Indian Public Policy Review

A Journal of Economics, Politics, and Strategy

ARTICLES

INDIAN PUBLIC POLICY REVIEW

The Nature and Implications of Off-Budget Borrowings in India: Centre and States

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Abstract

India has a long-standing problem with data gaps, which have serious implications for fiscal policy and economic growth. The lack of transparency around off-budget borrowing is a major example of data gaps in India, and has been persistent across the Union and state levels. The paper examines the regulatory framework and institutional gaps surrounding off-budget borrowings in India. It attempts to build a comprehensive understanding on the methods used for such borrowings and ascertains their true extent. The paper relies primarily on data from CAG audits of the Union and state finance accounts. The paper welcomes the Union's recent actions to make transparent and begin to do away with the use of off-budget borrowings. However, more actions are needed to close this form of data gap, at the Union and the states and, meanwhile, the Union should focus on ensuring the full reporting of these borrowings. This calls for an improvement in the coverage, timeliness, quality and integrity of fiscal reporting, in line with international standards. Eventually, that could be best achieved with a comprehensive and consolidated PFM law for the Union and the states.

I. Introduction

Broadly, we define 'data gaps' as fiscal data that are either unreported or miscategorised. Data gaps tend to reflect gaps and inconsistencies in the legal and regulatory framework. The Fifteenth Finance Commission (FFC) (2020) highlighted several gaps in India's existing Public Financial Management (PFM) framework.[1] These gaps include inconsistencies in the laws and regulations pertaining to fiscal discipline, budget formulation, public procurement, and monitoring and reporting, as well as in their implementation. Beyond such legal gaps, data gaps in India could also result from institutional gaps. Among these, as the commission highlights, India does not have a dedicated, independent fiscal institution such as a Fiscal Council that could help in improving the reporting, collation, assessment, and coordination of fiscal data.

In this paper, we focus on the data gap of off-budget borrowings, which has been widespread and generally entrenched in India's fiscal reporting both at the Union and State levels. The Comptroller and Auditor General (CAG) of India and the FFC (2020) have expressed concerns on the growing prevalence of off-budget borrowings in the country. Fortunately, at the Union level, the issue has been taken up by the government over the last few years.

The 2019-20 Union budget enclosed a statement of extra budgetary resources (EBR) employed by the (central) public sector entities. Budgets that followed dealt with such borrowings to varying degrees. FY 2020-21 witnessed discontinuation of off-budget borrowings for Food Corporation of India (FCI) – generally the largest off-budget borrower at the Union level. The estimated extra-budgetary allocation to all the ministries was brought down to zero in FY 22, barring a Rs 30,000 crore provision for meeting additional resource requirements of public agencies, which too was eliminated in the following year. With much attention given to the subject of off-budget resources, public attention to it has increased as the amounts involved have grown, now especially in the States.

Characterising off-budget borrowing as a data gap operating in the context of a legal gap, this paper studies the modalities, extent, trends, and regulatory context of off-budget borrowings at the Union and State levels in India. On this basis, it makes recommendations and outlines a way forward for India to address this issue across the levels of government.

The primary issue that this paper seeks to address is the lack of adequate reporting of the full extent of government finances. Rather than evaluating how governments choose to conduct their fiscal operations, we are more concerned with how they report them. It is worth noting here that given the very nature of the problem, data relating to off-budget borrowing is scarce; for some States, it is simply unavailable. The analysis, naturally, focuses on those States for which numbers are available in the public domain. This does not necessarily mean that the States discussed in this paper are the ones that have resorted to off-budget borrowing the most. For the other States, it is difficult to come to any conclusion because the extent of their off-budget borrowings still cannot be gauged.

The paper is organised as follows. The immediately following section elaborates on the general problem of data gaps, and how legal gaps contribute to them. Subsequently, the data gap of off-budget borrowings is introduced, with a detailed explanation of what it entails, and the modalities through which governments resort to it. The next section undertakes a detailed analysis of the available data on off-budget borrowings at the Union and State levels, identifying trends and bringing out insights. Given the legal and regulatory contexts of data gaps, the paper then surveys the existing statutes and rules, at Union and State levels, that seek to regulate off-budget borrowing. Building on the range of existing regulatory models revealed by this exercise, this section also makes an argument for how off-budget borrowing should be regulated, in order to adequately fill this data gap. This discussion allows the next section to critically evaluate the Union's recent intervention in regulating sub-national off-budget borrowing, via Article 293 of the Constitution. Finally, the last section discusses how India can sustainably tackle off-budget borrowings, by outlining a way forward.

II. Data gaps and legal gaps

A) The problem of data gaps

The presence of data gaps suggests shortcomings in a country's PFM system. Deficiencies in fiscal reporting make it difficult to accurately assess the quality of fiscal spending, use fiscal policy as a tool for economic growth and development, and accurately prioritise expenditure.

Some of the data presently generated by India's PFM system is not comprehensive in its coverage, and is not subject to timely external scrutiny.[2] This is because India's fiscal data is replete with discrepancies,[3] misclassifications,[4] and non-comparability,[5] which creates challenges in consolidating fiscal data. Such data gaps are an especially concerning issue in India's present context, as it seeks to emerge from the enormous fiscal strain of the COVID-19 pandemic and use government capital expenditure as a catalyst for recovery and growth. Thus, transparency in fiscal reporting is critical for India to effectively monitor its fiscal position, and use available resources efficiently (Singh, 2023).

In the post-pandemic period, the Union Government has focused on increasing capital expenditure. However, despite capital-intensive projects typically being spread across multiple years, the annual budgeting exercise generally only lays down short-term (yearly) funding plans. The difference between the total and the budgeted period of the project constitutes another major data gap.

Lack of effective public investment management practices risks cost overruns and revenue shortfalls. For the financial viability of long-term projects, revaluation of the extent of resources absorbed by them is necessary. Projects can often suffer from inadequate funds (or non-allocation of funds) in the years after they are announced, and run the risk of causing significant sunk costs. The lack of a regularly published medium-term expenditure framework, that would lay out spending plans over a period of time, leads to inefficient allocation of resources.

Standard budgeting exercises – that can help ensure that long-term commitments are fulfilled, and that can evaluate the available fiscal space to accommodate new projects – are not practised currently. With a 33% rise in capital expenditure in the annual budget of 2023, performance-based budgeting is another area that needs to be looked at (Kukreja, 2023). Defining outcome indicators to assess the development of priority and high-importance projects is needed to improve transparency and accountability in their execution.

Additionally, since the current budgeting practices are almost entirely annual in their orientation, the process of legislative scrutiny and approval are also oriented accordingly. However, given how multi-year projects foreseeably involve medium-term expenditure commitments, legislatures should be given the opportunity to assess the impact of such commitments as well, when approving the budget.

State-owned enterprises (SOEs) are prominently involved in building infrastructure. State-controlled banks and other vehicles often back capital-heavy projects, and absorb the losses incurred in the process, as Richmond et al (2019) show in certain countries' SOEs. These enterprises typically enjoy preferential access to debt from financial institutions and other lenders due to government backing. Lack of information regarding the debt profiles of these enterprises is a data gap, as SOE debt often becomes government debt – as we will see in the case of off-budget borrowings later in the paper. Medium- and long-term planning for financing infrastructure can better ensure the financial viability of projects with long gestation periods, enhance fiscal discipline, and help prevent bailouts.

An International Monetary Fund (IMF) & Financial Stability Board (FSB) (2009) report highlighted that data gaps regarding exposures taken through off-balance sheet entities had left markets and policymakers unprepared for the Global Financial Crisis. As part of the Data Gaps Initiative-2[6] recommendations, G-20 countries are expected "to provide comprehensive general government debt data with broad instrument coverage" (Heath & Goksu, 2016, p. 30).

