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A Short Note on Debt-Neutral Fiscal Policy

Zico Dasgupta

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cse.azimpremjiuniversity.edu.in

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Zico Dasgupta[1]

Abstract: One of the central concerns against increasing expenditures in the recent period has been the possibility of an adverse impact on debt-GDP ratio. Once stability of debt-ratio is regarded as a policy-objective, the aggregate expenditure that is consistent with the stability condition gets determined by the given level of output growth rate and revenue receipts. Instead of perceiving expenditures to be determined by the debt-stability condition, this short note attempts to lay bare the conditions under which the debt-stability condition is restored despite increasing the growth rate of non-capital primary expenditure to a targeted level. The targeted level can be perceived as one which fully compensates the income loss of labour during the pandemic. In contrast to conventional wisdom, the possibility of increasing non-capital expenditures is explored not by reducing capital expenditures, but rather by increasing the latter. Using the multiplier value of capital expenditures estimated by the RBI, it is argued that the debt-ratio would remain unchanged despite increasing the growth rate of non-capital primary expenditure if the capital expenditures growth rate is allowed to increase in a specific proportion.

[1] Discussions with Amit Basole and Arjun Jayadev greatly helped in writing this note. The usual disclaimer applies.

1 Rethinking Counter-Cyclical Strategy

The Indian economy has been hit by at least two distinct shocks during the pandemic. The first shock reflects the sharp reduction in aggregate investment and exports which led to drastic fall in output and employment. The second shock involves a distinct change in pattern of demand due to technological-cum-structural changes unleashed by the pandemic. Such changes include a shift in expenditures against sectors which provide face-to-face services and are less amenable to home-based work.

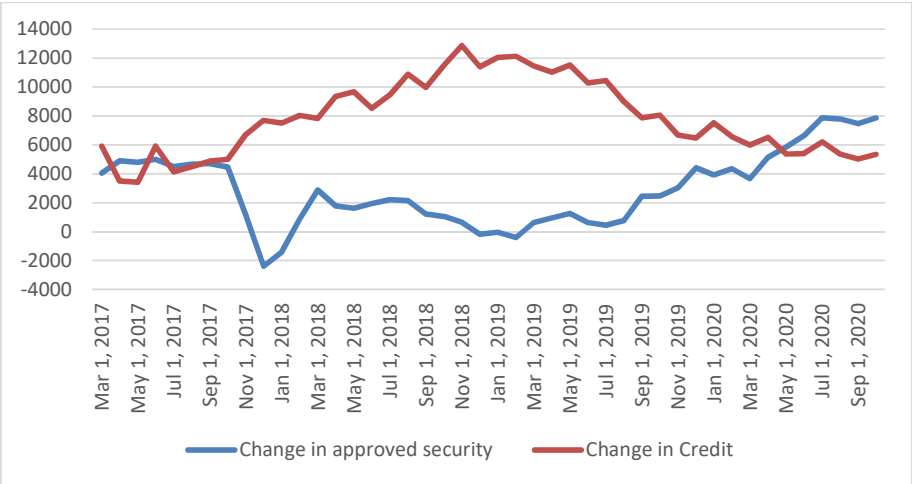
These sectors typically provide livelihood for the lower income deciles. Lower share of consumption expenditures from rest of the economy on these sectors would indicate lower income for the latter. Thus, income of lower deciles would fall on account of both a level-wise decline as well as a structural change in demand during the pandemic.

By implication, the restoration of aggregate output to the pre-pandemic level does not provide a sufficient condition for similar restoration of income for the bottom deciles. Since the squeeze in their income reflect both a level wise decline as well as a structural change in aggregate demand, counter-cyclical strategies need to be aimed at addressing both these issues. There are broadly two routes through which counter-cyclical policies have been perceived.

The first route involves loose monetary policy, which otherwise the RBI has adopted since the emergence of the pandemic. Despite a series of liquidity-boosting as well as interest-related measures, such policies failed to bring about any significant recoevery of credit in the recent period. Reflecting a severe demand constraint for credit and an *exante* excess supply of reserves, banks have registered a sharp rise in investment in government securities and similar decline in credit disburesement in the recent period.

