Financing Public Expenditure on Imports in India under the New Economic Policy

Debashree Chakraborty
Assistant Professor, Department of Economics
Adamas University, Barasat

Ambar Ghosh
Professor of Economics
Department of Economics, Jadavpur University, Kolkata

Abstract

Fiscal Deficit Target which constitutes a cap on government's borrowing has been a hallmark of the New Economic Policy (NEP) that India adopted in 1991 at the behest of IMF and World Bank. Tracing the trajectory of the expenditure pattern of the present Government of India, we have seen that there has been a steady rise in the government's spending on imported armaments and imported capital goods. The aim of the paper is to consider the modes of financing of this enhanced government expenditure and the four different means of financing that we have considered are namely external borrowing, internal borrowing, taxation of capitalists' income and indirect taxation. We have examined the short term macroeconomic impacts of all these four policies both in the presence of the fiscal deficit target and in its absence. We have found that the best way of financing the increase in the government's expenditure on imported goods is by taxing the capitalists' income in the presence of the fiscal deficit target. We have also found that the fiscal deficit target produces strong recessionary effects in the cases of internal and external borrowings. It acts as an automatic destabilizer in the cases of direct and indirect taxation. This paper therefore builds a strong critique of the ideological orthodoxy of the fiscal policy of the NEP pursued in India.

Keywords*: fiscal deficit target, automatic destabilizer, new economic policy*
Subject classification codes*: E12, E62*

1. Introduction

Every catastrophe comes with a silver lining. The COVID 19 pandemic has put the need of enhanced government expenditure back into popular discourse which years of tight fiscal discipline had managed to sideline. Across the globe there has been an economic as well as ideological opposition to government spending which gets reflected in the fiscal deficit target (which stands for government borrowing).Governments across all countries adhere to this target fervently. Stringent restrictions on the size of the fiscal deficit as a proportion of GDP has been a hallmark of the New Economic Policy (NEP) that India adopted in 1991 at the behest of the IMF and World Bank. In pursuance of the Fiscal Responsibility and Budgetary Management Act (FRBM Act 2003) and the subsequent recommendations of the Urjit Patel Committee Report (Reserve Bank of India 2014), India adheres to a fiscal deficit target of around 3% of GDP. With the pandemic and a strict lockdown throwing economic activity in doldrums, real GDP growth is projected to contract by 7.7% in 2020-21 as compared to

growth of 4.2% in 2019-20. (Government of India 2021). The government had responded by announcing fiscal stimulus packages which made the fiscal deficit target during April-November reach 135.1 % of the budgeted amount in 2020-21, higher relative to 114.8% of the budget estimate during the corresponding period of the previous year (Government of India 2021). However in line with the fiscal deficit target, the government had to scale it down to 6.8% of GDP in 2021-22 but higher than that laid down by the FRBM Act and the Urjit Patel Committee report. Government's fervent adherence to fiscal prudence is integral to the core idea of the "new consensus" in macroeconomics[1] that has been dominating the globe for the last few decades. Central to this idea is the belief that fiscal policy is incapable of tackling the problem of deficient demand and hence it is inferior to monetary policy which should be the tool for macroeconomic stabilization. Standard neoclassical framework argues that more public borrowing will crowd out private investment from the market and hamper growth. Price level will shoot up, the nominal wages will adjust to the higher price level and this will further dampen private investment. However there is little empirical evidence to support this proposition. As Pelagidis and Desli (2004) point out in a world of high unemployment and weakened trade union bargaining power, adjustment of wages to higher price level does not happen automatically. Apathy to take resort to budget deficit in times of recession allows the possibility of a vicious cycle between low growth and deficits (ibid). Evdoridis (2000) argued that not only during recession, generally in an economy budget deficits are a pre requisite to high growth rates; it helps the capital goods sector realize profit and thereby stimulates constant growth without inflation. Arestis and Sawyer (2003) argues that when budget deficit is viewed in terms of "functional finance" i.e. the purpose of deficit is to secure a high level of economic activity, then it does not crowd out private investment from the market. So there is ample theoretical insight as to why sticking to fiscal deficit target is not an act of prudence, but a reflection of ideological orthodoxy. This belief has been a driving motivation of our paper.

Coming back to the Indian context, we next consider it worthwhile to look at the expenditure pattern of the present government. For a country like India, import content is very high. Fuel and then capital goods are the principal imports in the basket of imports. Since 2014, there has been a steady rise in the import of machine tools and machinery (electrical and non-electrical) which form the bulk components of capital goods (as captured in Figure 1). This data is a testimony to the fact that the present government in India has raised its spending on imported armaments and imported capital goods (for example bullet trains). It is in this context that the question of financing this enhanced government expenditure becomes important. The purpose of this paper is to examine how this policy of raising public expenditure on imported goods is likely to affect India's GDP and well-being of the people under different modes of financing in the presence of the fiscal deficit target as well as in the case where the fiscal deficit target is absent. The modes of financing that we have considered are external borrowing, internal borrowing, taxation of capitalists' income and indirect taxation. Through these exercises, we have sought to identify the best mode of financing an increase in government's expenditure on imports and to examine whether the effects of the policies mentioned above become better or worse in the presence of the fiscal deficit target. To accomplish the tasks mentioned above, following Ghosh and Ghosh (2016), we have developed a model that we hope captures the salient features of the Indian economy.

[1] One can see Goodfriend and King (1997), Woodford (2003) for detailed analysis

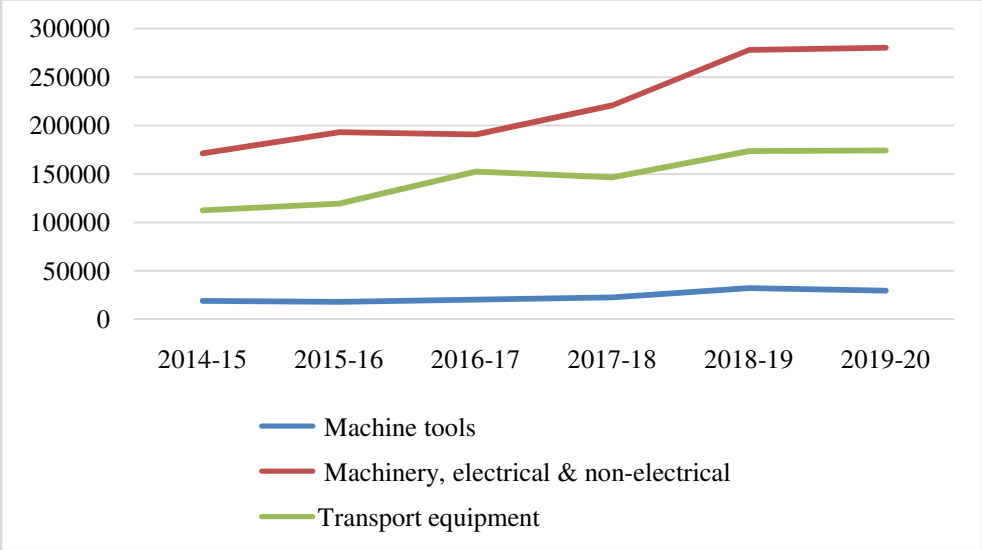

Figure 1: trend in imported capital goods (Source: Compiled by the authors from Reserve Bank of india data)

2. The Model

The model is developed on the lines suggested by Keynes(1936) and Kalecki(1954). The model consists of a real sector and a financial sector. Following Keynes, we assume that aggregate output or GDP of the economy is demand determined. The goods market equilibrium condition is given by

$$Y = c_w.\left(\frac{W}{P}\right) + c_c.(1-t).\left(Y - \frac{W}{P}\right) + G + I(r,e) + X\left(\frac{P^*e}{P}; Y^*\right) - \frac{P^*e}{P}\left[M_G + m.c_c.(1-t).\left(Y - \frac{W}{P}\right) + m_I.I(r,e) + m_Y Y\right] \quad (1)$$

where $Y \equiv$ GDP, $c_w \equiv$ average and marginal consumption propensity of the workers, $c_c \equiv$ average and marginal consumption propensity of the capitalists, $W \equiv$ aggregate given money income of the workers, $P \equiv$ domestic price level, $G \equiv$ government consumption, $I \equiv$ aggregate gross investment, $r \equiv$ domestic interest rate, $e \equiv$ nominal exchange rate, $X \equiv$ export, $P^* \equiv$ foreign price level in foreign currency, $Y^* \equiv$ foreign GDP, $M_G \equiv$ the part of G that represents demand for final foreign goods, $m \equiv$ the fraction of capitalists' consumption expenditure that is spent on final foreign goods, $m_I \equiv$ the fraction of aggregate investment expenditure spent on final foreign goods and $m_Y \equiv$ imported input requirement per unit of Y. Final foreign goods mean those foreign goods that are imported but not used as intermediate inputs in domestic production. We regard India to be a small open economy so that P^* and Y^* are given to India.

