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Lessons from Optimal Taxation for the GST and Beyond

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Abstract

This paper studies the new GST from the perspective of some key results in the theory of optimal taxation. A review of these findings and a study of their applicability to India leads us to the conclusion that, while the GST is a major overhaul and rationalisation of the existing commodity tax structure in India, to tap its full fiscal potential in meeting redistributive goals and increasing the tax-GDP ratio, major reforms are also required in the coverage and design of direct taxation (including personal income and corporate profit taxation) and direct redistributive transfers in India.

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Lessons from optimal taxation theory for the GST and beyond

1 Introduction.

The Indian economy is currently undergoing a major overhaul of its tax machinery by way of shifting to the new Goods and Services Tax (GST). On the occasion of this revolutionary transformation, this paper reminisces about some classic results in the literature on optimal taxation and attempts to study from their perspective the relevance of the new GST and its implications for future fiscal reforms in India.

We begin in Section 2 with a brief overview of the theoretical motivations behind the use of distortionary commodity taxation in lieu of non-distortionary (first-best) instruments such as personalised lump-sum taxes and transfers for raising governmental revenue and promoting its equity and efficiency objectives.

Sections 3 to 5 review three fundamental precepts from optimal taxation theory and their relevance for GST. Firstly, a set of theoretical results, beginning with the seminal works of Diamond and Mirrlees (1971), demonstrate that a second-best optimal tax structure is production efficient, which implies that it recommends no taxation of transactions between firms (or no intermediate good taxation). It is these results that provide the basic justification for preferring tax structures such as VAT/GST or the US retail sales tax over all other forms of commodity taxation. The clause attached to these results, in the form of a system of corporate profit taxation that is well-aligned to the distribution of profit incomes in the economy, and underlying economic intuition are discussed in Section 3.

Secondly, when commodity taxes are employed to raise revenue for the government and to promote its redistributive objective, the economy incurs dead-weight (efficiency) losses, *i.e.,* the use of commodity taxes involves equity-efficiency trade-offs. The "many person Ramsey rule" of the optimal taxation literature demonstrates how an optimal commodity tax structure strikes the right balance between these two objectives of the government by requiring different commodities to be taxed at different rates. This rule is reviewed in Section 4.

Thirdly, when direct taxation in the form of a non-linear income tax is also an instrument available to the government along with commodity taxation, then the former dominates the latter as both an effective redistributive and revenue-generating device. Tax structures of most developed economies are modelled on this premise. Commodities are taxed either at a uniform

rate of VAT or at most a few VAT rates, the purpose being mainly to supplement government revenue, while saving on costs of administrating a large number of tax rates. The onus of achieving redistributive goals falls mainly on instruments of direct taxation and transfers, the former being also the more dominant source of revenue for the government. From this we infer in Section 5 that, when there are limits to the extent to which income taxation can be employed, which is true of many developing countries including India where some major sectors of the economy escape income taxation, then the onus of both redistribution and revenue generation will fall on the more inferior instrument, commodity taxation.

Based on these results from the literature on optimal taxation, we argue in the concluding Section 6, that the few tax rates and cesses on which the new GST is currently based are not sufficient to adequately address the redistributive concerns of the government in the absence of a comprehensive and inclusive system of income taxation. But, purely for administrative reasons, we are compelled to economise on the number of tax rates that can be implemented under the new GST. Hence, based on some key findings in optimal taxation theory, which are reviewed in this paper, and on the observed experiences of the more developed world, we make our concluding argument that, to harness the full potential of GST in India, this reform in commodity taxation has to be combined with even bigger future reforms in the coverage and structure of direct taxation (including personal income and corporate profit taxation) in India.

2 Commodity taxation and the trade-off between equity and efficiency objectives.

In this section, we differentiate between the first-best and second-best taxation policies of the government and review the motivation for employing commodity taxation for raising governmental revenue and promoting its equity and efficiency objectives.

2.1 First-best policies and violation of incentive compatibility.

While the first fundamental theorem of welfare formalises Adam Smith's conjecture on the non-wastefulness (Pareto efficiency) of an equilibrium of a private ownership economy with a complete set of perfectly competitive markets, it is silent about the social desirability of such an outcome. It is possible that, in this economy, the initial distribution of wealth is so highly skewed that it results in an equilibrium that is considered inequitable by the society.