This phenomenon is shown in Figure 1, which shows the trend in year-on-year monthly change in banks' credit and investment in approved securities. The scissor between credit demand and investment in securities since 2019 indicate the constraint of the monetary policy as a counter cyclical strategy.

Figure 1: Change in Credit and Investment in Approved Securities of Scheduled Commercial Banks in Rs. Billion, March 2017 to October 2020



Source: Database of Indian Economy, RBI

The second route relates to fiscal lever, the use of which has been limited in India as compared to various G20 countries. While any rise in fiscal deficit may increase output and income, the extent and the nature of such increase would depend on the nature of fiscal instrument. This is because different fiscal instruments may have different multiplier values, while having different effects on income of specific classes.

For example, capital expenditures have relatively higher multiplier value with respect to non-capital primary expenditures. But non-capital primary expenditures like employment guarantee programs or food subsidies have immediate and unambiguously positive effect on labour's income. Though both forms of expenditure would have positive impact on output, non-capital expenditures are often discouraged in the policy-circles due to their low multiplier values[2].

However, the non-capital expenditures can be preferred over the capital expenditures for at least two reasons. Firstly, in the midst of income squeeze

[2] For example, see the RBI bulletin in December, 2020.

of bottom deciles during the pandemic, such expenditures can immediately meet the target of compensating their income loss. Secondly, if an economy is characterized by jobless growth, then income transfer to labour involving non-capital expenditures may be preferred over strategies which have greater impact in increasing output growth rate.

One of the central concerns against raising expenditures in the recent period has been the possibility of an adverse impact on debt-GDP ratio. Once stability of debt-ratio is regarded as a policy-objective, the aggregate expenditure that is consistent with the stability condition gets determined by the given level of output growth rate and revenue receipts. Instead of perceiving expenditures to be determined by the debt-stability condition, this short note attempts to lay bare the conditions under which the debt-stability condition is restored despite increasing the growth rate of non-capital primary expenditure to a *targeted level*.

The targeted level of growth rate of non-capital expenditures can be perceived as one which compensates for the income loss of labour during the pademic. Thus, the target for non-capital expenditures growth rate is assumed to be set independent of the debt-sustainability condition. Since there exists no necessary reason why the targeted expenditures is exactly such that it meets the debt-stability condition, this note addresses the following question: what would be the required adjustment mechanism by which the debt-GDP ratio remains constant?

In contrast to conventional wisdom, the possibility of increasing non-capital expenditures is explored not by reducing capital expenditures, but rather by increasing the latter. Using the multiplier value of capital expenditures estimated by the RBI, it is argued that the debt-ratio would remain unchanged despite increasing the growth rate of non-capital primary expenditure if the capital expenditures growth rate rise in a *specific proportion*. The rest of the note is organized as follows:

Section 2 provides a broad cross-country comparison of public debt in order to focus on specific issues. Section 3 sets out the macroeconomic assumptions of the theoretical framework of the note. Section 4 provides a theoretical model to lay bare the relationship between different fiscal instruments and the debt-sustainability condition. Section 5 provides some projections based on the given parameter values. The debt-sustainability condition is evaluated using Centre's expenditure, revenue, deficit and debt-stock figures.

2 Some Stylized Facts of Public Debt

There are broadly two distinct ways in which the issue of debt sustainability has been perceived. The first approach targets the levels of debt-GDP ratio as high *levels* are argued to reduce creditor's faith on government's repayment ability and thereby, lead to insolvency[3]. The second approach relates to the Domar condition whereby debt-sustainability is defined as stabilization of debt-GDP ratio over time[4].

The central problem with the first approach is that it treats the government at par with an individual and thereby, ignores any possibility of implementation of government policies that finances its own expenditures. Further, once defined in terms of the Domar condition, higher levels of debt-GDP ratio itself can be argued to sustain higher levels of deficit ratios. While each of these criticisms remain valid, the relevance of the first approach itself stands greatly diminished in the midst of the present crisis.