In June 2022, at the end of DGI-2, a progress report noted for India that "an estimate of a comprehensive general government data including centre, states, local government and public sector enterprises is not available with us" (IMF & FSB, 2022b, p. 13). Remarkably, at the completion of DGI-2, India was the only G20 country that had not even partially met this target (IMF & FSB, 2022a). Despite having made some progress in other aspects of fiscal reporting, India's problem of off-budget borrowing remains largely unaddressed. As India assumes the G20 Presidency for 2023, this serves to underline the urgency of addressing this data gap.

B) How legal gaps contribute to data gaps

As the FFC (2020) highlighted, there are gaps between the broad PFM structure outlined in the Constitution, and the operational rules, regulations, guidelines, and manuals that operationalise the PFM system. The existence of these gaps leads to avoidable complexity and inconsistencies, and ultimately affects the quality of the fiscal data that the PFM system generates. It also enables the

circumvention of fiscal rules contained in the fiscal responsibility legislations (FRLs) at Union and State levels, through practices such as off-budget borrowings and misclassifying revenue expenditure as capital expenditure.[7] Legal gaps, such as inconsistencies between definitions in the FRLs, also lead to discrepancies in reported debts and deficits, and affect the veracity of projected numbers and scenarios.

Legal gaps can subvert constitutional principles in unintended and unforeseen ways. This can be illustrated through the example of the Public Account. Under the Government of India Act, 1935, the executive's final sanction was required to withdraw funds from the public account (which was the only government account at the time) (Government of India Act, 1935, S. 151(1)). In order to establish legislative supremacy over financial matters, the framers of the Constitution did away with this executive sanction, and replaced it with an Appropriation Act, to be passed by the legislature itself (Constituent Assembly Debates, 1949a, para 112; India. Const. Arts. 114 & 204). But in order to exempt routine withdrawals, such as for repaying depositors under small saving schemes, from formal legislative approval, the Constitution does not require an Appropriation Act for withdrawing money from the Public Account (Constituent Assembly Debates, 1949b, para 308).

The framers of the Constitution applied different standards of scrutiny for the Consolidated Fund and the Public Account only because they did not envisage the latter as containing revenues that the government would use to finance its regular expenditures. But as this paper will illustrate, in the case of the National Small Savings Fund (NSSF), the Public Account has been routinely misused as an instrument for off-budget borrowing, thus subverting the cardinal constitutional principle of legislative supremacy over fiscal affairs.

While the constitutional distinction between the Consolidated Fund and the Public Account remains relevant, there is a legal gap insofar as regulation of the Public Account is concerned. This legal gap has, in turn, contributed to the data gap of off-budget borrowing. This is illustrative of how the broad structure of the Constitution has not been adequately filled in with appropriate regulation at the statutory level, resulting in constitutional principles being compromised in practice.

III. Introducing off-budget borrowings

A) What are off-budget borrowings?
In this paper, we define off-budget borrowings as borrowings which are not reflected in the budget, even though budgetary resources will have to be used for their repayment either in the current or future period. Off-budget borrowers may include PSUs, Special Purpose Vehicles (SPVs), and/or the government itself.

A lot of PSUs rely substantially on budgetary support from the government in order to run their operations and perform their functions. Beyond budgetary support, PSUs also rely on other sources of financing, including borrowing. A typical example of off-budget borrowing involves a PSU

borrowing an amount in its own name, but the responsibility for repayment lying with the government, and this liability not being reflected in the government's budget.

Another type of example involves the finance ministry resorting to off-budget borrowings on behalf of other government ministries or departments. For example, instead of incurring a budgeted expenditure from the Consolidated Fund of India (CFI) by paying for the food subsidy to FCI, the corporation was given loans from the Public Account. Withdrawal of such loans, as discussed, does not require any legislative approval. The liability was only partially reflected in the government's balance sheet at a much later date.

One of the reasons why governments may be resorting to off-budget borrowings is to bypass the debt and fiscal deficit targets under their FRLs. In the case of State governments, they are also bound by the hard borrowing limits imposed on them by the Union under Article 293(3) of the Constitution. These limits could serve as a strong incentive for such governments to access funds through off-budget means, when they do not have any further scope to do so on-budget.

It might also be the case that, at the time the PSU borrows, the government does not bear the primary responsibility for repayment; yet, at the time of repayment, budgetary resources are utilised for this purpose. This happens in the case of contingent liabilities, where, for example, if the PSU defaults on repayment, the government (as the guarantor) has to step in to repay the debt. But since in these cases, it is not clear at the outset of borrowing itself that the repayment liability rests with the government, we do not consider contingent liabilities as off-budget borrowing. After all, it is also possible that the contingency does not arise at all, since the PSU was able to repay the debt by itself.

Official definitions of off-budget borrowing vary across authorities, with different governments, laws, and the CAG having their own versions. One example of an official definition (that aligns with our proposed definition) is as follows: "Off-Budget Borrowings" mean non-budgetary receipts that need to be serviced by way of interest and principal repayment directly from the budget, and in which the liability is not contingent in nature (Maharashtra Fiscal Responsibility and Budget Management Rules, 2006, rule 2(h)). However, in cases where interest and/or principal is repaid by the borrowing entity from the grants received from the government, and not directly paid by the government, it is difficult to distinguish the component of the grant that will be used for repayments.

India lags behind its peers in the G20 when it comes to debt reporting. A prerequisite to effectively implement fiscal policies is having access to the right data. Existence of off-budgetary debt is a problem as it is generally unscrutinised and unreported. This asymmetry in information is a concern in systems based on democratic accountability. Citizens have a legitimate interest in knowing the full extent of the fiscal affairs of the governments they have voted into power. By resorting to off-budget operations, governments place themselves beyond democratic scrutiny. Not only is this problematic in and of itself, but it also leads to sub-optimal governance and policy outcomes.

The need for accurate data escalates when the economy is in a post-pandemic state. The budgeting system needs to stay true to certain principles, one of them being the principle of universality, which

states the need for one budget for all transactions –thus ruling out extra budgetary transactions . The Union budget, which – unlike State budgets – receives much limelight and is subject to robust scrutiny, still generally stops short of full disclosure by not defining and revealing off-budget borrowings exhaustively.

B) How do governments resort to off-budget funds?

Governments at the Union as well as State levels undertake off-budget borrowings in a variety of ways. In this sub-section, we highlight commonly used methods.

(i) NSSF Borrowings

The NSSF, a part of the Union's Public Account, receives deposits under National Savings Schemes. The balance in the fund has been regularly invested in special government securities. Withdrawals from the NSSF do not require prior approval from Parliament (since it is part of the Public Account), which makes it easier for the Union government to use this fund as a source of extra-budgetary financing. Very often, the government uses this gap, and many entities receive loans from this fund. The recipients include central PSUs and Union ministries for projects implemented by them.

NSSF liabilities are included in the Statement of Liabilities of the Central Government, which forms part of the Union Receipt Budget. Even though these liabilities are included in the government's total liabilities, they are not reflected in the fiscal deficit. This is because, for calculating the Union's fiscal indicators, such as the fiscal deficit and revenue and capital expenditure, only the CFI's balance is considered. The expenditure incurred from the NSSF balance is not included as part of total government expenditure. Also, the NSSF deficit is not merged with the CFI deficit, resulting in an under-inclusive deficit statistic. The Union's fiscal deficit, legally capped at 3% of GDP, thus remains unaffected by the use of NSSF funds (Fiscal Responsibility and Budget Management Act, 2003, S. 4(1)(a)).

The issues with this method do not end here. In several instances, the CAG has found that resources received by an entity as recorded in the NSSF account were lower than the true numbers. Wilful understatement of the fund allocation indicates a bigger problem than issues with accounting categories: one of intentional misrepresentation. The problem has persisted over several years and across public entities, and needs close scrutiny.