Acknowledging that there will usually be several ways to non-wastefully allocate the scarce resources of an economy to various end uses, the second fundamental theorem of welfare economics states that any such Pareto efficient allocation can be decentralised as a competitive equilibrium of a private ownership economy provided the government can implement a system of personalised lump-sum taxes and transfers. In particular, with unrestricted power to redistribute resources through use of such policy instruments, the government can decentralise that Pareto efficient allocation, which is considered just and desirable by the society. Thus, under the assumptions of the second welfare theorem, government faces no compromise between its twin objectives of promoting equity and efficiency.

These two fundamental theorems of social welfare provide the foundations of modern public economics. Much of public economics is concerned with the consequences of deviating from the ideal conditions under which these results operate. In particular, lets consider the case where the government's power to do unrestricted lump-sum taxes and transfers is seriously inhibited by informational constraints such as lack of knowledge of true wealth positions/ abilities to pay of private individuals. If the rich know that moving to the social optimum will require heavy taxation of their wealth, then they will refrain from revealing their true wealth status to the government in order to avoid paying high lump-sum taxes. Similarly, if the poor know that transfers to them are contingent on their wealth status, then they too have the incentive to understate their wealth to benefit from higher transfers. Thus, in the presence of informational constraints, first-best policies such as personalised lump-sum taxes and transfers are not "incentive compatible."

2.2 Incentive compatibility of commodity taxation and the equity-efficiency trade-off.

It was Ramsey (1927) who first studied the optimality of employing commodity taxes as alternatives to personalised lump-sum taxes for raising governmental revenue. His results were resurrected and made more accessible to readers by Diamond and Mirrlees (1971) (henceforth referred to as DM), who used the tools offered by modern duality theory in microeconomics to study commodity taxation as a means of both raising governmental revenue and redistribution.[1]

As opposed to personalised lump-sum taxes, which are imposed on private wealth and earning levels of individuals that are usually imperfectly observable by the government, commodity taxes are imposed on observable transactions in commodities between sellers and buyers. Hence,

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[1]See Section 6 for the redistributive role of commodity taxation.

in contrast to the former policy instruments, the latter are incentive compatible. However, commodity taxes provide only a second-best means of raising governmental revenue and redistribution. This is because a commodity tax generates revenue for the government by driving a wedge between the price paid by the buyers and price received by the sellers. Thus, in competitive situations, it drives wedges between the marginal rates of substitutions of the buyers and the sellers, leading (as will be recalled below) to violations of conditions that characterise first-best Pareto optimality.[2] Hence, while commodity taxes can be employed to further government's revenue and redistributive objectives, this comes at the cost of loss in Pareto efficiency. Thus, use of commodity taxes involves equity-efficiency trade-offs.

3   Second-best production efficiency and implications for intermediate input taxation – The case for VAT/GST.

In this section, beginning with the DM model, we review the main theoretical justification for commodity tax structures like VAT/GST that are based on an important property of the optimal commodity tax structure, namely, there should be no taxation of intermediate inputs or, equivalently, inter-firm transactions in commodities should not be taxed.

3.1   Second-best production efficiency in the DM model.

Recall that a first-best Pareto optimal allocation has three properties: (i) consumption efficiency (or the equalisation of marginal rates of substitution between goods across all consumers), (ii) production efficiency (or the equalisation of marginal rates of substitution between goods across all producers), and (iii) joint consumption and production efficiency (or the equalisation of marginal rates of substitution between goods across producers and consumers).

In this regards, the DM model precludes taxation of transactions between consumers. Thus, all utility-maximising consumers face the same price vector and so consumption efficiency continues to hold at the second-best of this economy with commodity taxes.

On the other hand, the DM optimal commodity tax structure recommends non-zero taxation of transactions between consumers and firms. Hence, it implies that the prices faced by utility-maximising consumers will differ from the prices faced by competitive profit maximising firms. Thus, the consumption and production marginal rates of substitution are not equalised implying

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[2]Recall, under perfect competition, utility maximising consumers and profit maximising firms equate their respective marginal rates of substitution to the relative market prices.

the violation of the first-best Pareto condition of joint consumption and production efficiency. Hence, the solution offered by Ramsey (1927) and DM for meeting the revenue requirement and redistributive goals of the planner is truly second-best in nature.

One of the remarkable features of the DM optimal commodity tax structure was that, despite its second-best nature, it continues to exhibit production efficiency.[3] An allocation of resources is production efficient if the aggregate production (which is the sum of production vectors of all individual producers) that it induces lies on the frontier of the aggregate technology of the economy (which is obtained as the (vector) sum of technology sets of all individual producers). In fact, frontier points of the aggregate technology are obtained by summing frontier points of individual technologies with equal marginal rates of substitution (equal slopes). The marginal rates of substitution at a frontier point of the aggregate technology will be the same as the marginal rates of substitution at frontier points of individual technologies that sum to it.