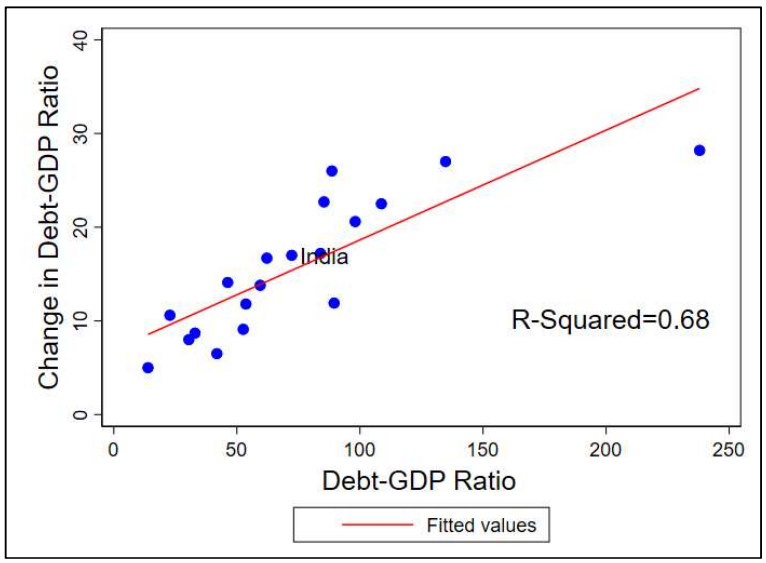
The pandemic has been associated with a sharp rise in debt-GDP ratio and deficit-GDP ratios in all countries. Figure 2 shows the change in debt-GDP ratio of G20 countries during 2020-21 with respect to their initial levels of debt- ratio in 2019-20. The positive correlation between the two indicates that the rise in debt-GDP ratio has been more or less in proportion to the existing level of debt ratios of different countries. Thus, the debt-ratio of a specific country in relation to its peers would be more or less similar in 2020-21 as it was in 2019-20. India happens to be located exactly on the trend line.

[3] See Buiter (1990) and Lahiri and Kannan (2004) for this view.

[4] See Domar (1944) and Pasinetti (1998) for this view.

Further, due to the very nature of the present crisis, even the Domar-Pasinetti condition may be breached for many G20 countries in the short period. Thus maintaining a constant debt-GDP ratio in the *immediate short run* may not even be necessary for a specific country. Nonetheless, destabilization of debt-GDP ratio over medium period may act as a financial constraint for a developing country like India which has significant international exposure to external borrowing and other capital flows. The need for stabilization of debt-ratio is perceived in this broad context.

Figure 2: Initial Level and Change in Debt-GDP Ratio in 2020-21 for G20 Countries (as %)



Source: Fiscal Monitor (October 2020), IMF

Note: The scatter excludes Argentina, whose debt-ratio figure for 2020-21 is not available.

The recognition of the possibility that aggregate expenditures may confront a financial constraint following a rise in debt-ratio in the medium run, makes this analysis different from that of the Modern Monetary Theory (MMT). What distinguishes the MMT from other demand-side theories is the former's proposition that the only possible constraint before fiscal stimulus is the availability of real resources[5]. The objective of maintaining a

[5] See Palley (2020) for a detailed discussion.

given debt-ratio follows from assumptions which go beyond the MMT framework.

3 Assumptions

Over and above the issue of debt-sustainability, there are at least three other concerns which have been often posed against expansionary fiscal policies. The first concern relates to interest rate adjustments, the second relates to inflationary pressure and the third pertains to BoP constraints. This note abstracts away from all these issues for at least two set of reasons.

Firstly, independent of the validity of the assumptions and the policy-level debates that are related to such concerns under normal circumstances, these constraints appear to remain muted at the present juncture. This is due to the existence of exante excess supply of bank reserves, loose monetary policy, sharp decline in crude oil prices, improvement in current account balance, existence massive accumulated foreign exchange reserves and emergence of massive involuntary unemployment *at a given wage rate*.

