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RATIONALE FOR INFLATION INDEXED PERSONAL INCOME TAX STRUCTURE

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ABSTRACT

"Costs of inflation" is not a new phenomenon in macroeconomic theory. Developing economies like India face significant inflation every year and suffer huge costs due to distortions created by inflation. Inflation affects governments and residents alike. In this paper, we try to explain the effects of inflation caused due to distortions created in income tax structure. Further, we will be discussing the various aspects of unchanged income tax structure over time and will try to give a rationale for an inflation indexed income tax structure for high inflation countries like India.

KEYWORDS: *inflation, tax rate, economy, tax revenue, purchasing power*

1.INTRODUCTION

In general, personal income tax structure has always been progressive in nature all over the world, in which, average rate of tax increases with income. It broadly divides an individual's income into a few intervals and each interval faces different marginal tax rate. These intervals are updated every few years and each interval gets expanded over time but this does not happen every year. Developing countries like India faces significant level of inflation which reduces purchasing power of incomes significantly every year. With increase in price levels, wage rates also increase in general, in the economy. If we consider an individual for whom wage rate increase just as much so that it exactly offset the price increase, then it would be appropriate to assume that the individual is as well off as he was in the previous year. But in our analysis in the upcoming sections, we show that it is not the case. In the years, when income tax intervals are not updated, the individual would actually be worse off. We will also show that although it may increase the tax collections (in real terms) of the government but it will come at the cost of taxpayers' welfare and create deadweight loss for the economy as a whole (discussed in section 4). Further, we have discussed how not having an inflation indexed income tax structure will affect the progressivity of income tax structure.

2.IMPACT ON GOVERNMENT AND TAXPAYERS

In this section, we will first discuss the effect of un-indexed income tax structure on government and taxpayers and then compare it with inflation indexed income tax structure. Over time due to inflation, purchasing power of money goes down and if income tax slabs remain unchanged (in nominal terms), then the tax slabs in real terms would be different than that of previous year and this would affect both the government

and the taxpayers. This change in the income tax structure (in real terms) will also have distortionary effects on the economy, which has been discussed in section 4. In this section, we will explain the direct effects of this on the taxpayers and the government.

It would be just and fair if someone earning same real income in two periods is equally well off in both periods and someone who is earning more real income in next period is strictly well off in the next period. For this to satisfy, for those who are earning same real income must be left with same real disposable income as earlier and for those whose real income has increased must be left with increased real disposable income.

For simplicity, in our analysis, we restrict the number of income tax slabs to three and consider a hypothetical example of income tax slabs which clearly will not affect outcome of this study. For incomes not exceeding Y1 there is no tax, for incomes ranging from Y1-Y2 marginal tax rate is 10% and for incomes exceeding Y2 marginal tax rate is 20%. We consider two time periods and normalize price level of first period to 1. Now suppose price level in the economy has increased by 10% which causes nominal income of individuals to increase in the economy. There are three possible scenarios:

(a) Nominal income increases by less proportion than increase in price level: in this case, taxpayers will certainly be worse off as their real income has fallen and the impact on government tax revenue will be ambiguous.

(b) Nominal income increases by the same proportion as the increase in price level: in this case also, taxpayers will be worse off. This can be explained as follows: Here average tax rate (ATR) for an individual with income Y can be given as-

$$\text{Average tax rate} = \begin{cases} 0 & ;Y \le Y1 \\ \frac{0.1*(Y-Y1)}{Y} = \left(10 - \frac{10Y1}{Y}\right)\% & ;Y1 < Y \le Y2 \\ \frac{0.2*(Y-Y2)+0.1*(Y2-Y1)}{Y} = \left(20 - \frac{10(Y2+Y1)}{Y}\right)\% & ;Y > Y2 \end{cases} \quad (1)$$

Consider a taxpayer A with nominal income Y in the first period whose income (due to inflation) becomes 1.1Y in second period. In this case, we may be tempted to think that person A is as well off as she was in the previous period as her nominal income has increased exactly in the same proportion as the increase in prices, thereby causing no change in her real income and standard of living. However, if the income tax slabs are unchanged, then this will not be true unless her income (in both periods) fall under the exemption limit. Taxpayer A would be equally well off in both the periods if her real disposable income (real income minus tax paid in real terms) remains the same for which her average tax rate should remain the same. For average tax rate to be same (while nominal income increases from Y to 1.1Y), her marginal tax rate must be equal to the average tax rate. If marginal rate is greater than average rate, average rate will tend to increase with income and if it is less than average rate, then average rate would tend to decrease with income. If we look at our example, then we note that till the exemption limit marginal rate of tax is zero and so is the average tax rate. But if we look at the second slab with marginal rate of tax equal to 10%, if someone's income falls in that category then her average rate of tax is less than 10% (as she is paying 10% tax only on part of the income). Similar thing shall be true for those falling under 20% tax category. Since the marginal tax rate is always higher than average tax rate (except exempted category), when nominal income increases from Y to 1.1Y average tax rate also increases (from equation 1) which will leave less of real disposable income to her, worsening her living standard even though she is earning the same real income. For taxpayers who are at the margins of upper limit of any slab, situation will be even worse as there will be a sudden jump in marginal tax rate and hence average rate of tax will be even higher.