It is clear from the above discussion that equalisation of marginal rates of substitution across all price-taking and profit-maximising producers will take place if and only if the price vectors faced by different producers are proportional to each other. Thus, a competitive equilibrium with commodity taxes is production efficient if and only if the price vectors faced by all producers are proportional. DM show that the second-best Pareto optimal commodity tax structure results in a production efficient allocation, where the price vectors faced by individual producers are actually equal (and not just proportional):

It follows from DM's "production efficiency lemma" that there are no differences in (or wedges between) the price vectors faced by individual producers at a second-best Pareto optimum of the DM economy. We thus obtain a remarkable property of the DM optimal commodity tax structure: Taxation of inter-firm transactions (equivalently, intermediate input taxation) is not desirable at a second-best Pareto optimum of a DM economy.

It is this result that provides a strong theoretical foundation for real-world tax structures such as VAT, GST, and the US retail sales tax, where firms are either rebated for taxes paid on purchases of intermediate inputs from other firms (VAT/GST) or are not taxed when they purchase inputs from other firms (retail sales tax, where only sales to final consumers are taxed).[4] Intuitively, these tax structures ensure that all firms face the same prices so that profit

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[3]This provided a powerful counterexample to the very influential claim by Lipsey and Lancaster (1956) that in the presence of a distortion in the economy, which makes attainability of at least one of the first-best Pareto optimal conditions impossible, the remaining Pareto optimal conditions, although still possibly attainable, are no longer desirable at a second-best optimum.

[4]This is also the result that has been invoked often to validate use of producer prices as the correct shadow prices for cost-benefit analyses of public sector projects. See, *e.g.,* Little and Mirrlees (1974) and Drèze and Stern (1987).

maximisation will lead to equalisation of their marginal rates of substitution with the economy producing on the frontier of its aggregate technology and thus realising the full productive potential of its input resources.

However, underlying this deep result of DM are two key assumptions.

Assumption 1: Technologies of all producers exhibit constant returns to scale (crs).

Assumption 2: At least one of the following two conditions is true:

(i) There exists a commodity that is always in net demand by all consumers.

(ii) The government can implement a uniform lump-sum transfer/tax (also called a poll subsidy/tax or a demogrant).

Under Assumption 1, all profit maximising private firms make zero profits. Assumption 2 is also called "local Pareto non-satiation". Intuitively, part (i) of this assumption states that there is a commodity that is liked and hence demanded in non-negative or positive amounts by all consumers in the economy. The implication of this assumption is that, if ever the government finds itself in a situation where its budget is in surplus, then there are instruments available to it to effectively use this surplus to increase welfare of all consumers. For example, under Assumption 2, it can do so by using this surplus to reduce the commodity tax on the good that is liked by all consumers or by distributing this surplus to all consumers as a uniform lump-sum transfer.

3.2 Technological non-increasing returns and second-best production efficiency.

Assumption 1 of the DM model laid open their analysis to questions about the robustness of its results. More realistic situations encompass cases where private firms generate positive profits. This is possible, for example, if there are firms whose technologies exhibit decreasing returns to scale. There is a classic body of literature that extends the DM model to include such firms and studies whether the striking features of the DM optimal commodity tax structure also carry over to this extended context.

With regards to the end use of profits generated, this literature assumes that these can be (partly or fully) taxed away by the government (for instance, in the form of corporate profit taxation) and can (partly or fully) accrue to consumers as profit (dividend) incomes (assuming

that firms are ultimately owned by consumers). Two polar results in the literature are presented below.

The first result states that production efficiency continues to hold at all second-best optimal allocations with commodity taxes if the government can *uniformly* tax profits of all firms at 100% and can implement a uniform lump-sum transfer.[5] The second result, which is due to Dasgupta and Stiglitz (1972) (henceforth DS), says that, under Assumption 2, production efficiency continues to hold at all second-best Pareto optimal allocations with commodity taxes provided the government can implement a system of *firm-specific* profit taxes.

Thus, even in cases where firms generate positive profits, the optimal commodity tax structure recommends no taxation of intermediate inputs if it is possible for the government to either uniformly tax away all profits of the firms or to tax each firm's profit at a different rate.

It can be argued that in real world situations, the policy of taxing away all profits would remove incentives for agents to undertake managerial or entrepreneurial activities, while the policy of firm-specific profit taxation may be quite administratively and politically demanding. Moreover, many authors felt that the basic intuition and understanding of the economic principles underlying the link between profit taxation and second-best production efficiency were not clear in the DS analysis.