(ii) Government Fully-Serviced Bonds

A bond is defined as a debt instrument by which an entity borrows money from an investor for a pre-defined period and interest rate. PSUs make use of Union government bonds to raise funds from the market. Special securities issued by the government to banks, PSUs, and other entities are listed in the Asset and Liability Statement of the Receipt Budget. Sometimes the securities are in the form of

government fully-serviced bonds, where the entire liability falls on the Union government and is not shared by the PSU. Despite this, some of these bonds do not feature under government liabilities in the budget.

Regarding this, Basumatari & Tarwadi (2021) state that "The debt servicing of these bonds is a charged expenditure on the central budget. Given that these bonds will be a part of the central government's budget, debt servicing will form a part of the government's deficit, and thus, debt." For this reason, the inclusion of such bonds in the budget is crucial at the time of creation of the liability. Only this would provide a full picture of the government's fiscal health, and prevent unforeseen strains on budgetary resources at the point when these liabilities materialise.

(iii) Domestic Market borrowings

State PSUs and SPVs raise resources from markets to meet the financial requirements for providing services for which government is typically responsible (for instance, a drinking water supply project, which is a welfare scheme of the government, but being implemented by a PSU or an SPV). In several cases, the State government is liable for servicing the principal and interest obligations of the debt picked up by State PSUs, despite not being listed as an explicit guarantor. Since PSUs are distinct legal entities, formally separate from the State government, States argue that PSU borrowings are on the strength of the PSU's own balance sheet alone. Ultimately, despite the government being liable, this kind of liability escapes the State government's accounts, and can only be found in PSU accounts.

(iv) Foreign Market Borrowings

Apart from raising funds from domestic markets, PSUs have also directly approached external funding agencies. As per Articles 292 and 293(1) of the Constitution, only the Union Government has the power to borrow from overseas, and States are expressly restricted to borrowing within the territory of India.

Despite this constitutional prohibition, there are examples of State PSUs resorting to overseas off-budget borrowings which will have to be repaid by their State Government, through the issue of 'masala bonds'. These rupee-dominated bonds are instruments of debt raised in foreign markets in Indian currency, instead of the local currency or dollars. For example, the Kerala Infrastructure Investment Board (KIIFB) raised Rs 2,150 crore in 2018-19 through masala bonds, which the CAG has observed is in violation of Article 293(1). The repayment of the KIIFB borrowings was done from the State petroleum cess and motor vehicle tax, which makes them a direct liability of the State. In the same year, the Andhra Pradesh State government cleared Rs 2,000 crore of bonds to be raised by the Capital Region Development Authority (CRDA), which also included masala bonds.

(v) Special Banking Arrangements

Special banking arrangements (SBAs) refer to the arrangements made by the government with the banks to facilitate cash and credit flow outside the budget appropriation. The beneficiary body can be a PSU, SPV, or any Implementing Agency involved in quasi-fiscal operations with the government.

In the past, SBAs have been used to postpone budgetary expenditure on fertiliser subsidies, which is to be paid to fertiliser companies. Often, the payment is not made in the same year, which results in carryover liabilities. To make up for non-payments, Department of Fertilizers arranges loans from PSU banks to the fertiliser companies. The department also partially bears the interest on these loans. Fertiliser companies, at times, leverage the pending subsidy payments with the banks to avail credit.

In all five cases discussed above, the government's use of off-budget borrowing had the effect of deferring expenditure for the future, which would otherwise have to be incurred in the present. The interest repayments on borrowings are reflected in the year they are due; the repayment of the principal is postponed, and is neither reflected as an expenditure nor a liability in that year. This not only created a liability requiring future repayment, sometimes lasting well beyond that government's term, but – crucially – the liability was hidden, unaccounted, and unreported. When the time of repayment does arrive, CAG audits have revealed how in some cases a new debt is taken by the Union government or the PSU to service the old debt.[8] This creates a potentially indefinite loop of debt. Not having to pay their dues in a stipulated time, and not having to face any scrutiny from legislatures, markets, or citizens, can result in imprudent spending by the entities availing the loan.

C) Heightened relevance of off-budget borrowings

India showcases much higher levels of deficit and debt than other emerging economies (Rao, 2022). At a time when fiscal resources are strained and economic conditions are volatile, the practice of resorting to off-budget borrowings is especially fraught with risk. The prevalence and extent of this practice is a significant hidden liability that can cast a long shadow on the fiscal health and capacity of governments for years to come.

While the Union government has made progress in addressing this issue in recent times, states have done very little. The fiscal strains on Indian states are increasing due to a number of factors, including rising population in many states, the rising need for infrastructure development, low and stagnant state and local government tax receipts, and rising cesses and surcharges by the Union (that have reduced the divisible pool for the transfers to states, i.e. the funds that will be transferred to the states in keeping with the formula or division recommended by the Finance Commissions.)

In recent years, several state governments have had difficulty in meeting their financial obligations. This has been exacerbated by the fact that many states rely heavily on grants from the central government, which have often not kept pace with their expenditure needs. Other sources of revenue, such as GST, have also not been adequate to meet their expenditures. Additionally, India's economic slowdown has led to decreased tax revenues for state governments.

The COVID-19 pandemic further compounded these fiscal pressures; states faced increased demands for healthcare spending, while simultaneously experiencing reduced income due to lockdowns and other restrictions imposed by the government in order to contain the virus' spread. As a result of these various pressures, compounded by high legacy debt in many cases, more Indian states are now struggling with mounting debt burdens and deficits that threaten their long-term economic stability.

The FFC (2020) estimated the general government debt to have increased from 70% of GDP in 2018-19 to 90% of GDP in 2020-21. During this period, the fiscal deficit of all the states shot up by 38.4%, from Rs. 5.85 lakh crore to Rs. 8.1 lakh crore (Tiwari & Surya, 2021). The share of states in total central taxes has been around 29%, compared with the commission's recommendation proportion being 41% of the divisible pool (Tiwari & Surya, 2021). The issue of 'freebies' issued by state governments has become especially prominent, with the Election Commission of India as well as the Supreme Court weighing in on the subject.

With an intent to address state off-budget borrowings, the Union directed the states, in March 2022, to furnish their off-budget numbers. Borrowings made by the State PSUs and Special Purpose Vehicles (SPVs), where the state is to service the principal and the interest amounts either out of the state budget or by special assistance to these institutions, would now be accounted as states' liabilities. A detailed discussion on this will follow a subsequent section.

IV. Analysing the data gaps in the reporting of off-budget borrowings

The paucity of data on off-budget borrowings in India has constrained attempts to study the subject, at least empirically. To get a fair estimate of the total liabilities, Singh and Srinivasan (2004) added to the general government debt the debt of PSEs, and the guarantees issued to loss-making public enterprises. Total liabilities, 107% of the GDP, turn out to be significantly higher than the on-budget numbers which are widely used in policy formulation, and this can lead to an underestimated probability of fiscal strains.

Blagrave and Gonguet (2020) too base their extra-budgetary estimates on the borrowing requirements of PSEs. Using the fiscal deficits of the central and the state governments, which reflect their borrowing needs, and adding to it the borrowings by the central PSUs, they create a "metric that broadly captures the government and quasi-government borrowing need". The data of state PSUs was not used owing to its lack of availability.

In a similar attempt, Misra et al (2020) estimate the subnational extra-budgetary borrowings using the guarantees given by state governments as a proxy for the former. While it is true that guarantees are (contingent) liabilities that are not reflected through major financial indicators, it is also the case that not all guarantees materialise into actual liabilities. Besides, PSUs also operate on a PPP model

(public private partnership) where the government often has only a percentage of the total stake in the firm, which limits its liabilities.