Let us explain the RHS of (1). The first and the second term give workers' and capitalists' consumption demand, respectively. We assume for simplicity and without any loss of generality that the amount of labour employed in production is fixed and the only variable

input of production is the imported intermediate goods used in production. This assumption is also justified in Indian context for the following reasons. The major part of India's GDP is produced in the organized sector in India. Its output has been growing in the post-reform period in India at an average annual rate of about 6 percent. But employment in the organized sector has virtually been stagnant .In the unorganized sector, quite a large part of the output is produced in family firms and the family members get the profit as their remuneration. Thus, the assumption that labour is a fixed input makes sense in Indian context. This model is a short run model and the money wage rate is assumed to be fixed. Workers also earn interest income in the given period on the savings, which they lent out in the past periods at interest rates that prevailed in the past periods. Thus, workers' interest income in the given period is also given. The total given money income of the workers in the given period is denoted by *W*.

Aggregate gross investment demand is, as standard, a decreasing function of *r*. It is also assumed to be a decreasing function of the nominal exchange rate. This assumption may be explained as follows. India, as we have already mentioned, is dependent on imported technology. Technology is imported in the form of machinery and equipment. An increase in the exchange rate, given by P^*, makes imported capital goods costlier in terms of domestic currency. This, given investors' expectations regarding future, discourages investment. Again, India is crucially dependent on imported intermediate inputs. An increase in *e* makes imported intermediate inputs costlier in terms of domestic currency. Indian firms also have large amounts of external debt denominated in foreign currency. An increase in *e* makes external debt service charges larger in terms of domestic currency. All these adverse supply shocks depress investor sentiments and, thereby, dampen investment demand. There is prima facie empirical evidence in support of this assumption in Indian context (Ghosh and Ghosh (2016)).

The export function is standard. The import function is self-explanatory. For simplicity, we have taken m, m_I and m_Y to be fixed instead of making them functions of the real exchange rate. Following Kalecki (1954), we assume that *P* is set by applying a fixed mark-up, denoted by $\bar{\gamma}$, to the average variable cost of production.

$$P = \bar{\gamma} m_Y P^* e \equiv \gamma P^* e \quad ; \ \bar{\gamma} > 1 \tag{2}$$

BOP Equilibrium

In India, data on exchange rate show that it is highly flexible. So, we assume a flexible exchange rate regime. We also assume for simplicity and without any loss of generality that the net inflow of capital is exogenously given and it is denoted by $\bar{K}$. Hence, the BOP equilibrium condition may be written as:

$$X\left(\frac{P^* e}{P}; Y^*\right) - \frac{P^* e}{P}\left[M_G + m.c_c(1-t).\left(Y - \frac{W}{P}\right) + m_I.I(r,e) + m_Y Y\right] + \bar{K} = 0 \tag{3}$$

Substituting (2) into (3), we rewrite it as follows:

$$X\left(\frac{1}{\gamma}, Y^*\right) - \frac{1}{\gamma}\left[M_G + mc_c(1-t)\left\{Y - \frac{W}{\gamma P^* e}\right\} + m_I I(r.e) + m_Y Y\right] + \overline{K} = 0$$

(4)

The Financial Sector

The RBI seeks to keep interest rate at a target level through its liquidity adjustment facility (LAF) and open market operations. Hence, we shall regard *r* as a policy variable of the RBI and take it as exogenously given. Thus, we write

$$r = \overline{r}$$

(5)

Government's Budget Constraint

Given the fiscal deficit target, government's budget deficit cannot exceed a fixed fraction, (say *a*) of GDP. We assume government's expenditure to consist of two components, namely, government's expenditure on domestic goods (denoted by G_D) and government's expenditure on imported goods (denoted by M_G). Government's budget constraint is, therefore, written as

$$G = G_D + \frac{P^* e}{P} M_G = t\left(Y - \frac{W}{P}\right) + aY$$

(6)

Substituting (5) into (4), we rewrite it as follows:

$$X\left(\frac{1}{\gamma}, Y^*\right) - \frac{1}{\gamma}\left[M_G + mc_c(1-t)\left\{Y - \frac{W}{\gamma P^* e}\right\} + m_I I(\overline{r}, e) + m_Y Y\right] + \overline{K} = 0$$

(7)

Substituting (2), (5), (6) and (7) into (1), we rewrite it as

$$Y = c_w.\left(\frac{W}{\gamma P^* e}\right) + c_c.(1-t).\left(Y - \frac{W}{\gamma P^* e}\right) + t(Y - \frac{W}{\gamma P^* e}) + aY + I(\overline{r}, e) - \overline{K}$$

(8)

The specification of the model is now complete in the fiscal deficit target case. It is given by the two key equations, (7) and (8), in two endogenous variables *Y* and *e*. We can solve (7) and (8) for *Y* and *e* in the fiscal deficit target case.

No Fiscal Deficit Target Case

When there is no fiscal deficit target, *G* is autonomous and not fettered by the budget constraint (6). In this case, we substitute (2), (5) and (7) into (1) and rewrite it as

$$Y = c_w.\left(\frac{W}{\gamma P^* e}\right) + c_c.(1-t).\left(Y - \frac{W}{\gamma P^* e}\right) + I(\bar{r}, e) + G - \overline{K} \quad (9)$$

We can solve (7) and (9) for the equilibrium values of *Y* and *e*.

3. An Increase in Government's Expenditure on Imported Goods

As we have already mentioned, the present government in India has substantially increased expenditure on imported weapons and luxury capital goods such as bullet train. Thus, there has taken place under the present government substantial increase in M_G. What kind of impact is it likely to produce on GDP under different modes of financing in the presence of the fiscal deficit target as well as in its absence? We shall use the model developed above to answer this question. An increase in M_G may be financed by external borrowing, internal borrowing, direct taxation and indirect taxation. We will explore all these four cases here.

3.1 *An increase in government expenditure financed by External Borrowing*

If an increase in M_G is financed by external borrowing, $\overline{K}$ rises so that $d\left(\frac{P^* e}{P} M_G\right) = d\overline{K} = A$. Here, we assume for simplicity that the government decides on $d\overline{K}$, fixes its value at a given amount *A* and allows dM_G to be determined endogenously. We shall examine the impact of this increase in government expenditure on imported goods in both the cases of fiscal deficit target and no fiscal deficit target. We take up the fiscal deficit target case first.

The Case of the Fiscal Deficit Target

To derive the impact of the increase in government consumption mentioned above, we take total differential of (7) and (8) treating all exogenous variables other than $\overline{K}$ as fixed, set $d\left(\frac{P^* e}{P} M_G\right) = d\overline{K} = A$ and, then, solve them for dY and de. Taking total differential of (7), setting $d\left(\frac{P^* e}{P} M_G\right) = d\overline{K} = A$, and solving for *de*, we get

$$de = \theta dY, \text{ where } \theta \equiv \frac{[m.c_c.(1-t). + m_Y]}{\left[m_I(-I_e) - mc_c.(1-t).\frac{W}{\gamma P^* e^2}\right]} > 0 \quad (10)$$

The sign of θ follows from our assumption that the denominator of the expression on the RHS of (10) is positive. This means that an increase in the exchange rate improves BOP. This assumption is needed for reasons of stability (see (a.12) in Appendix). Let us now

explain (10). Following an increase in $\overline{K}$ and $\left(\frac{P^*e}{P}M_G\right)$ by $d\overline{K}$, BOP remains in equilibrium at the initial equilibrium (Y,e). Hence, *e* will change if and only if *Y* changes. Per unit increase in *Y*, given the exchange rate, total import will increase for two reasons: First, the amount of imported intermediate inputs will increase by m_Y . Second, capitalists' disposable profit will go up by $(1-t)$ and this will raise capitalists' demand for imported consumption goods by $(1-t)mc_c$. Hence, per unit increase in *Y*, net export and, therefore, BOP at the initial equilibrium exchange rate goes down by the numerator. Therefore, to equilibrate the foreign exchange market, *e* has to rise so that BOP rises by the value of the numerator. Per unit increase in *e*, BOP rises by the amount given by the denominator. Per unit increase in *e* investment falls by $(-I_e)$ lowering import by $m_I(-I_e)$. On the other hand, per unit increase in *e* price level rises raising profit by $(1-t)\frac{W}{\gamma P^* e^2}$. Hence, import of consumption goods rises by $mc_c(1-t)\frac{W}{\gamma P^* e^2}$. In the net, therefore, net export and BOP goes up by the amount given by the denominator per unit increase in *e*. This explains the value of θ .