In order to gain more insights into the DS result, Hahn (1973) attempted to replicate it using different techniques. Some scepticism about the DS result was also expressed by authors such as Mirrlees (1972), who attempted to construct a counter example to demonstrate that production *inefficiency* at a second-best could in fact be desirable when the government can implement firm-specific profit taxes.

However, problems with the proofs and the analyses of Mirrlees (1972) and Hahn (1973) were highlighted by Sadka (1977), Munk (1980), and Reinhorn (2010), among others, so that the desirability of no intermediate input taxation (and hence the theoretical justifications of tax systems such as VAT, GST, or the US retail sales tax), in situations more general than the one studied by DM, remained obscured and disputed for a long time.

3.3 Second-best production efficiency, profit taxation power of the government, and distribution of profit incomes in the economy.

More recently, Murty (2013) distinguishes between (i) the profit taxation power of the government and (ii) the institutional rules by which profit incomes are distributed to consumers (the

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[5]See, for instance, Mirrlees (1972) and Guesnerie (1977, 1998).

ultimate owners of firms in a private ownership economy) and demonstrates that the desirability of second-best production efficiency depends upon whether or not (i) and (ii) are well-aligned.

The profit taxation power of the government refers to the number of profit tax rates that it can implement. For example, in the DS model, where it is assumed that the government implements firm-specific profit taxation, this is equal to the number of firms, while it is one in the case when the government implements a uniform 100% profit taxation with a demogrant (a uniform lump-sum transfer).

More generally, the government's profit taxation power is said to be T if all the firms in the economy can be partitioned (sorted) into T groups and the government can implement T profit tax rates, one for each of the T firm-groups.

In addition, it can be shown that the existing distribution of profits to consumers in the economy too induces another partition (grouping) of firms such that the profit income of any consumer is a function of profits of these firm-groups. Let the number of firm-groups induced by the distribution of profit incomes to consumers be T'. As an illustrative example, consider a natural grouping of firms induced by the riskiness of their returns into high, medium, and low risk categories. The asset portfolio of a consumer comprises of his share in profits of each such firm-group. The consumer chooses his asset portfolio based on his risk preferences. In this case $T' = 3$.

Murty (2013) shows that in economies where the technology exhibits non-increasing returns to scale and Assumption 2 holds, second-best production efficiency is desirable with no taxation of inter-firm transactions if the government has profit taxation power that is at least enough to tax each firm-group, induced by the existing distribution of profits to consumers, at a separate rate, *i.e.*, $T \geq T'$. Thus the Murty (2013) result implies that the government need not have full profit taxation power as in the DS model to ensure that a second-best optimum is production efficient. It is enough if it can align its profit taxation power to the existing rules of distribution of profit incomes.

Theoretically, there is a link between desirability of production efficiency at a second-best, profit taxation power of the government, and the distribution of profit incomes in the economy. We know that commodity taxes introduce wedges between consumer and producer prices and lead to violations of the first-best Pareto optimality condition of joint-consumption and production efficiency. Does an optimal tax structure also require wedges between the prices producers face when they transact with each other?

If a tax equilibrium is production inefficient, then the producer price vectors of firms are not

proportional, their marginal rates of substitution are not equalised, and production takes place in the interior of the aggregate production technology of the economy. Starting from such as an equilibrium, policies that remove wedges between (tax-distortions in) producer prices are Pareto improving when profit taxation is available. This is because, by removing such distortions, the aggregate supply and the aggregate income/GDP of the economy can be increased. These changes in producer prices can however affect profit incomes of consumers (possibly, in an adverse manner for some consumers) by affecting the profits of firms. Fiscal policy instruments such as firm-group specific profit taxation/subsidisation help in ensuring that profit incomes of consumers are not affected when the distortions in producer prices are reduced. In that case, the increase in aggregate income/GDP of the economy that is induced by reduction in price distortions shows up purely as an increase in government tax revenue that, under Assumption 2, can be redistributed back to consumers in a Pareto-improving manner. Thus, in such a fiscal system, the optimal tax structure can never exhibit production inefficiency, *i.e.,* the economy operates on the frontier of its aggregate technology, thereby realising the full productive potential of its input resources, requiring no taxation of intermediate inputs, and hence justifying tax systems such as VAT, GST, and the US retail sales tax.