Secondly, even when the relevant constraints do become binding, neither in their impact nor in their remedy are they specific to fiscal policy. Any economic recovery driven by domestic demand can be constrained by such factors under specific circumstances, whereas policies required for relaxing these constraints may include instruments other than the fiscal lever. In other words, fiscal prudence is neither a necessary nor a sufficient condition to relax the other three constraints.

Thus, in order to highlight the central question at hand, the following assumptions are made throughout the exercise:

(a) Nominal interest rate is exogenously given

(b) Inflation Rate is exogenously given

(c) Availability of foreign exchange reserves does not act as the immediate binding constraint.

(d) Exchange Rate is fixed.

(e) Aggregate demand is the immediate binding constraint.

The subsequent section provides a theoretical model on the basis of these assumptions.

4 Theoretical Framework

The rate of change in debt-GDP ratio depends on the relative strength of two variables: (a) the fiscal deficit-GDP ratio and (b) the growth rate of GDP at a given debt-GDP ratio. Since fiscal deficit is the sum of primary deficit and interest payment, the rate of change in debt-GDP ratio can be argued to depend on the relative strength of primary deficit-ratio, real interest rate and the output growth rate in a manner as described in Equation (1), where 'p' is the share of primary deficit in GDP, 'i' is the real interest rate, 'G' is the real GDP growth rate, $'\lambda'$ is the initial debt-GDP ratio and $\dot{\lambda} = \frac{d\lambda}{dt}$.

$$\dot{\lambda} = p - (G - i)\lambda \tag{1}$$

There can exist at least 2 analytically distinct mechanisms through which the debt-ratio would remain unchanged despite additional government expenditures. The *first* mechanism operates in the case of sufficiently high levels of fiscal multiplier and initial debt-GDP ratio, whereby higher expenditure itself stimulate growth rate to an extent that the debt-ratio does not deteriorate. In other words, the numerator of debt-GDP ratio rises in a manner such that the denominator rises proportionately. The *second* route involves financing additional government expenditures through profit tax such that the level of primary deficit remains unchanged at a given output growth rate.

In order to bring out the impact of multipliers on debt-ratio, Equation (1) is transformed into Equation (2), where '$\widehat{P_x}$' , '$\widehat{T_\pi}$' and '$\hat{n}$' respectively denote the growth rates of primary expenditure, corporation tax and revenue receipts other than corporation tax. The superscript '0' of a variable indicates its value for the initial period and the variables 'p', 'e', 'τ_π' and 'τ_n', respectively denote the shares of primary deficit, primary expenditure, corporation tax and other revenue receipts in GDP (see Appendix A.1 for details).

$$\dot{\lambda} = \frac{p_0 + e^0\widehat{P_x} + \tau_n^0\hat{n} + \tau_\pi^0\widehat{T_\pi} - (G-i)\lambda^0}{1+G} \tag{2}$$

By definition, the growth rate of corporation tax is the sum of growth rate of corporation tax-GDP ratio and the GDP growth rate. This identity is written as Equation (3), where $\widehat{\tau_\pi}$ is the growth rate of corporation tax-GDP ratio.

$$\widehat{T_\pi} = \widehat{\tau_\pi} + G \tag{3}$$

Similarly, if primary expenditures are decomposed into 2 components, capital expenditures and non-capital primary expenditure, then the growth rate of primary expenditure can be expressed as the weighted sum of growth rate of these components as described in Equation (4), where '$\widehat{k_g}$' and $\widehat{u_g}$ are the growth rates of capital expenditure and non-capital primary expenditures. The weights ${k_s}^0$ and ${u_s}^0$ reflect the shares of capital and non-capital primary expenditures in total primary expenditures in the initial period.

$$\widehat{P_x} = {k_s}^0\widehat{k_g} + {u_s}^0\widehat{u_g} \tag{4}$$

The elasticity of other revenue receipts with respect to nominal output growth rate ($\frac{\partial\hat{n}}{\partial G}$) is denoted as '$\epsilon_{ng}$' and assumed to remain constant. The relation between growth rate of other revenue receipts and nominal output growth rate is described as Equation (5), where '$\bar{n}$' is an autonomous component.