Again, taking total differential of (8), and substituting (10) into it and, then, solving for *dY*, we get

$$dY = -\frac{A}{1-\left[\left\{c_c(1-t)+(t+a)+t\frac{W}{\gamma P^* e^2}\theta\right\}-\left\{(c_w-c_c(1-t))\frac{W}{\gamma P^* e^2}+(-I_e)\right\}\theta\right]} < 0 \quad (11)$$

Let us explain (11). In the present case, aggregate government expenditure equals, as follows from (6), $\left(aY+t\left(Y-\frac{W}{P}\right)\right)$ of which $\frac{P^*e}{P}M_G$ is spent on foreign goods. Following an increase in this component of government expenditure by $d\overline{K} = A$, government expenditure on domestic goods goes down by the same amount at the initial equilibrium (*Y*, *e*), while BOP remains in equilibrium since government expenditure on imported goods and $\overline{K}$ rise by the same amount. All other components of expenditure on domestic goods remain unaffected. Thus, at the initial equilibrium *Y* and *e*, there emerges an excess supply of *Y* by the amount *A*. Producers reduce *Y* to remove this excess supply. Per unit fall in *Y*, aggregate planned demand for domestic goods in the flexible exchange rate regime falls not only by the aggregate personal marginal consumption propensity given by $c_c(1-t)$ but also by the government's marginal spending propensity $(a+t)$. The latter, which is due to the fiscal deficit target, makes the fall in aggregate demand per unit decline in *Y* substantially larger. This fall in aggregate demand is somewhat cushioned by the rise in consumption and investment demand by $(c_w-c_c(1-t))\frac{W}{\gamma P^* e^2}\theta$ and $(-I_e\theta)$, respectively, due to the fall in *e* induced by the unit decline in *Y*. Let us explain. Per unit fall in *e*, price goes down redistributing income from the capitalists to the workers by the amount $\frac{W}{\gamma P^* e^2}$. This raises

aggregate personal consumption demand by $(c_w - c_c(1-t))\frac{W}{\gamma P^* e^2}$. Per unit fall in *Y*, *e* falls by θ. Hence, aggregate personal consumption demand rises by $(c_w - c_c(1-t))\frac{W}{\gamma P^* e^2}\theta$ per unit fall in *Y*. However, the fall in profit lowers tax revenue and, therefore, government's consumption by $t.\frac{W}{\gamma P^* e^2}\theta$. Finally, investment goes up by $(-I_e)\theta$. Therefore, per unit fall in in *Y*, the reduction in excess supply is given by the denominator of the expression on the RHS of (11), which has to be positive for reasons of stability (see (a.16) in Appendix). Clearly, the multiplier is much larger because of the government's *e*-adjustment augmented marginal propensity to spend $(a+t)+t.\frac{W}{\gamma P^* e^2}\theta$, which is due to the fiscal deficit target. This yields the following proposition:

Proposition 1: When the government raises its expenditure on imported goods and finances it by borrowing externally, GDP will contract in the presence of a fiscal deficit target. Note that the contraction in GDP hurts the poor people engaged in production in the unorganized sector by reducing their income, which they earn principally in the form of profit.

The Case of No Fiscal Deficit Target

Let us now focus on the case where there is no fiscal deficit target. In this case, $d\left(\frac{P^* e}{P}M_G\right) = d\overline{K} = dG = A$. The government decides on *dG*and $d\overline{K}$ andallows M_G to be determined endogenously. Taking total differential of (7), we set $d\left(\frac{P^* e}{P}M_G\right) = d\overline{K} = A$, and, then, solving for *de* , we get (10) as in the earlier case. Taking total differential of (9), treating all exogenous variables other than *G* and $\overline{K}$ as fixed, setting $dG = d\overline{K} = A$, substituting (10) for *de* and, then, solving for *dY*, we get

$$dY = 0 \qquad (12)$$

Substituting (12) into (10), we get

$$de = 0 \quad (13)$$

Let us explain (12) and (13). In the absence of fiscal deficit target, an increase in $\frac{P^* e}{P}M_G$ by $dG = A$ financed by an equal increase in $\overline{K}$ keeps BOP in equilibrium at the initial equilibrium (Y,e) and leaves aggregate private and public spending on domestic goods at the initial equilibrium (Y,e) unaffected. Hence, both domestic GDP and exchange rate remain unaffected.

The above analysis yields the following proposition.

Proposition 2: An increase in government expenditure on imported goods financed by external borrowing leaves GDP unaffected in the absence of a fiscal deficit target. However, it brings about a large cumulative fall in GDP in the presence of the fiscal deficit target.

3.2 An Increase in Government Expenditure is financed by Internal Borrowing

Internal Borrowing

We now consider the case where the government raises its expenditure on imported goods by a given amount $A = d\left(\frac{P^* e}{P} M_G\right)$ and finances it by internal borrowing.

Fiscal Deficit Target

We first focus on the case of the fiscal deficit target, where the equilibrium values of Y and e are yielded by(7) and (8). To derive the impact of the change noted above on GDP, we first take total differential of (7) treating all exogenous variables as fixed, set $d\left(\frac{P^* e}{P} M_G\right) = A$ and, then, solve fo de . The solution is given by

$$de = \frac{A}{\bar{\theta}} + \theta dY \qquad \bar{\theta} = \frac{1}{\gamma}\left[m_I(-I_e) - mc_c.(1-t).\frac{W}{\gamma P^* e^2} \right] > 0$$ (For reasons of stability see (a.16) in Appendix) and

$$\theta \equiv \frac{(mc_c(1-t) + m_Y)}{m_I(-I_e) - mc_c(1-t)\frac{W}{\gamma P^* e^2}} > 0 \qquad (14)$$

Taking total differential of (8) treating all exogenous variables as fixed, substituting (14) for *de* and, then, solving for *dY*, we get

$$dY = -\frac{\left[\{c_w - c_c(1-t) - t\}\frac{1}{\gamma P^* e^2} + (-I_e)\right]\frac{A}{\bar{\theta}}}{1 - \left[\left\{c_c(1-t) + (a+t) + t.\frac{W}{\gamma P^* e^2}\theta\right\} - \left\{(c_w - c_c(1-t))\frac{W}{\gamma P^* e^2} + (-I_e)\right\}\theta\right]} < 0 \qquad (15)$$

(15) may be explained as follows. In the present case, total government expenditure equals $\left(aY + t\left(Y - \frac{W}{P}\right)\right)$ of which $\frac{P^* e}{P} M_G$ represents expenditure on imported products. An increase `in $\frac{P^* e}{P} M_G$ by $d\left(\frac{P^* e}{P} M_G\right) = A$ reduces government's expenditure on domestic goods by the same amount at the initial equilibrium (Y, e). However, this is neutralized by an equal increase in net export net of government's imports due to the BOP deficit induced

increase in e by $\frac{A}{\bar{\theta}}$ at the initial equilibrium Y. Hence aggregate planned spending on domestic goods remains the same as before at the initial equilibrium Y. However, the increase in e reduces investment demand by $(-I_e)\frac{A}{\bar{\theta}}$. Besides this, the increase in e will raise domestic price level and this will redistribute income from the workers to the capitalists. The increase in profit will raise tax collection and, thereby government's consumption. Thus aggregate personal and public consumption will fall by $(c_w-(c_c(1-t)+t))\frac{W}{\gamma P^* e^2}\frac{A}{\bar{\theta}}$. Since c_c and t are very small relative to c_w, the expression $(c_w-(c_c(1-t)+t))\frac{W}{\gamma P^* e^2}\frac{A}{\bar{\theta}}$ is highly likely to be negative. Moreover, since import intensity of I is quite high in India, $(-I_e)$ is likely to be quite large. Hence, the numerator of the expression on the RHS of (15) without the minus sign can be safely taken to be positive. Therefore, the numerator of the expression on the RHS of (15) (without the minus sign) gives the excess supply of goods and services that emerges at the initial equilibrium Y following the increase in government expenditure on imports financed by internal borrowing in the presence of a fiscal deficit target. The denominator, as we have already explained in the context of (11), measures the fall in excess supply per unit decline in Y when e adjusts along with the fall in Y to keep the BOP in equilibrium. Let us briefly explain the process of contraction. Following the emergence of excess supply at the initial equilibrium Y, producers in the first round lower Y by $\left[(c_w-(c_c(1-t)+t))\frac{W}{\gamma P^* e^2}+(-I_e)\right]\frac{A}{\bar{\theta}}=dY_1$. This fall in Y will lower the exchange rate by θdY_1. These two together will lower aggregate demand for domestic goods by μdY_1, where μ denotes the expression within third brackets in the denominator of (15). In the second round, therefore, Y will fall by $dY_2=\mu dY_1$. Similarly, in the third round, Y will fall by $dY_3=\mu dY_2=\mu^2 dY_1$. This is how the process of contraction will continue until the fall in demand that takes place in each successive round eventually falls to zero. Thus, the total fall in Y is given by

$$dY=dY_1+\mu dY_1+\mu^2 dY_1+\ldots\ldots\ldots\ldots=\frac{1}{1-\mu}dY_1 \quad (16)$$

(16) explains (15). Given the very wide income disparity between the workers and the capitalists and the low level of t (which is capped at about 30 percent in India), $(c_w-(c_c(1-t)+t))\frac{W}{\gamma P^* e^2}$ is highly likely to be positive. Again, given the very high degree of import intensity of investment, India being completely dependent on foreign technology for reasons we have explained earlier, $(-I_e)$ is likely to be quite large. For all these reasons, following an increase in government expenditure financed by internal borrowing, there is likely to be a large and cumulative decline in Y in the presence of a fiscal deficit target. This yields the following proposition:

Proposition 3: Following an increase in government expenditure on imported goods financed by internal borrowing, one can almost safely say that there will

be a large and cumulative decline in *Y* in India in the presence of a fiscal deficit target.