Though these different forms of indirect taxation are equivalent in theory, in practice, when compliance is imperfect, VAT and GST have an advantage over the retail sales tax, owing to the "fractional" manner in which revenue is collected by the former instruments: Under VAT or GST, tax revenue is collected at every stage of manufacturing and sale of a product where, at each stage, the concerned manufacturer can deduct the input taxes he paid from the tax payments received from the sale of his product that are collected from him by the government. This is in contrast to the US sales tax where the tax is collected only at the retail stage, *i.e.,* when the product is sold to consumers. This means that, if due to any administrative lapse, the sales tax on a product is not collected, then the government stands to lose the entire amount of tax payment that is due on the value of the product. On the other hand, under VAT and GST, the government recovers all tax payments made along the manufacturing line prior to the point where the product escaped the tax.

4 The efficiency-equity trade-off and the many person Ramsey rule (MPRR).

Another remarkable feature of the DM analysis was that it explicitly demonstrated the tussle between equity and efficiency considerations in the design of commodity tax structures. The optimal tax structure has to strike a right balance between the two objectives. This is delineated by the "many person Ramsey rule (MPRR)," which recommends taxing different commodities at different rates depending upon how their consumption is distributed among the people, the society's valuation of welfare levels and abilities to pay of different consumers, and the responsiveness of consumer demands (and hence consumer tax payments) to tax-induced changes in prices and real incomes.

The gross social marginal utility of income (SMUI) of a consumer is defined as the increase in social welfare when an extra unit of income is given to the consumer. For an inequality averse social welfare function, this will be higher for consumers with lower levels of utilities and incomes, *i.e.,* the society values these people as more deserving of any additional resource that the economy can secure.

It is intuitive that commodity taxes discourage consumption of goods by increasing the prices faced by consumers. In this regards, the MPRR recommends a commodity tax structure that leads to a greater reduction in the compensated demand for a good, the more the good is consumed by (i) individuals with lower gross SMUI and (ii) individuals whose tax payments are less (respectively, more) responsive to changes in income (*i.e.,* individuals with a low marginal propensity to consume taxed goods).

Point (i) captures the equity consideration as it implies that the optimal commodity tax system should discourage more the compensated demands of those goods that are consumed disproportionately by the rich. Point (ii) reflects the efficiency consideration involved in employing commodity taxation to meet the revenue target of the government. This is because the introduction of a positive commodity tax, by raising the consumer price, reduces the real income of people and hence also their expenditure on taxable goods. If, contrary to point (ii), the government was to generate its revenue by mainly taxing goods that are consumed disproportionately by people whose tax payments fall a lot when their incomes are reduced (*i.e.,* whose tax payments are very responsive to income changes), then very high rates of taxation of these goods, and hence very big price distortions and greater dead-weight losses, will be

required to generate the required governmental revenue.[6]

The conflict between equity and efficiency objectives in designing optimal commodity tax structures is starkly demonstrated in the special case where cross price elasticities of demands are zero. To see this, lets first define the net social marginal utility of income of a consumer as the sum of his gross SMUI (converted into monetary units) and his marginal propensity to consume taxed goods. Deaton (1979) defines the social luxury index of a good, which is negatively related to the weighted average of the net SMUIs of consumers, where the weights are the shares of different consumers in the total consumption of the good. Thus, this index is higher the more the good is consumed by people with low net SMUI. To see the intuition behind this concept, consider the special case where the marginal propensity to consume taxed goods does not vary a lot across consumers. In this case, the index is high the more the good is consumed by the people whose gross SMUI is low, namely, the rich of the society.

When cross-price elasticities of demands are zero, Atkinson and Stiglitz (1976) show that the optimal tax rate of a good is the ratio of its social luxury index and its *own* compensated demand elasticity (averaged across all consumers). Thus, the higher the social luxury index of a good, the higher is its optimal tax rate, and the higher is its compensated demand elasticity, the lower is its optimal tax rate. The latter principle, which is related to the inverse elasticity rule of commodity taxation that was first proposed by Pigou (1947), states that in order to raise a given amount of governmental revenue through commodity taxation in the least distortionary way (*i.e.,* with least loss of efficiency), goods with lower price elasticities of demand should be taxed more. This is because, for such goods, fall in demands (and hence the losses in the tax-revenue) due to commodity tax-induced increases in consumer prices will be the least. Thus, the conflict between equity and efficiency objectives is clear when one notes that the goods with low price elasticities of demand will generally be necessities. So, on the one hand, the optimal tax structure prescribes taxing more the goods with higher social luxury indexes, while on the other, it also prescribes higher rates of taxation on necessities, which are known to form bigger proportions of the expenditures incurred by the poor. Atkinson and Stiglitz (1976) provide examples of cases where, in the balance, equity considerations can dominate efficiency considerations and also of cases where the reverse is true.