$$\hat{n} = \bar{n} + \epsilon_{ng}G \tag{5}$$

In a general form, the output can be perceived to be a function of autonomous components of demand as described by Equation (6), where Y, 'A', 'k', 'u' and 'τ_π' respectively denote the levels of real GDP, autonomous components of demand, capital expenditures, non-capital primary expenditures and corporation tax. The partial derivatives of this function with respect to each of the independent variables would simply indicate the value of the multiplier for each component of demand.

$$Y = Y(A, k, u, T_\pi) \tag{6}$$

Thus, taking total differentiation and dividing both sides by the initial level of output, one arrives at the growth equation as described in Equation (7), where $a = \frac{\partial Y}{\partial A}\frac{dA}{Y}$ and treated as an autonomous component of growth rate, 'm_k' 'm_u' and '$m_{\tau\pi}$' are the multipliers for capital expenditures, non-capital primary expenditures and corporation-tax GDP ratio.

$$G = \theta\left[a + m_k k_s \widehat{k_g} + m_u u_s \widehat{u_g} - \ m_{\tau\pi}\tau_\pi^0 \widehat{\tau_\pi}\right] \tag{7}$$

$$m_k = \frac{\partial Y}{\partial k} > 0;\ m_u = \frac{\partial Y}{\partial k} > 0;\ \frac{\partial Y}{\partial \tau_\pi} = -m_{\tau\pi} \leq 0;\ \theta = \frac{1}{1 + m_{\tau\pi}\tau_\pi^0} > 0$$

Plugging Equations (2)-(6) in Equation (1), the reduced form debt sustainability equation can be written as Equation (8):

$$\dot{\lambda} = \frac{C_1 + e^0 k_s^0 \widehat{k_g}(1 - jm_k) + e^0 u_s^0 \widehat{u_g}(1 - jm_u) - \tau_\pi^0 \widehat{\tau_{\pi y}}(1 + jm_{\tau\pi})}{1 + G} \tag{8}$$

where

$$C_1 = p^0 - r_n^0 \bar{n} - jg_a + i\lambda^0$$

$$j = \tau_n^0 \epsilon_{ng} + \tau_\pi^0 + \lambda^0 > 0$$

If a debt-neutral financing strategy is defined as one where the debt-GDP ratio remains stable despite additional fiscal support, then the required condition can be calculated at $\dot{\lambda} = 0$. Since the denominator would be positive for any plausible value of G (i.e. $G > -1$, or growth rate greater than minus 100%), the debt-sustainability condition would be satisfied if the numerator is 0. This condition can be expressed as Equation (9):

$$\widehat{u_g} = \frac{-C_1}{e^0 u_s^o (1 - jm_u\theta)} + \frac{k_s^0 (jm_k\theta - 1)}{u_s^o (1 - jm_u\theta)}\widehat{k_g} + \frac{\tau_\pi^0 (1 - jm_{\tau\pi}\theta)}{e^0 u_s^o (1 - jm_u\theta)}\widehat{\tau_{\pi y}} \tag{9}$$

The above condition indicates the relationship which the three fiscal instruments need to maintain with respect to each other along a debt-neutral

growth trajectory. If fiscal support is perceived as additional non-capital primary expenditures ($\widehat{u_g}$), then the adjustment mechanism required for additional fiscal support would depend on the sign of the coefficients of second and third terms of RHS. In the case of higher growth rate non-capital primary expenditure, a positive (negative) sign of a coefficient in RHS would indicate that the relevant variable needs to be increased (reduced).

The sign of the coefficients depends on the multiplier values of different fiscal instruments with respect to the initial values of different parameters. This is because changes in different fiscal instrument not only affects the rate of change in stock of debt (numerator of debt-ratio), but also the growth rate of output (denominator of debt-ratio).