No Fiscal Deficit Target Case

We now focus on the no fiscal deficit target case, where we get *Y* and *e* by solving (7) and (9). To derive the impact of an increase in $\frac{P^*e}{P}M_G$ by $dG = d\left(\frac{P^*e}{P}M_G\right) = A$ on *Y*, we first take total differential of (7) treating all exogenous variables as fixed, set $d\left(\frac{P^*e}{P}M_G\right) = dG = A$ and, then, solve for *de*. This gives us

$$de = \frac{dG}{\bar{\theta}} + \theta dY = \frac{A}{\bar{\theta}} + \theta dY \text{ (see (14))} \tag{17}$$

Now, taking total differential of (9) treating all exogenous variables other than G as fixed, substituting (17) for *de* and, then, solving for *dY*, we get

$$dY = \frac{A\left[1 - \left\{\left(c_w - c_c(1-t)\right)\frac{W}{\gamma P^* e^2} + \left(-I_e\right)\right\}\frac{1}{\bar{\theta}}\right]}{1 - \left[c_c(1-t) - \left\{\left(c_w - c_c(1-t)\right)\frac{W}{\gamma P^* e^2} + \left(-I_e\right)\right\}\theta\right]} \tag{18}$$

Comparing the expressions on the RHSs of (15) and (18), we find that the numerator in (18) is highly likely to be much larger. It may be positive as well. The denominator, on the other hand, is also much larger in (18) because of the absence of the term $(a+t)+t\frac{W}{\gamma P^* e^2}$. Both of these make the contraction in *Y* much smaller in the present case. *Y* may even expand. We may explain the difference in the following manner. When the government takes recourse to internal borrowing and uses the loan raised to spend on imported goods, both *G* and $\frac{P^*e}{P}M_G$ increase by the same amount and aggregate planned demand for domestic goods at the initial equilibrium (Y,e) remains unaffected. However, the increase in demand for imports and the consequent BOP deficit induces an increase in the exchange rate, which raises net export by $d\left(\frac{P^*e}{P}M_G\right) = dG = A$ so that BOP deficit is removed. Therefore, at the initial equilibrium *Y* ,aggregate planned demand for domestic goods rises by $dG = A$. This increase in the aggregate demand for domestic goods at the initial equilibrium *Y* did not occur in the

presence of the fiscal deficit target. The increase in the exchange rate, however, lowers investment demand and aggregate consumption demand by $-I_e \frac{1}{\theta} A$ and $\left(c_w - c_c(1-t)\right)\frac{W}{\gamma P^* e^2}$, respectively. In the presence of the fiscal deficit target, the fall in aggregate consumption demand is less because of the increase in public consumption due to the additional tax collection from the additional profit caused by the increase in the domestic price level induced by the rise in the exchange rate. This difference is, however, negligible because the tax rate is effectively likely to be quite small in India. In the net, therefore, there may emerge excess demand or excess supply at the initial equilibrium *Y*. Even if there emerges an excess supply, its amount is likely to be substantially less than that in the fiscal deficit target case. The denominator, which measures the amount of fall in excess supply per unit decline in *Y*, is also much larger in the present case, as the shrinkage in *Y* does not reduce government expenditure. The above analysis yields the following proposition:

> **Proposition 4: Following an increase in government spending on imported goods financed by internal borrowing, GDP may increase in the absence of the fiscal deficit target. Even if it contracts, its contraction is highly likely to be substantially less than that in the presence of the fiscal deficit target.**

3.3 An Increase in Government Expenditure is financed by Additional Tax Collection from the Rich

Here we consider the case where the government raises its expenditure in terms of domestic goods on imported goods by a given amount *A* and finances it by taxing capitalists' income at a higher rate so that $A = d\left(\frac{P^* e}{P} M_G\right) = d\left[t\left(Y - \frac{W}{P}\right)\right]$. We first focus on the fiscal deficit target case and then on the one where there is no fiscal deficit target.

Fiscal Deficit Target Case

In this case, *Y* and *e* are given by (7) and (8). Taking total differential of (7), setting $d\left(\frac{P^* e}{P} M_G\right) = d\left[t\left(Y - \frac{W}{P}\right)\right] = A$ and, then, solving for *de*, we get

$$de = \theta_A A + \theta_Y dY; \quad \theta_A \equiv \frac{\left(1 - \frac{1}{\gamma} mc_c\right)}{\frac{1}{\gamma}\left[m_I(-I_e) - mc_c\left(\frac{W}{\gamma P^* e^2}\right)\right]} \text{ and } \theta_Y \equiv \frac{mc_c + m_Y}{\left[m_I(-I_e) - mc_c\left(\frac{W}{\gamma P^* e^2}\right)\right]} \tag{19}$$

Let us explain (19). Following the increase in government spending in terms of domestic goods on imported goods by *A* and additional tax collection from the capitalists by the same amount, net export at the initial equilibrium (Y, e) falls by $\left(1 - \frac{1}{\gamma} mc_c\right)A > 0$. Therefore, with *Y* remaining unchanged at its initial equilibrium value, *e* rises to raise net export by the same

amount to restore equilibrium in the foreign currency market. Per unit increase in *e*, net export rises by $\frac{1}{\gamma}\left[m_I(-I_e)-mc_c\left(\frac{W}{\gamma P^* e^2}\right)\right]>0$ (For reasons of stability, see (a.12) in Appendix). Hence, at the initial equilibrium *Y*, *e* goes up by $\theta_A A$. Following the government's adoption of the policy noted here, *Y* is likely to change. If it goes up by *dY*, with *e* remaining unchanged, import will go up and net export will fall by $\frac{1}{\gamma}(mc_c+m_Y)dY$. Hence, *e* will rise to raise net export by the same amount and, thereby, restore equilibrium in the foreign currency market. Since per unit increase in *e* net export rises by $\frac{1}{\gamma}\left[m_I(-I_e)-mc_c\left(\frac{W}{\gamma P^* e^2}\right)\right]>0$, *e* will go up by $\theta_Y dY$. This explains (19).

Now, taking total differential of (8), setting $d\left[t\left(Y-\frac{W}{P}\right)\right]=A$, substituting (19) for *de* and solving for dY, we get

$$dY=\frac{\left[(1-c_c)-\left\{(c_w-c_c)\frac{W}{\gamma P^* e^2}+(-I_e)\right\}\theta_A\right]A}{1-\left[(c_c+a)-\left\{(c_w-c_c)\frac{1}{\gamma P^* e^2}+(-I_e)\right\}\theta_Y\right]} \quad (20)$$

Let us now explain (20). Following the government's adoption of the policy considered here, at the initial equilibrium (Y,e), government's consumption expenditure rises by *A*, while capitalists' consumption and, thereby, aggregate consumption falls by $c_c A$. Thus, in the net aggregate demand for domestic goods goes up by $(1-c_c)A$ at the initial equilibrium (Y,e). Since c_c is quite small, $(1-c_c)A$ is substantially large. However, the policy considered here creates BOP deficit at the initial equilibrium (Y,e) raising *e* by $\theta_A A$. The increase in *e* lowers aggregate demand for *Y* in two ways. First, investment demand goes down by $(-I_e)\theta_A A$. Second, the increase in *e* raises domestic price redistributing income from the workers to the capitalists. This lowers aggregate consumption demand by $(c_w-c_c)\frac{1}{\gamma P^* e^2}\theta_A A$. In the net, therefore, aggregate demand for domestic goods changes by the amount given by the numerator at the initial equilibrium *Y*. Since c_c is quite small, $(1-c_c)$ is quite large and, therefore, there is a chance for the numerator to be positive. The denominator has to be positive for stability (this can be easily derived from Appendix). It gives the amount of fall in excess demand (excess supply) per unit increase (decrease) in *Y*, when *e*adjusts along with *Y* to keep BOP in equilibrium. Per unit increase (decrease) in *Y*, supply goes up (down) by 1 unit. However, aggregate demand for domestic goods also rises (falls). With *e* remaining unchanged, aggregate personal and public consumption demand increases (decreases) by (c_c+a). However, *e* does not remain unchanged. Per unit increase (decrease) in *Y*, there takes place an increase (decrease) in *e* by θ_Y. This lowers (raises) aggregate investment and

consumption demand by $\left[(c_w - c_c)\frac{1}{\gamma P^* e^2} + (-I_e)\theta_Y\right]$. Hence, in the net, aggregate demand for domestic goods rises (falls) by the term within third brackets in the denominator of the expression on the RHS of (20) per unit increase (decrease) in *Y*. This explains (20). Since the sign of the numerator is ambiguous, we get the following proposition:

> **Proposition 5: Following a given increase in government expenditure on imported goods financed by additional tax collection from capitalists' income, GDP may expand in the presence of a fiscal deficit target. It may decrease also.**

We will now compare the present case to those of external and internal borrowing in the presence of the fiscal deficit target.