Attributing the entire liability to the government without considering enterprise revenues, reserves and assets, the odds of debt materialisation, and the ownership share is bound to reflect an overestimated figure. Kaur et al (2018) emphasise on a fair assessment of the fiscal risk posed by guarantees. The Reserve Bank of India (RBI) report of the Group to Assess the Fiscal Risk of State Government Guarantees (2002) proposed assignment of weights to guarantees for calculation of the true fiscal obligation.

The problem seems to persist geographically, as a similar trend is observed in studies conducting off-budget debt assessment of other nations. Zhang and Bernett (2014) create a new measure of fiscal activity in China which adds off-budget transactions to the general government statistics. They identify local government financing vehicles (LGFVs) created solely for infrastructure spending to consolidate their debt in the fiscal data, to distinguish them from other state-owned enterprises (SOEs), which could have their own resources.

The Fiscal Responsibility and Budget Management (FRBM) Review Committee (2017) discussed the issues pertaining to off-budget borrowings at the state level. Some states are of the view that their spending powers are limited by fiscal responsibility laws, and that extra-budgetary resources are inevitable to maintain capital and infrastructure expenditure. The committee recommended that the collation, analysis, and annual reporting of the extended public debt should be undertaken by both Union and the state governments in a supplementary budget document. The exercise will be useful in accounting for the challenges posed by guarantees, off-budget borrowings, and losses of parastatals. On a similar note, the Fourteenth Finance Commission (2014) endorsed full disclosure of extra-budgetary borrowings in the interest of transparency, and recommended they be eliminated in a time-bound manner.

> "The Finance secretaries candidly admitted that there is significant political pressure [to resort to off-budget borrowings]. However, in principle, most of the states recognized that such practices lack a sound accounting foundation and should be discouraged." - FRBM Review Committee (2017)

> "In the case of the many State Governments, despite efforts, we have not been able to arrive at tenable numbers of such liabilities." - FFC (2020)

For assessing the extra-budgetary load on the public resources, a meaningful analysis through actual data should be done. Reinforcing the need to release true numbers is a more prudent solution than developing methodologies for their estimation, especially for data that is not hard to gauge, but simply is not made accessible to the public, or not collected at all.

This paper, therefore, is an attempt to untangle the issue of extra-budgetary borrowings and make sense of the numbers that are available in the public domain. To know these numbers is to be aware

of the gaps in the budget processes that cause such borrowings in the first place. It is also crucial that the system abides by the fiscal reporting standards to ensure reliability in public resource spending. Schick (1981) argued for financial controls in OECD economies with off-budget borrowings. India is in a comparable situation, with its growth being trammelled by an inefficient PFM system, of which extra-budgetary spending is a critical issue. The rest of this section looks at the extent of the back-door spending incurred by the Union and the States.

The Union government, in a much-lauded move, released 'Statement 27 – Statement of Extra Budgetary Resources (EBRs)'[9] employed by ministries as part of the 2019 budget. It showcased the resources availed through government fully-serviced bonds, NSSF borrowings, and SBAs from 2016 onwards. Since then, updated versions have been released with each budget. CAG audits of the Union government over several years point out the inadequacies of the statement, that includes deficiency in the format, as well as incomplete or non-disclosure of certain entities' debt.

The extra-budgetary details in statement 27 are available from 2016 onwards. The scenario before that remains unclear. It is difficult to draw conclusions from the available data, because of the extent of absences and understatement of several significant entries. For this reason, we have compiled a new statement 27, based on CAG audits, to give a more complete picture of the extra-budgetary liabilities.[10]

Even after this, many issues remain unresolved. The period of borrowings, interest rates, the repayable principal and interest amounts, and the carried forward debt remain unknown. The Ministry of Finance, in its reply[11] to CAG on the inadequate information disclosure via statement 27, stated that since repayments are done out of the consolidated fund, they are reflected in the expenditure profile of the budget.

> It is important to note here that these numbers are available in the public domain post-CAG audits of UGFA, and are not necessarily complete. It is, therefore, difficult to conclude that extra-budgetary debt has been going down since 2019, and that the intensity of the problem has fallen.

The Union government releases expenditure profiles in the ministry-wise statement of budget estimates[12] (SBE) every year, which shows the expenses made on account of the Internal and External Budgetary Resources (IEBR)[13]. The IEBR fund is provided apart from the regular budgetary support, and is specifically used for repaying the off-budget debt owed by each ministry. IEBR expenditure is also incurred by the Ministry of Finance to make direct repayments on behalf of some PSEs. The IEBR on various items can range from 17 to 21% of the annual budgetary expenditure. The Statement of Fiscal Policy in the 2018-19 budget too stressed the need to assess the IEBR allocated to PSEs to get a perspective on the capital expenditure incurred by the Union. Other methods of repayment include provision of grants to PSEs or government departments, or by redemption of bonds directly.

"The Ministry in its reply (October 2021) stated that Statement 27 was just a statement regarding investment through EBR. The repayable amount of EBR (Principal and interest) to be financed from Budget was reflected in the Statement of Estimate (SBE) against the concerned scheme of the demand." – CAG's Audit Report No. 18 of 2022, Union Government

Figure 1: Extra budgetary resource utilisation by the Union government
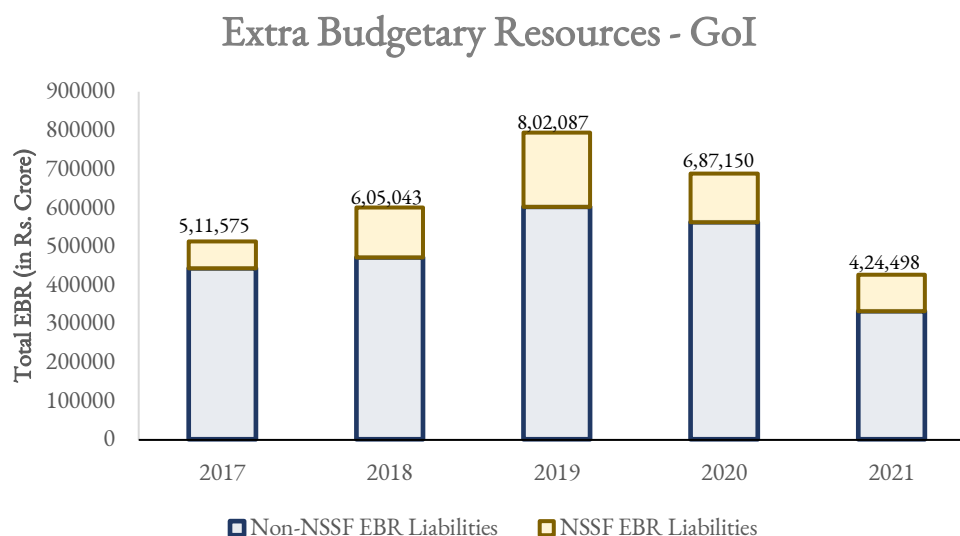
Source: CAG Union Audit Report (2016 to 2021), Ministry of Finance (2021)

Note: Non-NSSF liabilities comprise government fully serviced bonds (CAG audited Statement 27 numbers) and SBAs (which are only available in CAG reports)

Figure 1 shows an inverted-V trend in the total EBR utilisation by the Union. The total EBR had shot up to Rs 8,02,087 crore at the end of 2019, and stood at 4.24% of the GDP (Figure 2). The graph shows that the extent to which the Union government resorted to EBR had gone down in 2020 and 2021 to 3.42% and 2.41% of GDP respectively. This trend is likely due to the unavailability of CAG-audited extra-budgetary debt figures of borrowers including Food Corporation of India, NHAI, and Power Finance Corporation. The Ministry of Railways is another major borrower and secures funds via Indian Railway Finance Corporation (IRFC).