The value of the coefficient for capital expenditure growth rate is given by $\frac{k_s^0(jm_k\theta-1)}{u_s^o(1-jm_u\theta)}$. Since $k_s^0 > 0$ and $u_s^0 > 0$, the sign of the coefficient would depend on the bracketed terms of numerator and denominator. A relatively high multiplier value of capital expenditure (m_k) would imply that the coefficient is positive. Similarly, the value of the coefficient for the growth rate of corporate tax-GDP ratio is given by $\frac{\tau_\pi^0(1-jm_{\tau\pi}\theta)}{e^0u_s^o(1-jm_u\theta)}$. Since the initial values of expenditure and tax ratios are positive ($\tau_\pi^0>0$, $e^0>0$ and $u_s^o>0$), the sign of the coefficient would depend on the bracketed terms in numerator and denominator. Here, a relatively low value of profit-tax multiplier ($m_{\tau\pi}$) would imply that the coefficient is positive.

5 Parameters and Projections

The relationship between the three fiscal instruments is examined here by putting plausible values for the relevant parameters. The initial values are directly taken from the figures available till November, 2020. The relevant multiplier values are taken from different studies, including the RBI. The necessary condition for debt-sustainability is then examined for a given rise in non-capital expenditures by projecting different scenarios.

5.1 Parameters and Data Source

According to the Monetary Policy Report of RBI (2019), the value of multiplier for capital expenditure and revenue expenditure in India stand at 3.25 and 0.45 respectively. The multiplier value fiscal of support is assumed

to be similar to that of revenue expenditures. Thus, $m_k = 3.25$ and $m_u = 0.45$.

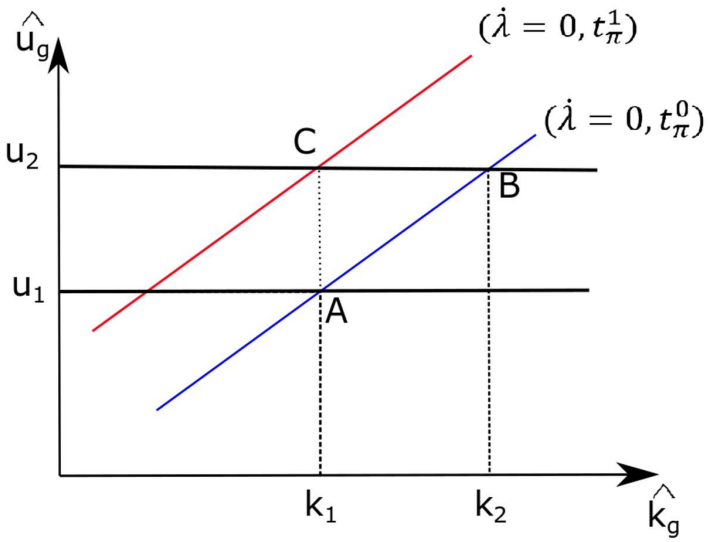
In Bose and Bhanumurthy (2013), the value of corporate tax multiplier was estimated to be -1.03. Similar to RBI (2019), the multiplier value was estimated through a system of simultaneous equations. Due to this methodological resemblance, this estimation is used as a plausible value of corporate tax multiplier in our projections. Thus, $-m_{\tau\pi} \cong -1$. But, a caveat may be added that corporate tax multipliers estimated through macro variables may have an upward bias in absolute terms. The specific route through which corporate tax-rate can be perceived to affect output growth rate is through corporate investment. But the relationship between corporate tax-rate and investment rate has been historically weak. Nonetheless, since an upward bias in tax multiplier turns to have limited effect on the central argument, we continue with $-m_{\tau\pi} \cong -1$.

Initial values here indicate the possible values of the parameters by 2021 February. Data for the initial values for expenditures, deficits and non-debt receipts (expenditure-deficit) are taken from RBI Monthly Bulletin and updated till 2020 October. The data for debt stock is till September 2020 and taken from Department of Economic Affairs. For the initial value of GDP, we have used the Advanced Estimates of National Income by CSO. The figure for corporation tax (till 2020 H2) is taken from RBI Monthly Bulletin. The non-debt receipts other than corporation tax is calculated by deducting corporation tax from non-debt receipts. For the sake of simplicity, the autonomous component of other non-debt receipts is assumed to be 0. The autonomous component of output growth rate is assumed to be similar to the projected world output growth rate for 2021 by World Economic Outlook. The assigned values of the parameters are listed in table A.1 (see Appendix A.2).