Comparison to the Case of External Borrowing

If we compare the present case to that of external borrowing, we find that in the present case, there is a chance for the GDP to increase, but in the latter case GDP unambiguously falls – see (11). Let us explain this difference. In the latter case, as the government raises its spending on imported goods by *A*, it has to lower its spending on domestic goods by the same amount at the initial equilibrium (Y,e) because of the fiscal deficit target. Since the increase in government spending on imports is financed by external borrowing, BOP remains in equilibrium at the initial equilibrium (Y,e). Thus, at the initial equilibrium (Y,e), there emerges an excess supply of domestic goods by the amount *A*. Hence, *Y* and along with it *e* have to fall to remove the excess supply. In the present case, the increased public spending on imports is financed by raising additional tax revenue of *A* from the capitalists. Hence, despite the fiscal deficit target, the government need not lower its spending on domestic goods at the initial equilibrium (Y,e). However, the additional tax collection lowers capitalists' consumption demand by $c_c A$. Since, c_c is quite small, there emerges substantial excess demand for domestic goods of $(1-c_c)A$ at the initial equilibrium *Y*. However, unlike in the latter case, in the present case, there will emerge a BOP deficit of $(1-mc_c)A$ at the initial equilibrium (Y,e). This will raise *e* lowering aggregate demand for domestic goods. Thus, at the initial equilibrium *Y*, one cannot say a priori whether there will emerge excess demand for or excess supply of domestic goods. However, even if *Y* contracts in the present case, its contraction is likely to be less than that in the case of external borrowing. This yields the following proposition:

> **Proposition 6: In the presence of the fiscal deficit target, if an increase in government expenditure on imported goods is financed by external borrowing, GDP will fall unambiguously. However, if it is financed by taxing capitalists' income, GDP may even rise. Even if it contracts, its contraction is likely to be less.**

Comparison to the Case of Internal Borrowing

Let us now compare the present case to that of internal borrowing. In the latter case, the increase in government spending on imported goods by a given amount *A* in the presence of the fiscal deficit target is matched by an equal fall in government's spending on domestic

goods so that aggregate demand for domestic goods at the initial equilibrium (Y,e) falls by the given amount. However, the BOP deficit of *A* that the increased public spending on imported goods creates raises *e*, which raises net export net of government's imports by *A* so that aggregate demand for domestic goods is restored to its initial equilibrium value. However, the increase in *e* lowers aggregate consumption and investment demand creating an excess supply at the initial equilibrium *Y* (see (15). In the present case,however, aggregate demand for domestic goods instead of remaining unchanged rises by $(1-c_c)A$ at the initial equilibrium *Y* disregarding the fall in aggregate demand for domestic goods due to the BOP deficit induced rise in *e*. The BOP deficit that is created at the initial equilibrium (Y,e) is $(1-mc_c)A < A$, Hence, the rise in *e* and, therefore, the fall in aggregate demand for domestic goods due to the rise in *e* will be less. Therefore, in the present case, the contraction in *Y* is likely to be much less. *Y* may expand also. This observation can be most clearly perceived by comparing (20) and (15) taking the initial value of *t* to be zero. The above discussion yields the following proposition:

> **Proposition 7: In the presence of the fiscal deficit target, an increase in government expenditure on imported goods financed by internal borrowing is highly likely to bring about a large and cumulative fall in GDP. However, if the increase in government expenditure on imported goods is financed by taxing capitalists' income, the contraction in GDP is likely to be much less. It may even expand.**

When there is no fiscal deficit target, equilibrium values of *Y* and *e* are given by (7) and (9). Taking total differential of (7), setting $d\left(\frac{P^*e}{P}M_G\right) = d\left[t\left(Y-\frac{W}{P}\right)\right] = A$ and, then, solving for *de*, we get (19) as in the earlier case. Again, taking total differential of (9) treating all exogenous variables other than *G*as fixed, substituting (19) for *de* into it and, then, solving for *dY*, we get

$$dY = \frac{\left[(1-c_c)-\left\{(c_w-c_c)\frac{W}{\gamma P^* e^2}+(-I_e)\right\}\theta_A\right]A}{1-\left[(c_c)-\left\{(c_w-c_c)\frac{1}{\gamma P^* e^2}+(-I_e)\right\}\theta_Y\right]} \quad (21)$$

(21) is smaller than (20) because of the absence of the term *a* from the denominator of the expression on the RHS of (21). Thus, in this case, the expansion (or contraction) in *Y* will be smaller than that in the presence of the fiscal deficit target. This yields the following proposition:

> **Proposition 8: If the government raises its expenditure on imported goods and finances it by additional tax revenue collected from the capitalists, GDP may expand or contract in both the cases of fiscal deficit target and no fiscal deficit target. However, in the former case, the expansion or contraction in GDP will be larger.**

3.4 An Increase in Government Expenditure is Financed through Hikes in Indirect Tax Rates

We now consider the case where the government raises its expenditure on imported goods and finances it by raising additional indirect tax revenue. Denoting the indirect tax rate by τ, market price in the domestic economy may be written as

$$P' = P(1+\tau) = \gamma P^* e(1+\tau) \text{ (Using (2))} \quad (22)$$

Where P is the price received by the producers. Workers' real income in this scenario is given by $\left[\frac{W}{P(1+\tau)}\right]$. Total nominal profit earned by the capitalists is ($PY - W$). However, as buyers they face the price $P(1+\tau)$. Hence, their real profit is given by $\left[\frac{PY}{P(1+\tau)} - \frac{W}{P(1+\tau)}\right] = \frac{Y}{(1+\tau)} - \frac{W}{P(1+\tau)}$. Finally, indirect tax revenue of the government in nominal terms is given by $P\tau Y$. As a buyer, government faces the price $P(1+\tau)$. Therefore, government's indirect tax revenue in real terms is given by $\frac{\tau}{1+\tau}Y$. We shall henceforth denote $\frac{\tau}{1+\tau}$ by v. Adding up the three real incomes, we get real GDP. In what follows, for simplicity, we shall ignore the direct tax on capitalists' income. Since both domestic and foreign buyers of domestic goods pay the price $P(1+\tau)$, using (22) we have to rewrite (7) as

$$X\left(\frac{1}{\gamma}(1-v); Y^*\right) - \frac{1}{\gamma}(1-v)\left[M_G + mc_c\left(Y - \frac{W}{\gamma P^* e}\right)(1-v) + m_I I(\bar{r}, e) + m_Y Y\right] + \bar{K} = 0 \quad (23)$$

Fiscal Deficit Target Case

We first focus on the fiscal deficit target case where government's total consumption expenditure is given by

$$G = G_D + \frac{1}{\gamma}(1-v)M_G = (v+a)Y \quad \text{(see (6)} \quad (24)$$

Incorporating the changes noted above, and (22) and (24) into (8), we rewrite it as

$$Y = c_w.\left(\frac{W}{\gamma P^* e}\right).(1-v) + c_c.\left(Y - \frac{W}{\gamma P^* e}\right)(1-v) + I(\bar{r}, e) + (v+a)Y - \bar{K} \quad (25)$$

In the present case, the government raises its expenditure on imported goods by a given amount A and finances it by raising indirect tax collection so that

$$A = d\left(\frac{1}{\gamma}(1-v)M_G\right) = d(vY) \quad (26)$$

From (26) it follows that

$$dv = \frac{A - vdY}{Y} \tag{27}$$

To ascertain the impact of an increase in government expenditure on imported goods by a given amount *A* financed by indirect taxes in the presence of a fiscal deficit target, we take total differential of (23) and (25) treating all exogenous variables other than v and $p'M_G$ as fixed (where $p' \equiv \frac{1}{\gamma}(1-v)$) and set $A = d\left(\frac{P^* e}{P}(1-v)M_G\right) = d(vY)$. Taking total differential of (23), we get

$$\theta_e de + \theta_v dv + \theta_Y dY - A = 0 \tag{28}$$

Where

$$\theta_e \equiv \left[m_I(-I_e) - \left\{ m.c_c . \frac{W}{\gamma P^* e^2} \right\}(1-v) \right] \frac{1}{\gamma}(1-v); \tag{29}$$

Note that θ_e measures the amount of increase in net export and BOP per unit increase in *e* ceteris paribus. This is assumed to be positive for reasons of stability. (This stability condition can be easily derived following the line suggested in Appendix)

$$\theta_v \equiv -X_{p'} . \frac{1}{\gamma} + \frac{1}{\gamma} . \left[m.c_c . \left\{ Y - \left(\frac{W}{P} \right) \right\}(1-v) + m_I I(\bar{r}, e) + m_Y Y \right] + 2p'.m.c_c . \left(Y - \left(\frac{W}{P} \right) \right) \tag{30}$$

θ_v measures the change in net export per unit increase in *v* ceteris paribus. A unit increase in *v* ceteris paribus affects net export by raising the domestic price level. This produces three effects on net export. First, it raises net export by lowering the value of imports in terms of domestic goods. This is given by the second term of the expression on the RHS of (30). Second, a part of the additional indirect tax revenue is paid by the capitalists. Hence, their import of consumption goods goes down raising net export. This increase in net export is given by the third term of the expression on the RHS of (30). Finally, the rise in the domestic price level brought about by the rise in the indirect tax rate will very substantially lower net exports. This happens because India lacks any Indigenous technology or knowledge. Hence, close substitutes of all the goods and services that India produces are also available in all other countries of the world. Hence, even a slight increase in the price of Indian goods relative to foreign prices will induce Indians and foreigners to substitute foreign goods for Indian goods on a very large scale. This will lower net export very substantially. This is captured by the first term of the expression on the RHS of (30). This effect is likely to dominate by far the first two effects. Hence, in Indian conditions, θ_v is likely to be negative and its absolute value is likely to be substantially large. (Since, for simplicity, we have

assumed import intensities of investment and capitalists' consumption to be fixed, we have not been able to capture this effect fully here).