Figure 2: Extra budgetary debt (non-NSSF liabilities) and repayments as Percentage of GDP for GoI

Extra Budgetary Debt & Repayments
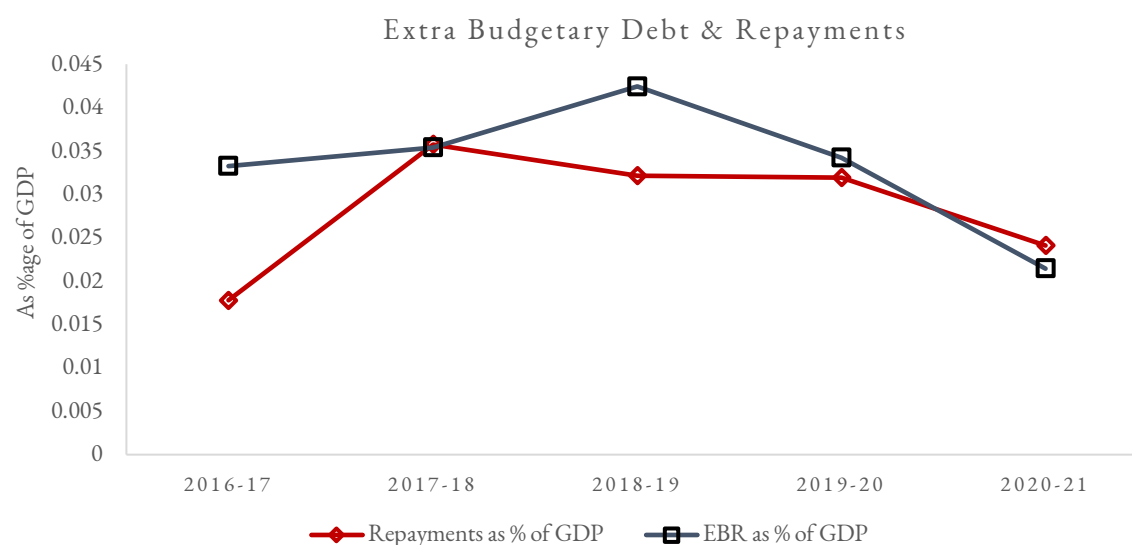
Source: Ministry of Finance (2016 to 2021)

The IEBR allotments in the latest budget of the year 2023-24 have remained high. The total budget estimates for 2023-24 amount to Rs. 4.87 lakh crore. The highest borrowers, like previous years, are FCI, the oil and gas public enterprises, and the power sector enterprises. FCI had been allocated Rs. 61,000 crore in 2021-22, which has increased to Rs. 1.45 lakh crore in FY24 budget estimates. Indian Railways, which was drawing Rs. 73,000 crore in 2021-22, reduced its allocation in the latest estimates to Rs. 52,000 crore. While the public enterprises in the power sector are estimated to withdraw Rs. 60,000 crore as IEBR in FY24, the renewable energy is expected to have Rs. 37,000 crore at its disposal. The Union government, by releasing Statement 27 and progressively diminishing EBR utilisation in the budget estimates, has made clear its intention to tackle this fiscal issue. However, consistently high IEBR allotments continue to work against this intention.

Figure 3: Figure 3: Budgetary and extra-budgetary support to NHAI and IRFC
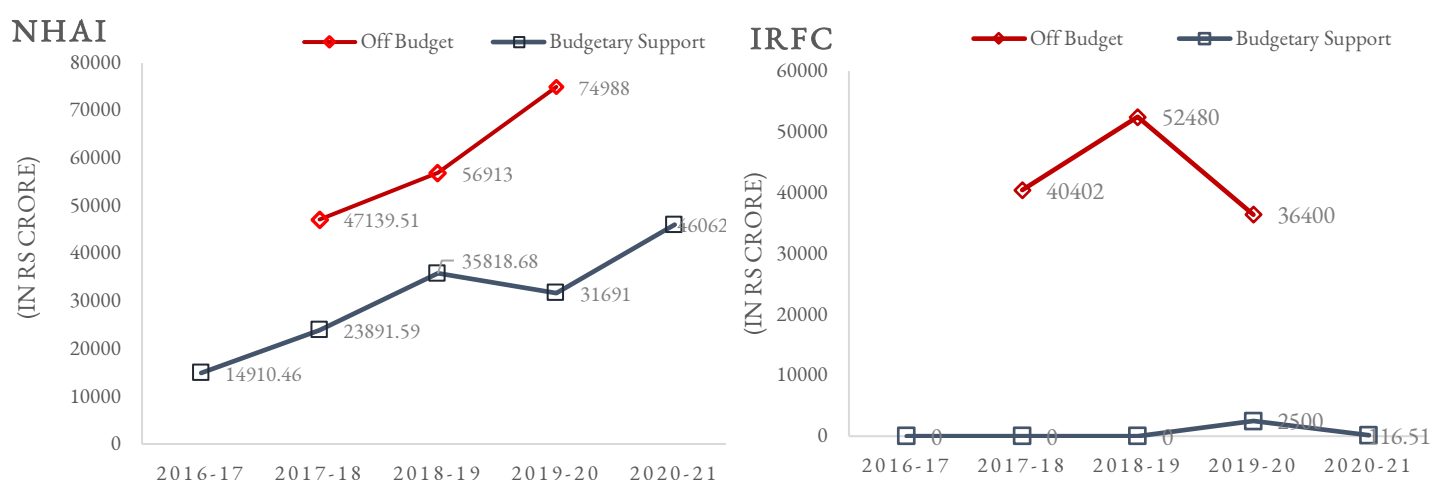
Source: CAG Union Audit Reports (2016 to 2021)

Beyond the numbers, it is worthwhile to study how some off-budget transactions actually occur. Let us consider one such example here. The National Highway Authority of India (NHAI) was created for infrastructure development on the government's behalf. It secures funding from the Union, and earns primarily through the toll revenues, which are not enough to meet its financial needs. It operates on funds received from both on and off-budget sources.

Meanwhile, the toll receipts from NHAI were instead being credited to the CFI as non-tax revenue. This 'government revenue' as then reinvested in NHAI. The Union reflected NHAI revenue as its own, which led to an increase in receipts and fall in fiscal deficit. On the other hand, it did not show NHAI's borrowings as its own, claiming that the liabilities were created against its own assets. The contrasting principles highlight the ability of the government to report a lower fiscal deficit. A similar case of Indian Railway Finance Corporation is detailed in Box 1.

The median off-budget borrower utilised funds to the extent of Rs 25,000 crore. The borrowed amount had been spent for various schemes like the Pradhan Mantri Awas Yojana (Rural), Deen Dayal Upadhayay Gram Jyoti Yojana, and irrigation projects like Pradhan Mantri Krishi Sinchai Yojana. Besides this, borrowings to the extent of Rs 20,000 crore were also made for PMAY - Urban scheme under the Ministry of Housing and Urban Affairs in 2018-19 via government fully serviced bonds, and another Rs 10,000 crore through NSSF.

Box 1: The case of IRFC

IRFC is a PSU that acts as the extra-budgetary financing arm of the Ministry of Railways (MoR) for acquisition or creation of the fleet of assets. IRFC raises funds from the markets to create rolling stock (rail vehicles) of Railways, which is leased to the MoR. In FY20, this comprised of nearly 70% of the total rolling stock of Indian Railways. Lease rentals received from the MoR are used by IRFC to service its own debt.

Extra-budgetary borrowing via PSUs is a tool used by governments to finance capital expenditure. Such expenditure is not reflected in the government's accounts. In case of IRFC too, the debt is separate from the Union government debt, on account of the former being a legally distinct identity from the latter. As per the GoI, funding from the IRFC works on 'leasing model', where the ownership of assets rests with the latter, and the government only exercises a 'right to use', which is a universally acceptable funding method.