Since average tax rate has increased and the real income is same, tax burden (in real terms) on taxpayers will be higher than that of in previous period. With increased real tax burden, government will receive more tax revenue in real terms. But this excess revenue will come at the cost of taxpayers' decreased living standard.

(c) Nominal income increases by more proportion than increase in price level: in this case, real income of the taxpayers will increase but we cannot say anything about the relative welfare as it will depend on the relative magnitude of increase in her real income vis-à-vis increase in her real tax burden due to higher nominal income. However, it is highly likely that increase in real tax burden will be higher than increase in real income when income tax slabs are not indexed with

inflation, thereby causing welfare loss to the tax payers. As far as government is concerned, it will receive more tax revenue in real terms with certainty.

The above three cases show that when we have un-indexed income tax structure, taxpayers' welfare is most likely to go down and government's welfare is most likely to go up, implying that government will gain at the cost of taxpayers' welfare.

Now suppose we have inflation indexed income tax slabs, the individuals with same real income would be as well off as they were in the previous period as the slabs in real terms won't be changed. If nominal income increases by inflation rate, then tax slab will also increase by inflation rate, leaving average tax rate unchanged and hence real disposable income of taxpayers unchanged. With same average rate of tax, government also gets the same revenue (in real terms). This leaves both government and taxpayer equally well off as in previous period. If there is economic growth and real income increases for a representative taxpayer, then some part of that extra real income goes to government and rest remains to the taxpayers making both of them well off as compared to previous period. Similarly, in case of economic downturn where real income of representative taxpayer goes down, this affects both taxpayer and government adversely.

Hence, in order to bring fairness in income tax regime and to do justice with the taxpayers, we should have an inflation indexed income tax slabs.

3.EFFECT ON PROGRESSIVITY OF TAX STRUCTURE

In real life, we face progressive income tax structure. If there were a proportional tax structure (having same marginal rate of tax for all incomes) then there would have been no need for this discussion. Progressive tax is one in which as income increases average tax rate also increases. If we look at the average tax rate as given in previous section, it is clearly strictly increasing with income if the income does not fall under exempted category and it is constant if it falls in exempted category.

In this section, we discuss about how progressivity of income tax structure is affected if the income tax slabs are unchanged. We consider two representative taxpayers whose incomes fall in the same slab and have same real incomes in the two periods (we also assume that in the next period too, their nominal incomes fall under that same slab only). *We claim that, among these two taxpayers, relative increase in the average rate of tax will be higher for the one with lower income.* (*See Appendix 1 for calculations*). This behavior of change in average tax rate will also be seen for the taxpayers in different slabs if one with the lower income is sufficiently far from upper boundary of her slab and the one with higher income is sufficiently far from lower boundary of her slab (*See Appendix 1 for calculations*). This kind of behavior of average tax rate will not be true only for those set of taxpayers whose incomes fall under different slabs and one with the lower income is very close to the upper boundary of slab and one with higher income is very close to the lower boundary of her slab (assuming that one with lower income remains in the same slab in the next period also). But for such cases also, if we relax the assumption that the taxpayer with lower income remains in the slab for both the periods, then again we may find that one with lower income has larger relative increase in average tax rate.

From our calculations, it is clear that leaving out some exceptions, relative change in average tax rate is decreasing with real income (*see Appendix 1)* i.e. individuals with lower real income faces higher percentage change in their average tax rate which is just opposite of progressivity. However, if we consider inflation indexed income tax slabs, the average tax rates remain the same for everyone and there is no effect on progressivity of tax structure. Here, we can safely conclude that if income tax slabs remain unchanged, income tax structure become less progressive.

4. EFFECT ON EFFICIENCY

Here we discuss the effect of un-indexed income tax slabs on economic efficiency. Every tax creates distortions in the economy and hence bears some efficiency losses. Lump sum taxes are most efficient ones and yet even they are not immune from these losses. Same is true for Income Tax; this tax also has bearing on efficiency. In this paper, we are not interested in these efficiency losses but are interested in additional losses which might arise due to tax distortions created due to inflation when income tax slabs are not inflation indexed.