$$\theta_Y \equiv -p'.[m.c_c.(1-v)+m_Y] \tag{31}$$

(31) gives the amount of fall in net export per unit increase in Y ceteris paribus. A unit increase in Y ceteris paribus raises import of intermediate inputs by $p'm_Y$ and capitalists' profit by $(1-v)$. The latter raises capitalists' consumption demand for imported goods and, thereby, lowers net export by $p'mc_c(1-v)$. This explains (31). Substituting (27) into (28) and solving for *de*, we get

$$de=\left(\frac{1+\frac{-\theta_v}{Y}}{\theta_e}\right)A+\left(\frac{(-\theta_Y)+\theta_v\frac{v}{Y}}{\theta_e}\right)dY \tag{32}$$

Let us now explain (32). Focus on the expression on the RHS of (32). The first term gives the increase in e that takes place at the initial equilibrium Y following the increase in government spending on imported goods by A and its financing by means of additional indirect tax collection. An increase in the indirect tax collection by A at the initial equilibrium Y will raise v by (A/Y). This will lower net export and BOP by $\frac{-\theta_v}{Y}A$ at the initial equilibrium (Y, e). The increase in government's spending on imported goods by A also lowers net export and BOP by A at the initial equilibrium (Y, e). To equilibrate the foreign currency market, e has to rise so that BOP at the initial equilibrium Y rises by the numerator of the first term of the expression on the RHS of (32). Net export and, therefore, BOP rises by θ_e per unit increase in e, with Y remaining unchanged at the initial equilibrium Y. Hence, e rises by the amount given by the first term of the expression on the RHS of (32) at the initial equilibrium Y and equilibrates the foreign currency market.

Let us now focus on the second term of the expression on the RHS of (32). It gives us the amount of change in e that occurs when Y changes from its initial equilibrium value by dY. Let us explain. When Y rises from its initial equilibrium value by dY, with e remaining unchanged, net export changes for two reasons. First, capitalists' income and, therefore, their consumption demand for imported goods and import of intermediate inputs together increases by $-\theta_Y dY$. Second, v falls by $\frac{v}{Y}dY$ lowering domestic price level. This will raise net export by $-\theta_v\frac{vdY}{Y}$. This is likely to be positive and quite large in India because of the likely very high price elasticity of India's net export for reasons we have already explained. The second effect is highly likely to dominate the first one and it may be safe to make that assumption. Hence, at the given e, net export will rise by $-\theta_v\frac{vdY}{Y}-(-\theta_Y)dY$. As a result, e will fall to equilibrate the foreign currency market by lowering net export by $\left[-\theta_v\frac{v}{Y}-(-\theta_Y)\right]dY$. Per unit fall in e, with Y remaining unchanged at its higher value, net export and BOP will fall by

θ_e. Hence, *e* will fall by $-\frac{\left[\theta_v \frac{v}{Y} + (-\theta_Y)\right]dY}{\theta_e}$. The total change in *e* will, therefore, be given by $\left(\frac{1+\frac{-\theta_v}{Y}}{\theta_e}\right)A - \left\{-\left(\frac{(-\theta_Y)+\theta_v\frac{v}{Y}}{\theta_e}\right)\right\}dY = \left(\frac{1+\frac{-\theta_v}{Y}}{\theta_e}\right)A + \left\{\left(\frac{(-\theta_Y)+\theta_v\frac{v}{Y}}{\theta_e}\right)\right\}dY$.

This explains (32).

Finally, taking total differential of (25) treating all exogenous variables other than G, v and M_G as fixed, substituting (27) and (32) into it and, then, solving for dY, we get

$$dY = \frac{\left[1-\left\{c_w.\left(\frac{W}{PY}\right)+c_c.\left(1-\frac{W}{PY}\right)\right\}-\left(\left(-I_e+(c_w-c_c)(1-v)\frac{W}{\gamma P^* e^2}\right)\left(\frac{1-\frac{\theta_v}{Y}}{\theta_e}\right)\right)\right]A}{1-\left[(c_c.(1-v)+a)+c'+\left(\left\{(c_w-c_c)(1-v)\frac{W}{\gamma P^* e^2}+(-I_e)\right\}.\left(\frac{-\theta_v\frac{v}{Y}-(-\theta_Y)}{\theta_e}\right)\right)\right]} \quad (33)$$

Where $c' \equiv (c_w - c_c)\frac{W}{\gamma P^* e}.\frac{v}{Y}$

Let us explain (33). We first focus on the numerator of the expression on the RHS of (33). It gives the excess supply or excess demand that emerges at the initial equilibrium *Y* following the adoption of the policy considered here by the government. Following the increase in government expenditure in terms of domestic goods by the amount *A* on imported goods financed by additional indirect tax collection, government's consumption expenditure goes up by *A*. This is the first term. However, this increase in the aggregate demand for domestic goods is offset by two factors. First, the additional indirect tax collection of *A* comes from the workers and the capitalists. As *v* at the initial equilibrium (Y,e) goes up by $\frac{A}{Y}$, their consumption demand falls by $\left\{c_w.\left(\frac{W}{PY}\right)+c_c.\left(1-\frac{W}{PY}\right)\right\}A$. This is the second term of the numerator. Finally, this policy is very much likely to create a very large BOP deficit at the initial equilibrium (Y,e) for two main reasons. First, the increased government's expenditure on imported goods by the amount *A* creates that much BOP deficit. Second, the increase in the domestic price level is very much likely to substantially reduce net export in India for reasons we have already explained. Hence, *e* will rise by a large amount lowering substantially investment and consumption demand. This is given by the third term in the numerator. (Aggregate consumption demand falls because of the increase in the domestic price level that the increase in e leads to. The rise in the domestic price level redistributes

income from the workers to the capitalists lowering aggregate consumption demand since marginal propensity to consume of the workers is likely to be substantially larger than that of the capitalists.) In all likelihood, the last two terms will dominate the first term creating an excess supply at the initial equilibrium *Y*.

Let us now consider the denominator. It has to be positive for reasons of stability. (This stability condition can be deduced easily following the line suggested in Appendix). It gives the fall in excess supply per unit decrease in *Y*, when *e* adjusts along with the fall in *Y* to keep the BOP in equilibrium. Per unit fall in *Y*, with *e* remaining unchanged, supply decreases by 1 unit. However, it reduces demand also. With *e* remaining unchanged, aggregate personal and public consumption demand go down by $\left[c_c(1-v)+a\right]$. The unit fall in *Y* also raise s*v* equiproportionately by (*v*/*Y*). This lowers aggregate consumption expenditure by c'. However, a unit fall in *Y* is highly likely to create a BOP deficit raising *e* by $\left[\frac{-\theta_2\frac{v}{Y}-(-\theta_3)}{\theta_1}\right]$. It will lower consumption and investment demand by $\left((c_w-c_c)(1-v)\frac{W}{\gamma P^* e^2}+(-I_e)\right)\left(\frac{-\theta_2\frac{v}{Y}-(-\theta_3)}{\theta_1}\right)$. (A unit fall in *Y* is highly likely to create a BOP deficit for the following reasons. A unit decline in Y lowers import of intermediate inputs as well as capitalists' consumption demand for imports. However, the indirect tax rate rises and the rise in the domestic price level that it induces is likely to bring about a very substantial contraction in net export for reasons we have already explained. This fall in net export is highly likely to dominate bringing about a BOP deficit in the net.) Therefore, aggregate demand for domestic goods will fall by the term given within third brackets in the denominator per unit fall in *Y*, when *e* adjusts along with the fall in *Y* to keep the BOP in equilibrium. Therefore, the denominator gives the fall in excess supply of domestic goods per unit fall in *Y* when *e* adjusts along with it to keep the BOP in equilibrium.

The adjustment process may be described as follows. We denote the absolute value of the numerator of the expression on the RHS of (33) by *N* and the term within third brackets of the denominator by ϕ. Following the increase in government expenditure on imported goods by *A* and its financing by means of additional indirect tax collection of the same amount, there is a very high chance in India that there will emerge an excess supply of *N* at the initial equilibrium *Y*. Producers in the first round will, therefore, reduce *Y* by $dY_1 = N$. This fall in *Y* will, again, lower aggregate planned demand for domestic goods by ϕN. In the second round, therefore, producers will reduce *Y* by $dY_2 = \phi N$. This fall in *Y* will, lower aggregate planned demand for domestic goods again by $\phi.(\phi N)$. Hence, in the third round *Y* will fall by $dY_3 = \phi^2 N$. This process of contraction will continue until the fall in demand that takes place in each successive round eventually falls to zero. Thus, the total fall in *Y* is given by

$$dY = -dY_1 - dY_2 - dY_3 - \ldots\ldots\ldots = -\left(N + \phi N + \phi^2 N + \phi^3 N + \ldots\ldots\ldots\right) = -\frac{N}{1-\phi} \quad (34)$$

The domestic price level faced by the buyers is highly likely to rise too. This is because of the rise in the indirect tax rate and the rise in the exchange rate. The above discussion yields the following proposition:

> **Proposition 9: If the government raises its expenditure on imported goods and finances it by raising indirect tax rates, there is a very high chance in India that it will lead to a large and cumulative fall in GDP in the presence of a fiscal deficit target. The workers are hurt because of the rise in the domestic price level.**

We will now compare the present case to that of taxation of capitalists' income.