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[6]See also Myles (1995).

5 Differential versus uniform rates of commodity taxation in the presence of direct taxation.

It follows from the above arguments that if consumption patterns of goods, social valuation of individual abilities to pay, as well as responsiveness of tax payments to changes in incomes vary widely across consumers and/or if price elasticities of demand vary significantly across goods, then both equity and efficiency considerations warrant taxing different commodities at different rates.

Despite this, there is a strong bias in real-life economic policy for implementing a limited number of commodity tax rates if not a single uniform rate of tax on all commodities. This can be attributed in part to the prohibitively high administrative costs of implementing a highly differentiated system of commodity taxation. But, more importantly, this bias has also drawn support from some key theoretical findings with regards to real-life tax structures, which are a mix of both direct and indirect/commodity taxes.

5.1 Interaction between direct and indirect taxation.

In his seminal work on direct income taxation, Mirrlees (1971) assumes that consumers differ in their productive abilities and so have different earning potentials. The productive ability of a consumer defines the implicit wage rate that he earns on the labour he supplies. Ideally, if the government could observe productive abilities of people then, given an equality-respecting social welfare function, it would employ the non-distortive (first-best) policy of personalised lump-sum taxation, where people with higher abilities are taxed more. However, in reality, it can neither observe the productive abilities of people nor the exact amounts of labour they supply. Rather, Mirrlees (1971) assumes that all it can observe and tax are the personal incomes of consumers, which are products of their implicit wage rates and the physical units of labour they supply. All consumers face a *common* income tax schedule that links tax payments to earned incomes. Given this schedule, they self-select/choose-independently how much they would like to earn and consume based on their preferences. Since earnings are observable by the government, payment of tax, in accordance with the tax schedule and based on their choice of how much to earn, cannot be avoided by people. Hence, such a policy, like commodity taxation, is incentive compatible. In this setting, Mirrlees (1971) characterises the optimal income tax schedule, and shows that it will generally be highly non-linear balancing redistributive considerations (by equitably linking tax payments to the abilities to pay of people as reflected

by their personal incomes) with efficiency considerations (by minimising the adverse effects of wage-income taxation on people's incentive to work/supply labour and increase GDP).

Beginning with Atkinson and Stiglitz (1976) and Mirrlees (1976), succeeding works have extended the original DM model to integrate both direct income taxation and indirect commodity taxation into a common framework to study the interactions between the two tax systems.

In this regards, it is important to note that the original DM analysis does not explicitly differentiate between direct and indirect taxation. For example, it treats leisure just as any other good that is subject to a linear commodity tax. The model assumes that there are no differences in productive abilities of consumers. Hence, all consumers face the same after-tax price of leisure, *i.e.,* the same net-of tax wage rate. Thus the DM model can also be interpreted as one where linear commodity taxation is combined with a linear income tax. It is in this setting that DM demonstrate the MPRR, which can be interpreted as recommending the following: *When the government can implement only a linear income tax, then a highly differentiated system of commodity taxation will usually be required to promote and finely balance its equity and efficiency objectives.*

However, there are also some theoretical results that demonstrate that, when utility functions/preferences of consumers have certain special features, then the optimal commodity tax rates are uniform even when income is taxed at a constant rate (*i.e.,* under a system of linear income taxation).[7] However, empirical works that test whether real-life preferences actually exhibit the special properties assumed in the above theoretical results are few and have mainly rejected these hypotheses.[8]

5.2 Case for uniform rate of commodity taxation under non-linear income taxation.

Atkinson and Stiglitz (1976) demonstrated that, when *non-linear* income taxation is also an instrument available to the government, then employing (a highly differentiated system of) commodity taxation is redundant *when* consumer utility functions are weakly separable between consumption goods and leisure/labour. In this situation, government's revenue needs can be met with least loss of efficiency by non-linear income taxation supplemented by a uniform rate of commodity taxation, while the former instrument also serves as a powerful redistributive

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[7]See, for instance, Deaton (1979, 1981), Deaton and Stern (1986), and Besley and Jewitt (1990). Deaton (1979) shows that this result is true when consumer preferences yield parallel and linear Engel curves, an assumption that is very commonly made in applied works.

[8]See Browning and Meghir (1991) and Crawford, Keen, and Smith (2010).

device.