Given the value of these parameters, the central question regarding financing strategy would involve the sign of the coefficients of capital expenditure growth rate and growth rate of corporation tax-GDP ratio. With high value of multiplier of capital expenditures and high level of initial debt-GDP ratio, the coefficient $\frac{k_s^0(jm_k\theta-1)}{u_s^o(1-jm_u\theta)} = 0.28 > 0$. Again, with relatively low corporation profit tax multiplier, the coefficient for growth rate of corporate profit tax-GDP ratio is $\frac{\tau_\pi^0(1-jm_\pi\theta)}{e^0u_s^0(1-jm_u\theta)} = 0.10>0$. Thus, additional fiscal support can be financed both by increasing capital expenditures as well as increasing

profit tax as long as they increase in proportion indicated by the coefficient values. Figure 3 shows this relationship.

Figure 3: Debt-Neutral Combinations of Expenditures



The blue line in figure 3 shows the locus of combination of growth rates of capital and non-capital primary expenditure at a given growth rate of corporation tax-GDP ratio ($\widehat{t_\pi^0}$), such that the debt-GDP ratio remains unchanged. Since $\frac{k_s^0(jm_k\theta-1)}{u_s^o(1-jm_u\theta)} = 0.28 > 0$, the slope is positive. At any given targeted growth rate of non-capital primary expenditure, say u_1, requires k_1 rate of growth of capital expenditure to maintain debt-neutrality. Since the slope is positive, increasing the targeted growth rate of non-capital primary expenditures at u_2 requires incurring higher growth rate of capital expenditure at k_2. The red line shows the relation between two kinds of expenditures at higher growth rate of corporation tax-GDP ratio ($\widehat{t_\pi^1}$). At higher rate of corporate taxes, higher non-capital expenditure growth rate (u_2) can be financed at given growth rate of capital expenditure (k_1).

In other words, lower the growth rate of corporation tax ratio, higher the required amount of capital expenditure growth rate to finance debt-neutral

non-capital primary expenditure and vice-versa. This is evident from a comparison between point B and C, where the same growth rate of non-capital primary expenditure (u_2) is asociated with lower capital expenditure growth rate at higher growth rate of corporation tax ratio.

This is because lower growth rate of corporation tax-ratio has adverse impact on debt-ratio. Its positive impact on output growth rate is weaker than its adverse impact on primary deficit on account of relatively low multiplier value. Thus lower the tax ratio, higher would be the burden of adjustment on capital expenditure to increase commensurately such that the output growth rate rises at par with the stock of debt. In other words, there is a trade-off between low deficits and low corporation tax-ratios in terms of maintaing debt-sustainability at given targets of non-capital primary expenditure.

5.2 Numerical Examples

Here we provide numerical example of financing a specific level of growth rate of non-capital primary expenditure. In this example, the targeted *level* of expenditure in year (t+1) is calculated as a sum of two components: (i) the amount that would be incurred if expenditure grows at the same rate in year (t+1) as it did during the immediate pre-pandemic year (t-1) and (ii) a pandemic-specific fiscal support of amount Rs. 3 lakh crores. If period (t) is perceived as the base year 2020-21, then at given initial values in the base year, the targeted annual growth rate of non-capital primary expenditure turns out to be 43.05% for 2021-22.

For any given level of corporation tax-GDP ratio in the base year, its growth rate during 2021-22 would be determined by the level of corporation tax-ratio during this period. Depending on the level of corporation tax-GDP ratio that is collected in 2021-22, three possible scenarios are projected in table 1. The corporation tax-GDP ratio in scenario 1, 2 and 3 is assumed to be 3.5%, 3% and 2% respectively.