Comparison to the Case of Taxation of Capitalists' Income

We will here compare the effect on GDP of an increase in government expenditure on imported goods financed by raising indirect tax rates (henceforth referred to as Case 2) to that in the case where the government finances its increased expenditure on imported goods by taxing capitalists' income (henceforth referred to as Case 1) . Comparing (33) and (20), we find the following. First, focus on the numerators of (33) and (20). They give the amount of excess demand or excess supply that emerges at the initial equilibrium *Y* following the government's adoption of the policies considered here. We will argue here that the chance of an excess supply emerging at the initial equilibrium *Y* is much higher in the case of indirect taxation. The reasons are the following. First, following the increase in *G* by *A* and the collection of additional tax revenue of *A*, at the initial equilibrium (Y,e), aggregate personal and public consumption expenditure goes up by $(1-c_c)A$ in case 1 and by a substantially smaller amount $\left[1-c_w.\left(\frac{W}{PY}\right)-c_c.\left(1-\frac{W}{PY}\right)\right]A$ in case 2. Note that c_w is likely to be substantially larger than c_c. At the initial equilibrium (Y,e), the BOP deficit that is created in case 1 is $(1-pmc_c)A$. In case 2, however, the BOP deficit that is created is much larger for the following reasons. First, only a part of the additional tax of *A* is paid by the capitalists. Therefore, the fall in their consumption demand for imported goods is much less. Second, the hike in the indirect tax rate raises the domestic price level. This is likely to very substantially lower net export, since net export is likely to be highly price elastic in India for reasons already explained. For these two reasons, the BOP deficit that is created at the initial equilibrium (Y,e) is likely to be much larger in case 2. Hence, at the initial equilibrium *Y*, exchange rate rises in both cases to restore BOP equilibrium. From (14) and (29) it is clear that net export rises more or less by the same amount per unit increase in *e* ceteris paribus in both the cases. Hence, *e* in the second case is likely to rise by a much larger amount making the consequent fall in investment and consumption demand much greater. Hence, at the initial equilibrium *Y*, for all the reasons cited above, the chance of emergence of an excess supply is much higher in the second case.

The policy of hiking indirect tax rates to finance government expenditure is also unjust as it raises the domestic price level and, thereby, brings about a substantial fall in the real income of the poor workers, who have little ability to sacrifice. This yields the following proposition:

Proposition 10: When the government finances its increased expenditure on imported goods by hiking indirect tax rates, the chance that it will lead to a contraction in GDP in India is substantially higher than that in the case where the government taxes capitalists' income for financing its additional expenditure on imported goods. The policy of hiking indirect tax rates also substantially reduces real income of the poor workers, who have little ability to sacrifice.

We will now consider the case where the fiscal deficit target is absent. When there is no fiscal deficit target, BOP equilibrium will still be stillbe given by (23) and $dG = A = d\left(\frac{P^* e}{P} M_G\right) = d(vY)$. The value of de is, therefore, still given by (32). In the absence of the fiscal deficit target, G is autonomous and it is no longer equal to $(v+a)Y$. Incorporating this change we rewrite the goods market equilibrium condition (25) as follows:

$$Y = c_w.\left(\frac{W}{\gamma P^* e}\right).(1-v) + c_c.\left(Y - \frac{W}{\gamma P^* e}\right)(1-v) + I(\bar{r}, e) + G - \overline{K} \tag{35}$$

Taking total differential of (35) treating all exogenous variables other than G and v as fixed, substituting (32) and (27) for de and dv respectively and, then, solving for dY, we get

$$dY = \frac{\left[1 - \left\{c_w.\left(\frac{W}{PY}\right) + c_c.\left(1 - \frac{W}{PY}\right)\right\} - \left(\left(-I_e + (c_w - c_c)(1-v)\frac{W}{\gamma P^* e^2}\right)\left(\frac{1 - \frac{\theta_v}{Y}}{\theta_e}\right)\right)\right] A}{1 - \left[(c_c) + c' + \left(\left\{(c_w - c_c)\frac{W}{\gamma P^* e^2}(1-v) + (-I_e)\right\}.\left(\frac{-\theta_v \frac{v}{Y} - (-\theta_Y)}{\theta_e}\right)\right)\right]} \tag{36}$$

(36) and (33) are identical except for the fact that the denominator of (31) is larger as it does not contain the term a. Thus, in the present case, contraction or expansion in Y will be less than that in the no fiscal deficit target case. This yields the following proposition:

Proposition 11: If the government raises its expenditure on imported goods and finances it by raising indirect tax rates, GDP is highly likely to contract in India in the presence of a fiscal deficit target. In the absence of the fiscal deficit target, the contraction in *Y* will be smaller.

4. Conclusion

The objective of this chapter is to identify the best method of financing public expenditure on imported goods in India and examine whether the policy we find optimum is consistent with the NEP. Let us, therefore, summarize the major findings of this chapter and identify the best possible policy option. The present government has substantially increased its expenditure on imported armaments and other imported infrastructure items. If it finances its additional expenditure on imported products taking recourse to external borrowing, then, in the presence

of the fiscal deficit target, there will take place a cumulative contraction in GDP. It will also add to the government's future external debt service charges aggravating India's future BOP woes. This mode of financing is obviously unacceptable. Note that the contraction in GDP hurts the poor people engaged in the unorganized sector. It reduces their income, which they earn mainly in the form of profit.

We also find that the fiscal deficit target, which is an integral part of the NEP, is responsible for the severe contraction in GDP that recourse to external borrowing leads to. This happens for two reasons. First, the increase in government expenditure on imported goods is matched by an equal amount of fall in public expenditure on domestic goods in the presence of the fiscal deficit target bringing about an excess supply at the initial equilibrium Y. Second, as producers reduce output to remove the excess supply, excess supply falls by a smaller quantity per unit fall in output, since a decline in output not only reduces private expenditure but also public expenditure. In the absence of the fiscal deficit target, however, GDP remains unaffected. This is because the increase in government's expenditure on imported goods does not reduce its expenditure on domestic goods.

If the increase in government's expenditure on imported goods is financed by internal borrowing, GDP will almost surely contract substantially in India in the presence of the fiscal deficit target. This happens for the following reason. First, the increase in government's expenditure on imported goods by a given amount produces two effects. It reduces government expenditure on domestic goods and creates BOP deficit by the same given amount. Hence, the exchange rate rises and raises net export net of government's imports by the same given amount. Hence, aggregate planned demand for domestic goods at the initial equilibrium level of GDP remains unaffected. However, the rise in the exchange rate lowers investment demand directly and aggregate consumption demand indirectly by raising the domestic price level, which redistributes income from the workers to the capitalists. Thus, at the initial equilibrium level of GDP, there emerges an excess supply of domestic goods bringing about a large and cumulative contraction in GDP. However, in the absence of the fiscal deficit target, GDP may change either way. Even if it contracts, its contraction will be substantially smaller than what happens under the fiscal deficit target. This happens on account of the following reasons. First, the given increase in government's expenditure on imported goods creates BOP deficit of the same given amount as that in the earlier case but leaves government's expenditure on domestic goods unchanged. The BOP deficit induced increase in the exchange rate will raise net export net of the government's spending on imports by the same given amount. Hence, at the initial equilibrium level of GDP, aggregate planned demand for domestic goods will rise by the same given amount. However, the increase in the exchange rate will lower, for reasons already explained, aggregate consumption and investment demand. Clearly, therefore, in this case GDP may expand also. In this case, the value of the multiplier is also less as public expenditure does not change with GDP. For this reason also, even if GDP contracts, its contraction will be substantially less in the present case.

Let us now consider the case where government's increased expenditure on imported goods is financed by collecting additional taxes from the capitalists. In this case, in the presence of the fiscal deficit target, GDP may even expand. In case it contracts, its contraction will be much less than what happens under the earlier two cases in the presence of the fiscal deficit target. Let us explain. When the government raises its expenditure on imported goods by a given amount and finances it by taxing capitalists' income, government's consumption expenditure goes up by the given amount, but capitalists' disposable income also falls by the same given amount. This reduces capitalists' consumption. The fall in capitalists' consumption, however, is likely to be quite small

because of their very low marginal propensity to consume. Thus, at the initial equilibrium GDP and exchange rate, there emerges an excess demand for domestic goods. It also creates BOP deficit, but it will be smaller than the given amount of increase in the government's expenditure on imported goods because of the fall in capitalists' consumption demand for imported goods. Thus, the BOP deficit created in this case at the initial equilibrium GDP and exchange rate will be less than that in the case of internal borrowing. Hence, the increase in the exchange rate and the consequent decline in aggregate consumption and investment demand will also be less. Thus, in this case, GDP may expand. If it contracts, its contraction is highly likely to be much less than that in the earlier two cases of internal and external borrowings in the presence of the fiscal deficit target. In the absence of the fiscal deficit target, the value of the multiplier will be less in this case since government's marginal propensity to spend out of GDP becomes zero. This will make the contraction or expansion of GDP smaller.