Although limited in its application to only separable preferences, this theoretical result by Atkinson and Stiglitz (1976), which was later strengthened by Mirrlees (1976), has been taken as a cue by many economists to argue that commodity taxation provides only an indirect means of tackling inequality and that redistributive goals can be more effectively achieved by measures that directly tax incomes of people from various sources, while identifying the needy groups in the society and transferring benefits to them directly.[9] These latter policies, which are based on (observed) abilities to pay of people, include not only non-linear income taxation but also payments such as social security contributions, and a range of direct transfers in cash or kind to targeted groups. These theoretical findings and the discourse they promoted provided also a relief to tax administration, as designing and enforcing a finely differentiated system of commodity taxation is daunting, because it involves huge administrative and monitoring costs and can be expected to result in reduced levels of compliance.

Thus, many OECD countries tend to adopt only a single or at most a few VAT rates. The EU does not permit most member states to levy more than three VAT rates – a standard rate and two reduced rates, where the latter can include zero rating of commodities such as food items and children's clothing. The Mirrlees Review, in its chapter on VAT by Crawford, Keen, and Smith (2010) recommends movement to a uniform rate of VAT for UK. These authors study the impact of a reform package for UK that replaces the existing differentiated VAT structure (which includes a standard rate of 17.5% and reduced rates of 5% and 0%) for a 17.5% uniform rate of VAT, whose effect on equity is neutralised by a 15% increase in all income support, income-based jobseeker's allowance and tax credit rates, and in the associated housing benefit and council tax benefit thresholds. They argue that such a package would lead to a net increase in tax revenue to the government, at the same time it improves both progressivity and efficiency of the tax system and can potentially compensate the losers from VAT unification.

These arguments thus lay the onus of achieving redistributive goals mainly on direct tax/ transfer measures, leaving VAT and other forms of commodity taxation as instruments that primarily contribute to the government's tax revenue. Focus then shifts away from the study of redistributive impacts of commodity taxes to the study of their revenue impacts, *e.g.,* to the study of whether introduction of the VAT leads to generation of higher tax revenues and higher tax-GDP ratio (*i.e.,* to questions such as: "Is VAT a money machine?")[10] However, even as a tool of tax revenue collection, in many developed countries, the role of VAT is secondary to

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[9]See Chapter 4 on VAT by Crawford, Keen, and Smith in the Mirrlees Review (2010).

[10]See for instance Keen and Lockwood (2006, 2010).

instruments of direct taxation. For example, the average share of tax on income, corporate profits, and capital gains in total tax revenue in OECD countries was 34% in 2014/15 (with 49% in USA, 48% in Canada, over 63% in Denmark, and over 40% in most other Scandinavian and Western European countries). While, the average share of tax on goods and services in OECD countries was 32% (with 17% in USA, 23% in Canada, and ranging from 20 to 33% in many Western European and Scandinavian countries.)

5.3 The case for highly differentiated commodity taxation in developing economies due to limited scope for direct taxation.

The above arguments that give little importance to the redistributive role of commodity taxation will be less relevant in the context of developing countries, which are characterised by weak institutions, inefficient tax administration, poorly designed fiscal policies, high monitoring costs, low compliance rates, a large black economy, huge untaxed sectors, *etc.* These factors imply that, in many of these countries, instruments available for direct taxation and transfers are limited in number and scope and are less effective. For example, in the presence of a large black economy, the Mirrleesian income tax schedule is no longer incentive compatible, as now the government can only imperfectly observe the true incomes of people. Tax-GDP ratios in these economies are lower as huge sections of the economy are left out of the ambit of taxation.[11] In India, for example, these include the agricultural sector and the rest of the informal sector, which provides a wide range of goods and services.[12] At the same time, there is also a huge variation of incomes in this sector, with incomes ranging from subsistence levels to levels corresponding to top earners in the formal sector.

In this situation, commodity taxation tends to be more exploited as a fiscal policy instrument for raising governmental revenue, while also meeting the redistributive objectives (the share of commodity taxes in total tax revenue in India was around 67% in 2014, while that of direct taxes was only 33%). This is because, to the extent that transactions in commodities are reasonably transparent, this mode of taxation continues to remain incentive-compatible. Absent direct taxation of the informal sector, it increases the tax base as taxes are levied and collected on purchases of goods and services by people *both* in the formal and the informal sectors.

A finer differentiation of commodity tax rates (than what is observed in the developed countries) seems justified on both efficiency and equity grounds. In the absence of direct

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[11]Average tax-GDP ratio for OECD countries was 34% in 2015 and more than 40% in many Western European and Scandinavian countries, while the same for India is around 17%.