While it is true that the government pays for the revenue of the IRFC from its own budget, the financial commitment between the two does not end here. Foreign lenders receive Letter of Undertaking (LoU) from the ministry as a guarantee for repayment of IRFC's debt in case of financial distress. For this reason, international credit rating agencies (CRAs) do not make a distinction between the IRFC's and the government's credit profiles.

GoI offers IEBR support for repayment of the capital component of IRFC's borrowings (figure 3). For the revenue component, it pays lease rentals. Since the debt is serviced from the budget, IRFC's debt is in fact, government debt. A more direct example as to why this should be the case follows.

Rail Vikas Nigam Limited (RVNL) is another central PSU, which is 100% owned by the MoR. In FY20, MoR received Rs. 1,407 crore from IRFC in one instance. The fund was passed on to RVNL, who used it to service its previous debt obligations to IRFC. In a way, the old debt obligations to IRFC were serviced using a new debt from IRFC, and is still not reflected in the UGFA.

Since the ministry is responsible for IRFC's debt repayment from future CFI, the two are not as distinct as it is claimed. Furthermore, the borrowings were also not disclosed in the Statement 27 of extra budgetary borrowings. Table A3 shows the extent of such borrowings by the government.

B) States' numbers

From an economic perspective, Indian states are extremely heterogenous. The difference, owing to population, geographies, and socioeconomic compositions, is evident from varying gross state domestic products (GSDP). For example, Maharashtra's GSDP, the highest among all States in 2020-

21, was 150 times that of the lowest ranking Mizoram. We focus on some States with high GDSP in our analysis of off-budget borrowings, which are highlighted in figure 4.

Figure 4: GSDP of Indian States in 2020-21 (in Rs. Crore)
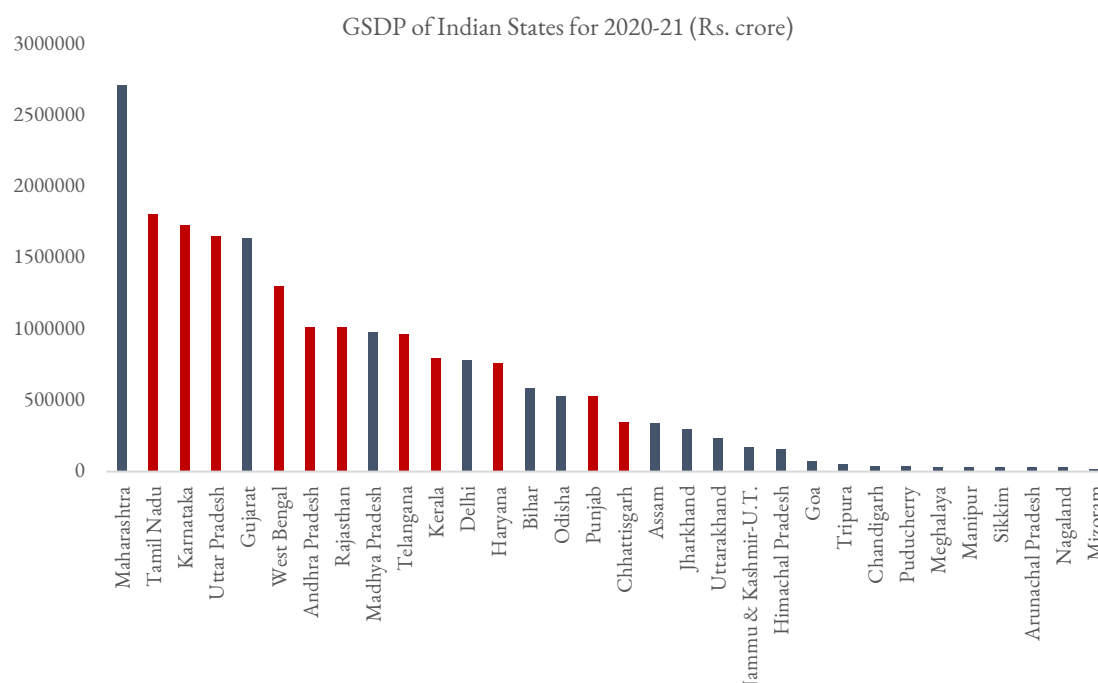
Data Source: RBI's Handbook of Statistics on Indian States
Note: States in red are the focus of further analysis.

While GSDP is important to understand the economic growth, the true fiscal health can only be determined by parameters like the fiscal deficit and the debt burden of a State. To an extent, they indicate how well a State is able to manage its finances, maintain the difference between its receipts and expenditures, and is equipped to incur future expenses while servicing its old obligations.

For the latter, we look at how States financed their fiscal deficit in 2021. Finance Commissions have raised concern on the budgetary imbalances of States, where they resort to new borrowings to service the old ones. This leads to what the Twelfth Finance Commission called a 'self-perpetuating spiral of debt and deficit'; the Commission recommended that public finances should be steered away from such malefic fixtures.

States use plenty of methods to finance fiscal deficits. These include loans from the Centre and institutions like LIC, SBI, and NABARD, market borrowings, provident funds, reserve funds, issuing securities to NSSF, and deposits and advances, among others. We concern ourselves with market borrowings and loans from institutions to understand which states borrow the most to close their deficits.

Figure 5 shows states' fiscal deficits on the x axis, and the percentage of fiscal deficit financed using loans and market borrowings on y axis. In some cases, excessive borrowings were done to pay back previous borrowings to institutions (like LIC), other banks, NSSF, etc. Some have remaining surpluses that were not utilised while financing. In such cases, the percentage exceeds 100%.

Figure 5: Financing fiscal deficit of States (2021)
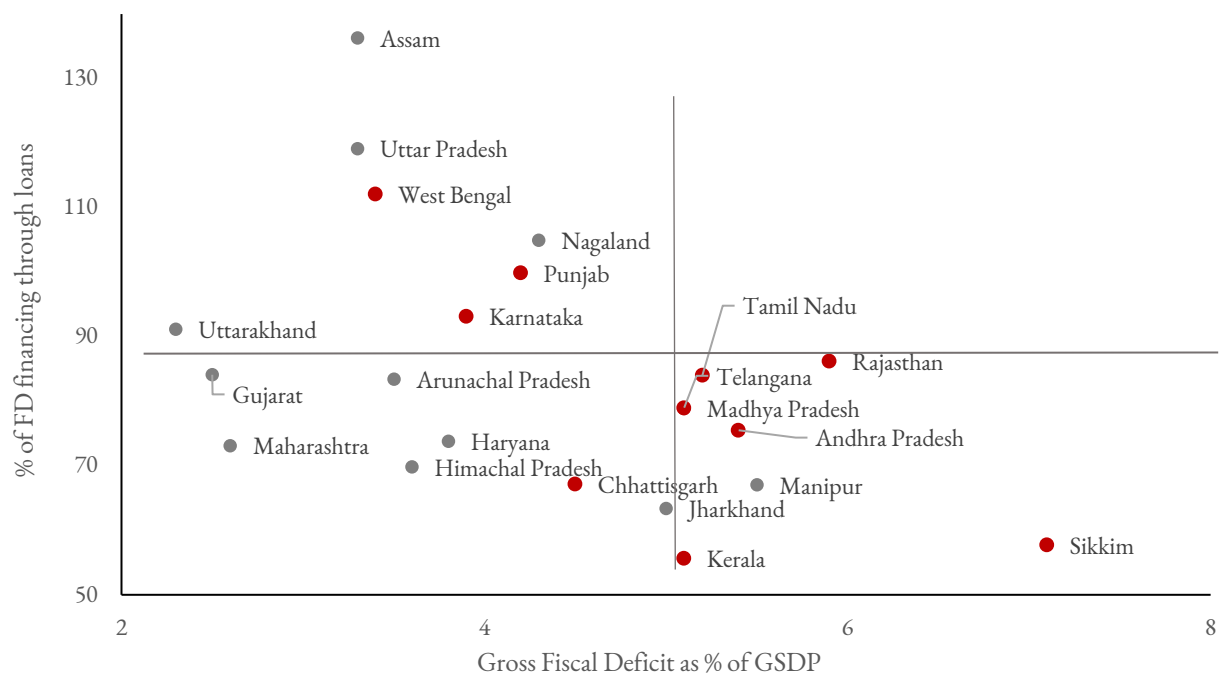
Data Source: RBI's State Finance: A Study of Budgets
Note: The States in focus have been highlighted in red.