Table 1 shows the shares of capital expenditures, primary deficit and fiscal deficit in GDP that is required for creating the additional fiscal space for financing a targeted expenditure growth rate under different scenarios. Column 2 shows the baseline value of relevant variables for 2020-21. Columns 3-5 show the relevant figures for 2021-22 under different scenarios.

Table 1: Projected Expenditure and Deficit Ratios in 2021-22 under Debt-Neutral Fiscal Support Program (at 2021-22 GDP)

	Baseline Value in 2020-21	Scenario 1 in 2021-22 (Corporation Tax-GDP Ratio=3.5%)	Scenario 2 in 2021-22 (Corporation Tax-GDP Ratio=3 %)	Scenario 3 in 2021-22 (Corporation Tax-GDP Ratio=2 %)
	(2)	(3)	(4)	(5)
Capital Expenditure-GDP Ratio	1.2%	2.2%	2.4%	2.8%
Primary Expenditure-GDP Ratio	7.8%	10.5%	10.6%	10.8%
Primary Deficit-GDP ratio	3.6%	3.6%	3.8%	4.9%
Fiscal Deficit-GDP Ratio	5.5%	5.2%	5.7%	6.9%

Reflecting the inverse relation between growth rate of corporation tax-ratios and capital expenditure growth rate that would be required for maintaing a constant debt-ratio, table 1 shows that lower levels of corporation tax ratios are associated with relatively higher shares of capital expenditures, primary expenditures, primary deficit and fiscal deficit in GDP.

6 Concluding Remarks

There are primarily three points which this note attempted to put forward:

Firstly, Domar-Pasinetti type debt sustainability conditions need to be examined by including the multiplier effects of fiscal instruments. The debt-stability condition for fiscal stimulus would turnout to be significantly less stringent in the midst of mulitpliers than it would have been otherwise.

Secondly, having high multiplier value for the preferred fiscal instrument is not necessary for ensuring debt-sustainability. What is needed is to locate at least one fiscal instrument which has sufficiently high value of multiplier, such that it can be combined with the preferred instrument in a specific proportion.

Thirdly, at high multiplier values of capital expenditures as prevalent in India, any targeted level of non-capital primary expenditure can be financed while keeping the debt-GDP ratio unchanged if the capital and non-capital primary expenditures are increased in a specific proportion.

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Appendix

A.1. Relation between Equation (1) and Equation (2)

The primary deficit-GDP ratio 'p' is defined as the ratio of primary deficit of period 't' and GDP of period 't'. The GDP of period 't' is written as equation A.1a, where 'Y' is the GDP of period 't' and Y^0 is the GDP of the previous period 't-1'. The primary deficit ratio 'p' is defined as equation (A.1b), where 'e', 'τ_n' and 'τ_π' denote the shares of primary expenditures, revenue receipts other than corporation tax and corporation tax in GDP for period 't'. The variables with superscript '0' denote the relevant ratios for period 't-1', as both the numerator and denominator show values of period 't-1'. These relations are described in equations A.1c-A.1f.

$$Y = Y^0(1+G) \quad \ldots(A.1a)$$
$$p = e - \tau_n - \tau_\pi \quad \ldots(A.1b)$$
$$e = e^0\left(1+\widehat{P_x}\right) \quad \ldots(A.1c)$$
$$\tau_n = \tau_n^0(1+\hat{n}) \quad \ldots(A.1d)$$
$$\tau_\pi = \tau_\pi^0\left(1+\widehat{T_\pi}\right) \quad \ldots(A.1e)$$
$$p^0 = e^0 - {\tau_n}^0 - {\tau_\pi}^0 \quad \ldots(A.1f)$$

A.2. List of Parameters and Assigned Values

Table A.1: Parameters and Values used in Numeric Example

Parameters	Values
e^0	0.078
λ^0	0.549
${t_\pi}^0$	0.010

t_n^0	0.033
p^0	0.036
i	0.001
ϵ	1.000
C_1	0.006
k_s	0.150
u_s	0.850
m_k	3.250
m_u	0.750
m_π	1.000
θ	0.991
g_a	0.050
$\bar{n}$	0.000