Finally, we considered the case where the government raises its expenditure on imported goods by a given amount and finances it by raising indirect tax collection by the same amount. This will raise on the one hand government's consumption expenditure by the given amount. On the other hand, the given amount of additional indirect tax collection will come from both the workers and the capitalists. Hence, their consumption will fall. The fall in the aggregate planned consumption demand due to the additional tax collection of the given amount will be much larger in the present case than that in the previous case of taxation of capitalists' income because marginal propensity to consume of the workers is substantially larger than the capitalists'. Hence, the amount of excess demand that will be created at the initial equilibrium level of GDP and the exchange rate in the present case will be much smaller than that in the previous case. The policy considered here will obviously also create BOP deficit at the initial equilibrium GDP and the exchange rate and it will be substantially larger than what is created in the previous case for two reasons. First, only a part of the given amount of additional tax comes from the capitalists and second, the hike in the indirect tax rate will raise the domestic price level and this will very substantially lower net export. The reason is the following. Since India does not have any technology and knowledge of its own, close substitutes of all the goods and services that India produces are produced everywhere else. Hence, even a slight increase in the prices of Indian goods will very substantially lower net export. Therefore, the rise in the exchange rate and the consequent decline in consumption and investment demand will be much larger in the present case than that in the previous case. Hence, the GDP is very much likely to contract in the present case and its contraction will be much larger than that in the previous case. The policy of raising indirect tax collection is also highly unjust as a part of the tax comes from the poor workers who have little ability to sacrifice.In the absence of the fiscal deficit target, the value of the multiplier will be smaller since government's expenditure becomes independent of GDP. Hence, the amount of contraction in GDP will be less.

Summing up the above results, we find that in the presence of the fiscal deficit target, taxing capitalists' income is the best method of financing an increase in government's expenditure on imports as it may lead to an expansion in GDP. Even if that does not happen, the contraction in GDP will be the least. It is also eminently just, as it puts the burden of financing the additional expenditure on those who have the ability to sacrifice. We also find that the fiscal deficit target produces strong recessionary tendencies when the additional public expenditure on imports is financed by internal or external borrowing. It also acts as an automatic destabilizer by making the multiplier values larger.

Our finding constitutes a strong critique of the NEP, which has drastically reduced direct tax rateson the rich, raised the importance of indirect taxes in financing government expenditure and made the fiscal deficit target an integral part of its recommended fiscal policy.

References

Ghosh,C. and Ghosh, A. (2016). *Indian Economy: A Macro-Theoretic Analysis*, PHI Learning Private Limited, Delhi.

Evdoridis, G. (2000). Public Sector Deficits as the Foundation of Economic Growth. *Journal of Post Keynesian Economics, 22:4*, 529-547.

Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money.* Palgrave Macmillan.

GoI (Government of India). (2021). *Union Budget of India 2021-22*. New Delhi: Ministry of Finance, GoI.

Marvin, G., & Robert, K. G. (1997). The New Neoclassical Synthesis and the Role of Monetory Policy. In B. B.S, & R. (. J.J, *NBER Macroeconomics Annual:1997* (pp. 231-296). Cambridge: MA:MIT Press.

Michael, K. (1954). *Theory of Economic Dynamics: An Essay on Cyclical and Long-Run Changes in Capitalist Economy.* London: Allen and Unwin, Third Impression Edition.

Pelagidis, T., & Evangelia, D. (2004). Deficits, Growth, and the Current Slowdown: What Role for Fiscal Policy? *Journal of Post Keynesian Economics;26:3*, 461-469.

Philip, A., & Malcom, S. (2003). Reinventing fiscal policy. *Journal of Post Keynesian Economics,26:1*, 3-25.

Woodford, M. (2003). *Interest and Prices: Foundations of a Theory of Monetory Policy.* Princeton: Princeton University Press.

Appendix

We write the BOP equilibrium condition (7) of the text as

$$B(e,Y)=0 \tag{a.1}$$

Where

$$B(*)\equiv X\left(\frac{1}{\gamma},Y^{*}\right)-\frac{1}{\gamma}\left[M_{G}+mc_{c}(1-t)\left\{Y-\frac{W}{\gamma P^{*}e}\right\}+m_{I}I(\bar{r},e)+m_{Y}Y\right]+\overline{K}=0 \tag{a.2}$$

$$B_Y = -\left[mc_c(1-t)+m_Y\right]<0$$

(a.3)

$$B_e = \frac{1}{\gamma}\left[m_I(-I_e)-mc_c(1-t)\frac{W}{\gamma P^* e^2}\right]>0 \text{ (for reasons to be explained shortly)}$$

(a.4)

Again, we write the goods market equilibrium condition (8) of the text as

$$E(e,Y)=0$$

(a.5)

where

$$E(Y,e)\equiv c_w\left(\frac{W}{\gamma P^* e}\right)+c_c(1-t)\left\{Y-\frac{W}{\gamma P^* e}\right\}+I(\bar{r},e)+t\left\{Y-\frac{W}{\gamma P^* e}\right\}+aY-\bar{K}-1=0$$

(a.6)

$$E_Y \equiv c_c.(1-t)+(t+a)-1<0 \text{ since } 0<c_c.(1-t)+(t+a)<1 \text{ (by assumption)}$$

(a.7)

$$E_e \equiv -\left[(c_w-c_c(1-t))\frac{W}{\gamma P^* e^2}+(-I_e)\right]+t.\frac{W}{\gamma P^* e^2} \qquad \text{(a.8)}$$

We examine here the stability of the equilibrium values of *e* and *Y*. The adjustment rules for *e* and *Y* are given by

$$\frac{de}{dt}=\mu.[-B(e,Y)] \qquad \mu>0$$

(a.9)

And

$$\frac{dY}{dt}=\gamma.[E(e,Y)] \qquad \mu>0$$

(a.10)

We also assume that the speed of adjustment in *e* is instantaneous, while that of *Y* is sluggish. Thus, when BOP is in disequilibrium, *e* adjusts and restores BOP equilibrium before any change in *Y* can take place. Linearizing $B(e,Y)=0$ around the equilibrium values of Y and e and assuming Y to remain unchanged at its equilibrium value, we rewrite (a.9) as

$$\frac{d\hat{e}}{dt}=\mu.\left[-B_e(e^*,Y^*)\right]\hat{e} \qquad \hat{e}\equiv(e-e^*) \qquad \mu>0$$

(a.11)

From (a.11) it is clear that the equilibrium value of e is stable if and only if

$$B_e = \frac{1}{\gamma}\left[m_I(-I_e) - mc_c(1-t)\frac{W}{\gamma P^* e^2} \right] > 0$$

(a.12)

Since the adjustment in e is instantaneous by assumption, (a.1) is always satisfied. Linearizing (a.1) around the equilibrium values of e and Y, we get

$$B_e(e^*, Y^*)(e - e^*) + B_Y(e^*, Y^*)(Y - Y^*) = 0$$

(a.13)

Since (a.13) is satisfied always, the value of $(e - e^*)$ will always be given by the following equation

$$(e - e^*) = -\frac{B_Y(e^*, Y^*)}{B_e(e^*, Y^*)}(Y - Y^*)$$

(a.14)

Linearizing $E(\bullet)$ around the equilibrium values of Y and e, substituting (a.14) into it, we rewrite (a.10) as

$$\frac{d\hat{Y}}{dt} = \left[E_Y(e^*, Y^*) + E_e(e^*, Y^*)\frac{-B_Y(e^*, Y^*)}{B_e(e^*, Y^*)} \right]\hat{Y} \quad \hat{Y} \equiv (Y - Y^*) \qquad \text{(a.15)}$$

From (a.15) it is clear that the equilibrium value of *Y* is stable if and only if

$$\left[E_Y(e^*, Y^*) + E_e(e^*, Y^*)\frac{-B_Y(e^*, Y^*)}{B_e(e^*, Y^*)} \right] < 0 \Rightarrow$$

$$1 - \left[\left\{ c_c(1-t) + (t+a) + t\frac{W}{\gamma P^* e^2}\theta \right\} - \left\{ (c_w - c_c(1-t))\frac{W}{\gamma P^* e^2} + (-I_e) \right\}\theta \right] > 0$$

$$\text{Where } \theta \equiv \frac{(mc_c(1-t) + m_Y)}{m_I(-I_e) - mc_c(1-t)\frac{W}{\gamma P^* e^2}} > 0 \quad \text{(a.16)}$$