It can be noticed that the states with high GSDP like Tamil Nadu, Karnataka, Uttar Pradesh, West Bengal, Andhra Pradesh, Rajasthan, etc (as can be seen in figure 4), fall mostly in the second and the fourth quadrant of figure 5. This indicates that they are either States with high share of market and institutional borrowings to finance deficits, or with high fiscal deficits. The discussion on off-budget borrowings will be limited to these fiscally-stressed States.

Before delving into the off-budget borrowings of States, it is important to be cognisant of the scarcity of this data. The off-budget borrowing numbers that follow are highly understated. One reason is the non-standard accounting of off-budget debt receipts in the financial accounts. For example, some governments may account for off-budgetary debt receipts under the Major Head 6003 - Internal debt of the State Government, while others may account it under MH 0075 - Miscellaneous General Services, as receipts.

There is also incompleteness of data in CAG audit reports on two levels. Firstly, for some states like Madhya Pradesh, Uttarakhand, and Gujarat, there is no data available at all on this aspect. Secondly, for states like Andhra Pradesh and Chhattisgarh, the data are not consistently available for the last few

years. Karnataka is one state that reports off-budgetary debt and IEBR numbers in its Overview of Budget. However, the information is not sufficient to give a complete picture of the terms of the debt, including the lender, repayment period, interest rate, etc.

Based on the available data, 2021 had the highest total borrowings for all the states. The reason can be two-fold. First, CAG has most information around extra-budgetary debt post state finance accounts audits for FY21. It could also be the case that with increasing needs for capital, states tend to resort to off-budget borrowings. Outstanding off-budget liabilities of all the states combined, as on 31st March 2021, were Rs 2,52,308 crore[14]. Telangana being the highest borrower, had an outstanding off-budget liability of Rs 97,940.45 crore at the end of 2021, equal to 9.99% of the GSDP (Figure 6). The next highest off-budget borrowers are Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu. In 2021, out of the 10 states that are analysed, the five southern States accounted for Rs. 2.34 lakh crore worth of debt, approximately 93% of the combined states' liabilities (off-budget).

As per their FRLs, states are required to maintain debt below a certain level, which they often miss. For example, Andhra Pradesh targeted total liabilities to not exceed 35% of the GSDP throughout 2015-16 to 2020-21 (Andhra Pradesh FRBM Act, 2005, S. 9(2)(ccc)). While the state has been able to maintain the ratio at 35%, it is only true if the off-budget liabilities are not considered. However, by its own definition, total liabilities mean *"the liabilities under the Consolidated Fund of the State and the Public Account of the State, and shall also include borrowings by the public sector undertakings and the special purpose vehicles and other equivalent instruments including guarantees where the principal and/or interest are to be serviced out of the State budgets"* (Andhra Pradesh FRBM Act, 2005, S. 2(l)). The State's off-budget liabilities comprise PSU liabilities, which when added to the total debt, the debt to GSDP ratio increases to 44% for the year 2020-21, much higher than the State's target.

Figure 7 looks at the debt-to-GSDP ratios of the four highest off-budget borrowers of 2021 to understand the unaccounted debt burden on the States. Kerala, unlike Andhra Pradesh, defines total liabilities as those upon the Consolidated Fund and the public account of the state (Kerala Fiscal Responsibility Act, 2003, S. 2(l)). The debt-to-GSDP target for 2019-20[15] was set at 29.67%, and the actual ratio exceeded the target and stood at 31.02%, without including off-budget debt (Kerala Fiscal Responsibility Act, 2003, S. 4(2)(c)).

(i) Who is borrowing on the states' behalf?

In the case of Andhra Pradesh, the extra-budgetary needs of the state seem to replicate the Union's to an extent. While FCI was one of the largest borrowers at the Union level, Andhra Pradesh's largest extra-budgetary borrower is the AP State Civil Supplies Corporation (APSCSC). It manages the entire value chain of the foodstuff and other essential commodities, and raised Rs 30,181 crore through EBR. The resource utilisation can be seen in Figure 8. In Telangana, the three top borrowers comprise up to 74% of the state's extra-budgetary needs (Figure 9). The next 24% is utilised by five public enterprises.

In most cases, there is a single largest borrower for each state that takes up the maximum share. In many states, power sector enterprises used the most extra-budgetary finances. Box 2 provides details on the financial strains that the sector faces.

Figure 6: State wise off-budget borrowings as on 31.03.20XX (Rs crore)

State/Year	2016	2017	2018	2019	2020	2021	2022
Andhra Pradesh	7162	11867		10000	77,586.00	1,12,115.00	1,18,393.81
Chhattisgarh						2071.01	
Goa						788.55	
Haryana					419.5	405.75	802.00
Karnataka						18421.37	
Kerala					18699.08	16469.05	
Maharashtra	550	51					
Punjab		1425				10550.62	
Rajasthan	2787.25	2605.52	2372.91	2137.42	2,901.54	1804.41	
Sikkim			380.56	878.5			
Tamil Nadu	684.63	929	3754	774.52	703.78	15368.91	
Telangana		18,017			71,131.63	97940.45	
Tripura	0	0					
West Bengal						3016.64	

Source: State Finance Audit Reports of CAG (2021,2022)

Note: The blanks indicate unavailability of data

Figure 7: Debt to GSDP ratios of the four southern States who are major off-budget borrowers
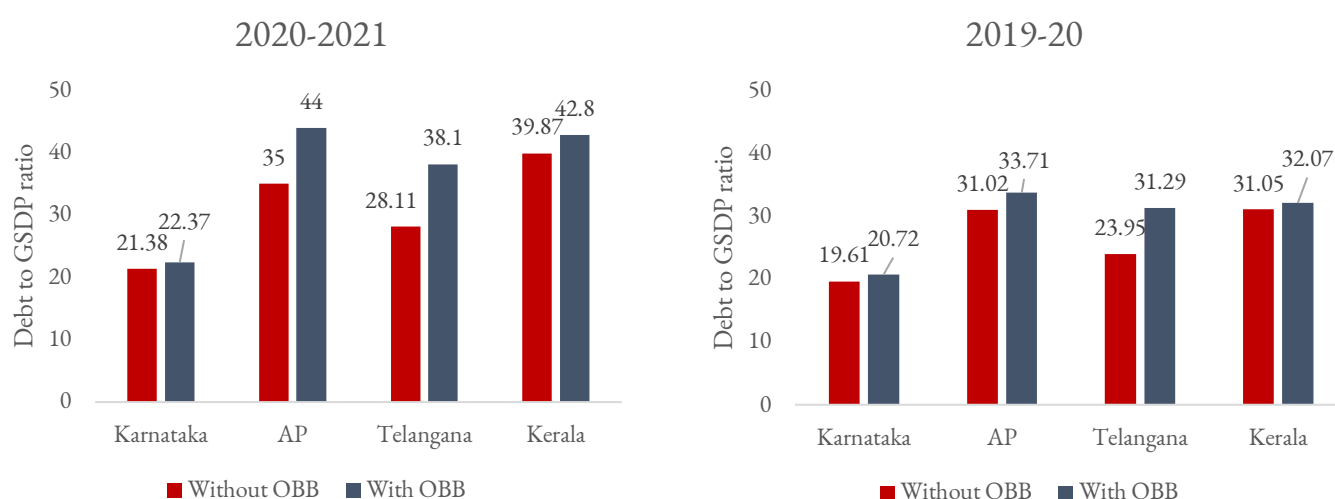
Source: State Finance Audits Reports of CAG