If nominal income tax slabs are unchanged and there is inflation in the economy, then we have already discussed in previous sections that average tax rate would increase for a representative individual with same real income in both the periods. This will leave her with less real disposable income than previous period which will reduce her budget and hence will affect her demand for various goods. In general, we will observe a reduction in demand (unless the goods are inferior goods). With decreased demand of products in the economy, labor demand will go down which will cause a downward push

on real wages, thereby decreasing real income of the individuals even further (obviously, here we are keeping everything else constant e.g. technological innovations etc. which might increase the real wages). With decreased real wages, tax revenues (in real terms) would also be less than what we would have expected. If we had ignored this effect through demand side of the economy, we could say that whatever losses would have been to the taxpayers would be exactly equal to the government's gain through increased revenue. But in the light of this effect through demand side of the economy, we can say that the government's gains would be much less than taxpayers' losses as this effect tends to make both government and taxpayers worse off by decreasing the real incomes of taxpayers. For example, if B is the excess tax burden (in real terms) to representative individual with same real income in both periods, then same B is also excess revenue (in real terms) generated by government from that individual. Now, let T be the tax paid (in real terms) in the previous period and X be the real income, then this taxpayer's real disposable incomes would have been X-T in previous period and X-T-B in the current period with government's revenues being T and T+B in the two periods. When we add up real disposable income of taxpayer with government's revenue, then in both periods it turns out to be X, which means society's total income remains same. Due to effect through demand side of the economy, real income of representative taxpayer decreases to X'<X and as both taxpayer's real disposable income and government's revenue are increasing functions of her real income, both will do down with this decrease in her real income. Now if we add up the taxpayer's real disposable income with government's revenue, then it turns out to be X' which is less than total income of the society (government plus taxpayers) in the previous period. This difference between X and X' is the additional Deadweight Loss caused due to inflation by distorting the existing income tax structure.

There might also be effects on supply side of the economy. If we consider the taxpayers who are at the margins of upper limit of their slab, then in the next period with increased nominal income (with same real income), they might fall under next income slab, thereby facing higher marginal rate of tax. With increased marginal rate of tax, their net marginal benefit from working decreases whereas marginal cost of working (as they have to give up leisure time for working) remains the same, which changes their optimal choice of how much labor they are willing to supply. This reduces the labor supply in the market pushing wages up but reducing the output and hence real income of the overall economy.

Combining both of these effects of decreased labor supply and decreased labor demand, with respect to wage rates, both work in opposite directions and effects of one other would be somewhat neutralized. But the interesting point here to make is that both of these effects work in tandem when it comes to the real output in the economy and both effects tend to decrease it. With decreased aggregate output, unemployment also increases in the economy.

If income tax slabs were inflation indexed, then none of these problems have surfaced. Average tax rates and marginal tax rates would have been same in both the periods and there had been no change in real disposable income and hence no effects on demand side of the economy. Similar analysis follows for the supply side as there had been no change in marginal rate of tax and labor supply choice would have not been affected. This clearly shows advantages of an inflation indexed income tax structure as there would be no additional distortions caused in the economy due to inflation.

5. BEHAVIORAL ASPECT

With increased average tax rate and decreased real disposable income, individuals will be motivated to evade tax. This will not only offset the supposedly increased tax revenues of government but also might, in worst case, lead to fall in overall tax revenue. The Problem is not only with the decline in tax revenue but also with the change in people's behavior. Once the people start evading tax, it will be very difficult to change their behavior back and this behavioral change may also create costs for the society as a whole by promoting further illegal activities.

6. CONCLUSION

In this paper, we have talked about the effects of un-indexed income tax structure and put forth the advantages of having inflation indexed income tax slabs. Though government revises the income tax slabs every few years but revision of slabs does not exactly offset the effects of inflation which creates distortions in the economy in the form of overall deadweight loss to the society. With inflation indexed income tax slabs, we can not only do justice to the taxpayers but also remove any possibility of distortions caused due to inflation through income tax.

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APPENDIX 1

(Calculations for section 3: Relative Change in Average Tax Rate)

Let Y and X be incomes of two representative individuals with Y>X

1. If both incomes fall under marginal tax rate(MTR) of 10% in both periods

   Relative change in Average Tax Rate

   $$For\ Y: \quad \frac{10*(1-Y1/1.1Y) - 10*(1-Y1/Y)}{10*(1-Y1/Y)} = \frac{Y1}{11(Y-Y1)}$$

   $$For\ X: \quad \frac{10*(1-Y1/1.1X) - 10*(1-Y1/X)}{10*(1-Y1/X)} = \frac{Y1}{11(X-Y1)}$$

   As Y>X → Y-Y1 > X-Y1 → Y1/11*(Y-Y1) < Y1/11*(X-Y1)

   - Relative change in ATR is higher for X
   - Similar analysis follows if both the incomes fall under marginal tax rate of 20%

2. If Y falls under MTR of 20% and X falls under MTR of 10%

   Relative change in ATR:

   $$\text{For X (rx):} \quad \frac{Y1}{11(X-Y1)}$$

   $$\text{For Y (ry):} \quad \frac{(20-10(Y1+Y2)/1.1Y) - (20-10(Y1+Y2)/Y)}{(20-10(Y1+Y2)/Y)} = \frac{Y1+Y2}{11(2Y-Y1-Y2)}$$

   For $r_x < r_y$: $X/Y1 > 2Y/(Y1+Y2)$; this is only possible if X is very close to Y1 and Y is very close to Y2. So in general, r_x is greater than r_y.