: Growth, Structure and Impact (1950-51 to 1978-79)** K.N. Reddy, J.V.M. Sarma & N. Sinha (1984) Rs 80.

11. **Entry Tax As An Alternative to Octroi** M.G. Rao (1984) Rs 40 Paperback, Rs 80 Hardcover.

12. **Information System and Evasion of Sales Tax in Tamil Nadu** R.J. Chelliah & M.C. Purohit (1984) Rs 50.

13. **Evasion of Excise Duties in India: Studies of Copper, Plastics and Cotton Textile Fabrics (1986)** A. Bagchi et. al (1986) Rs 180.

14. **Aspects of the Black Economy in India** (also known as "Black Money Report") Shankar N. Acharya & Associates, with contributions by R.J. Chelliah (1986) Reprint Edition Rs 270.

15. **Inflation Accounting and Corporate Taxation** Tapas Kumar Sen (1987) Rs 90.

16. **Sales Tax System in West Bengal** A. Bagchi & S.K. Dass (1987) Rs 90.

17. **Rural Development Allowance (Section 35CC of the Income-Tax Act, 1961): A Review** H.K. Sondhi & J.V.M. Sarma (1988) Rs 40 Paperback.

18. **Sales Tax System in Delhi** R.J. Chelliah & K.N. Reddy (1988) Rs 240.

19. **Investment Allowance (Section 32A of the Income Tax Act, 1961): A Study** J.V.M. Sarma & H.K. Sondhi (1989) Rs 75 Paperback, Rs 100 hardcover.

20. **Stimulative Effects of Tax Incentive for Charitable Contributions: A Study of Indian Corporate Sector** Pawan K. Aggarwal (1989) Rs 100.

21. **Pricing of Postal Services in India** Raghbendra Jha, M.N. Murty & Satya Paul (1990) Rs 100.

22. **Domestic Savings in India - Trends and Issues** Uma Datta Roy Chaudhury & Amaresh Bagchi (Ed.) (1990) Rs 240.

23. **Sales Taxation in Madhya Pradesh** M. Govinda Rao, K.N. Balasubramanian and V.B. Tulasidhar (Vikas Publishing House) (1991) Rs 125.

24. **The Operation of MODVAT** A.V.L. Narayana, Amaresh Bagchi and R.C. Gupta, (Vikas Publishing House) (1991) Rs 250.

25. **Fiscal Incentives and Balanced Regional Development: An Evaluation of Section 80 HH** Pawan K. Aggarwal and H.K. Sondhi (Vikas Publishing House) (1991) Rs 195.

26. **Direct Taxes in Selected Countries : A Profile** (Vol.I & II) Rs 100.

27. **Effective Incentives for Aluminium Industry in India: Monograph Series - I** Bishwanath Goldar (1991) Rs. 100.

28. **Survey of Research on Fiscal Federalism in India, Monograph Series - II** M.Govinda Rao and R.J. Chelliah (1991) Rs. 100.

29. **Revenue and Expenditure Projections: Evaluation and Methodology** V.G. Rao, Revised and Edited by Atul Sarma (Vikas Publishing House) (1992) Rs. 195.

30. **Sales Tax Systems in India: A Profile** 1991 Rs 150.

31. **State Finances in India** Amaresh Bagchi, J.L. Bajaj and William A. Byrd (ed.) (1992) Rs 450.

---

* Available with respective publishers. Publications sent against draft/pay order. Postage Rs 15 per copy. 10% discount is available on all Publications.

NATIONAL INSTITUTE OF PUBLIC FINANCE AND POLICY
18/2, Satsang Vihar Marg
Special Institutional Area
New Delhi - 110067.