[12]Informal sector accounts for more than 80% of the country's workforce.

taxation of workers in the informal sector and given the wide range of income differentials in this sector, the MPRR of DM once again gains relevance as, in accordance with it, implementing differential rates of commodity taxes can minimise dead-weight losses and ensure progressivity of the tax system across *both* the formal and the informal sectors: An inequality averse society will continue to value less an additional rupee of transfer to a rich person, immaterial of whether he works in the formal or the informal sector. And so it will continue, through its commodity tax policy, to discourage more the consumption (in both the formal and the informal sectors) of (i) those goods that are disproportionately consumed by the rich and/or (ii) goods whose demands are less responsive to tax-induced changes in prices.

However, Piggot and Whaley (2001) caution on broadening the base of commodity tax structures such as VAT/GST to include goods and services that can be produced both by the formal and informal (including home production) sectors, *e.g.,* gardening, cleaning, food preparation, hair-dressing, soft drinks, shoes, clothing, *etc.* Since purchases from the latter sectors are untaxed, introduction of or increases in GST or VAT on purchases of these goods and services from the formal sector can lead to a markable shift in demand for these goods to the informal sector, which is generally characterised by less efficient production technologies as compared to the formal sector. So, as resources such as labour or capital are transferred to this sector to meet the increase in demand, the overall economic inefficiency decreases and, as demonstrated by Piggot and Whaley (2001), this could result in lower levels of social welfare.

6 Conclusion: Limits to returns from the new GST without further fiscal reforms.

Public economic theory along with the evidence provided by the experiences of the developed countries suggest that direct taxation of observed abilities to pay of economic units and transfer schemes that identify and directly target needy groups in the economy are by far more superior and effective policy instruments than commodity taxes in meeting the revenue needs of the government and in promoting its efficiency and redistributive objectives. The role of commodity taxes such as VAT and GST in economies where direct tax and transfer schemes are well-developed and functioning becomes mainly one of supplementing the government revenue. Hence, in these economies, it is enough if a uniform commodity tax rate or at most a few tax rates on commodity groups are levied. This considerably relieves the tax administration of the difficulties in implementing and enforcing a complex system of differentiated commodity taxes,

while the onus of redistribution is borne mainly (if not) completely by the direct taxation and transfer schemes.

From this one can infer that there will be considerable limits to the extent to which the full potential of the newly introduced GST can be harnessed in India. The economy's income-tax base is poorly tapped, as its formidable agricultural sector is completely excluded from this base and so is the rest of its large informal sector. In addition, a big black economy that escapes income taxation looms in the background. At the same time, the assured base for direct taxation in India is currently limited as proportion of workforce employed in the formal sector is less than 20%. Attempts to increase further the tax burden of the compliant fraction of this section of the society cannot lead to significant increases in direct tax revenues. The Laffer argument on the limit to which increases in tax rates can increase tax revenue that can be collected from this sector will become binding, not to mention the serious disincentive effects that this may have on choices of people in this sector (who constitute one of the most economically productive fractions of the economy's workforce) to work more and contribute positively to the GDP. Moreover, although there is a plethora of well-meaning and well-funded redistributive transfer schemes targeting the poor and the needy, these schemes are often poorly designed as the incentives they provide for the upliftment of people in these sections of the society (in terms of moving towards universal literacy, increases in employability, promotion of the culture of family-planning, increasing resilience to climatic catastrophes, *etc.*) and for putting them on self-sustainable paths are poor, while the prevalence of weak and corrupt institutions imply that governmental aid does not fully percolate to its targets.

Under these circumstances, it is tempting for the government to shift the onus of raising revenue, while promoting its redistributive objectives, to commodity taxation. But, in the absence of a comprehensive and inclusive system of direct taxation, the sheer administrative costs of designing and implementing a finely differentiated commodity tax system as per the precepts of the optimal commodity taxation literature that are embedded in the MPRR, imply that the number of tax rates (including cesses) that can be feasibly administered under the GST are not sufficient enough to satisfactorily address redistributive and efficiency issues.

On the positive side, GST is a significant overhaul and rationalisation of the commodity tax structure in India. This is because it is based on another powerful maxim of the optimal taxation literature, namely, the optimal tax structure is production efficient, *i.e.,* it recommends no taxation of inter-firm transactions. But this result does not come free: gains in production efficiency from implementing the GST can be truly harnessed if the corporate profit taxation

power of the government is aligned to the way corporate profits are distributed to consumers in the economy. Thus it begs a better understanding of the distribution of corporate profits in the economy.

We have yet a long way to go. As indicated by public economic theory and supported by evidence from the developed countries, to reap even bigger and richer dividends from fiscal policy in India, GST has to be combined with major reforms in the coverage, design, and implementation of direct taxation (including personal income and corporate profit taxation) and transfer measures in India.

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