> ## Box 2: The financial strains on the power sector
>
> State governments, who are the primary owners of the bulk of distribution companies or discoms, spend heavily to pay for electricity subsidies, which has considerably strained the former's finances. Funds are used to cover subsidy costs, infuse capital, cover losses, and service debt obligations.
>
> The aggregate loss of 68 discoms went up by 66% in 2020-21 to Rs. 50,281 crore (PTI, 2022). The corporations have become incapable of running everyday operations without a capital dump by the states; servicing their own debt seems a far-fetched idea. Ujwal DISCOM Assurance Yojana (UDAY) was launched by the Union in 2015 for the revival of power distribution companies. Sixteen states took over the debt obligations of power corporations, while eleven just signed for improving their operational efficiencies.
>
> States have drawn criticism from the CAG for not being able to reap the benefits of the scheme. Kerala State Electricity Board (KSEB) faces a 318% rise in debt obligations between 2015-16 and 2020-21 (The Hindu Bureau, 2022).
>
> An overwhelming majority of extra budgetary funds go to the state PFCs, that is, to be serviced out of state budgets. The opacity surrounding the data obscures states' growth, and restricts the policy makers from conducting an accurate analysis. Andhra Pradesh PFC borrowed Rs. 15,161 crore in FY21. In the same financial year, Tamil Nadu Generation and Distribution Corporation (Tangedco) alone raised Rs. 14,700 crore out of the state's total off-budget borrowings of Rs. 15,396 crore. Tangedco is a subsidiary of Tamil Nadu Electricity Board (TNEB) and is responsible for installing thermal/gas/hydro power plants along with renewable energy. While Telangana spent Rs. 2,922 crore, Punjab too spent majority of its EBR on the power sector. Out of the entire Rs. 15,550 crore pool of extra budgetary funds, Rs. 8,238 crores went to Punjab State Power Corporation Limited (PSPCL).
>
> The financial distress caused by discoms is consistent across states. Guarantees, too, if and when materialised, will add to the debt burden. The power sector accounts for more than 60% of the total outstanding guarantees by the State governments (PRS, 2020). The FFC was concerned about the financial sustainability of the power sector on account of highly subsidized prices to several consumer groups, including agriculture, inefficient regulations, and its unattractiveness for the private sector. Recommendations were made to the Ministry of Power to develop a monitoring index for states, and to create an incentive system based on the performance of the power sector.

(ii) The Trends in Irrigation

By the end of 2021, out of Rs 97,940 crore borrowed outside the budget by Telangana, more than Rs 36,000 crore was for a single project - Kaleshwaram Irrigation Project Corporation Limited. Karnataka too had spent the most off-budget amount in irrigation projects, by allocating funds to Karnataka Bhagya Jala Nigam followed by Karnataka Neeravari Nigam Limited. Approximately Rs 11,000 crore was borrowed by the two corporations out of the total Rs 18,102 crore of borrowings at

the end of the FY 2021. Given that the revenue streams of these projects, if any, are unclear, it is not surprising that they rely so heavily on borrowings. At the central level too, the Department of Water Resources, River Development, and Ganga Rejuvenation has been a consistent borrower over the years.

Figure 8: Utilisation of extra budgetary resources by PSUs as on 31.03.2021 (Rs crore)
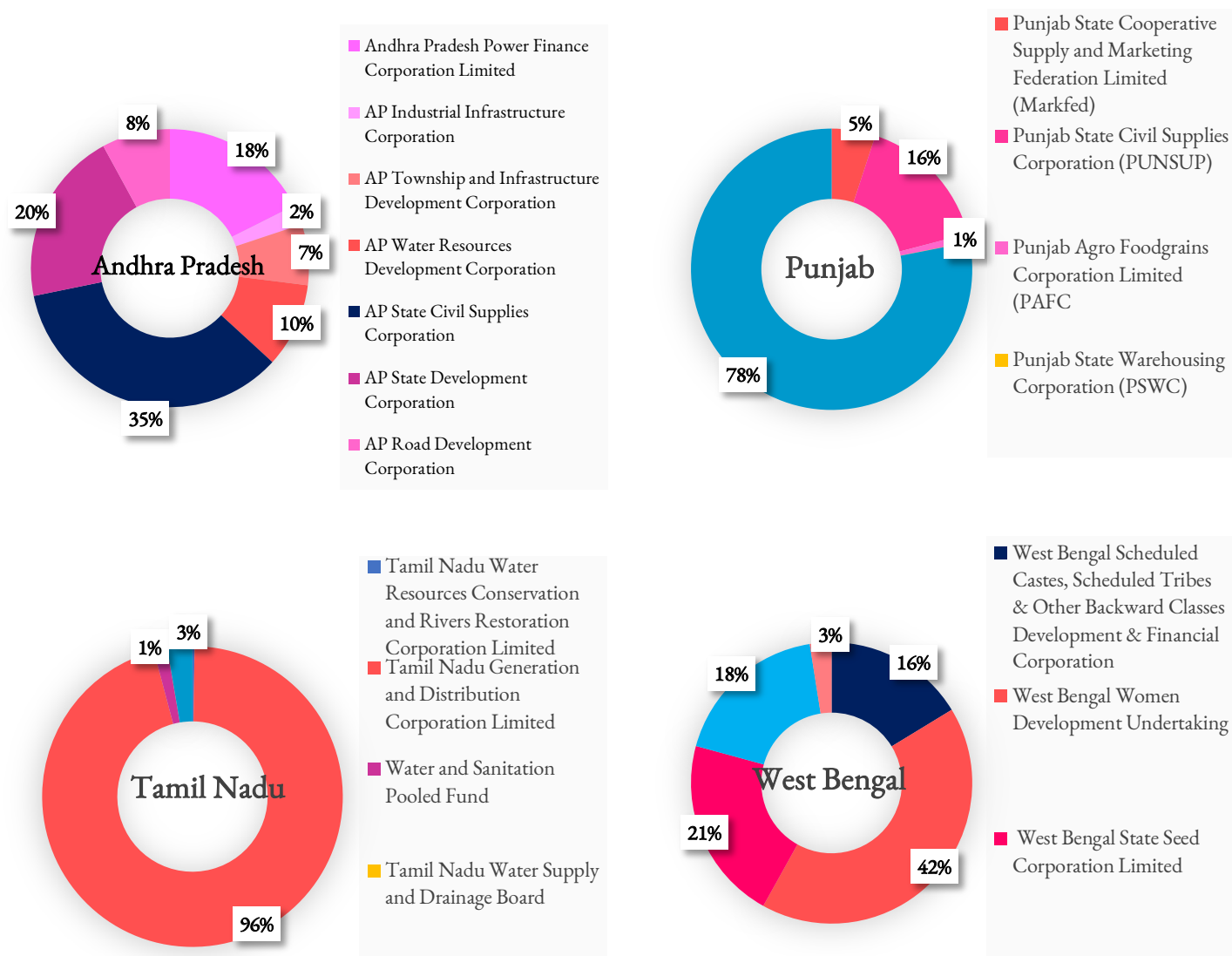
Source: CAG State Finance Audit Report (2022)

Note: The data is based on the CAG reports for 2021 for the States. In a more recent report, the 2021 off-budget borrowing numbers have been updated for Andhra Pradesh. However, the report does not provide updated numbers of the individual off-budget borrowers. Therefore, for this figure we have used the older numbers for Andhra Pradesh.

Figure 9: Utilisation of extra budgetary resources by Telangana PSUs as on 31.03.2021 (Rs crore)
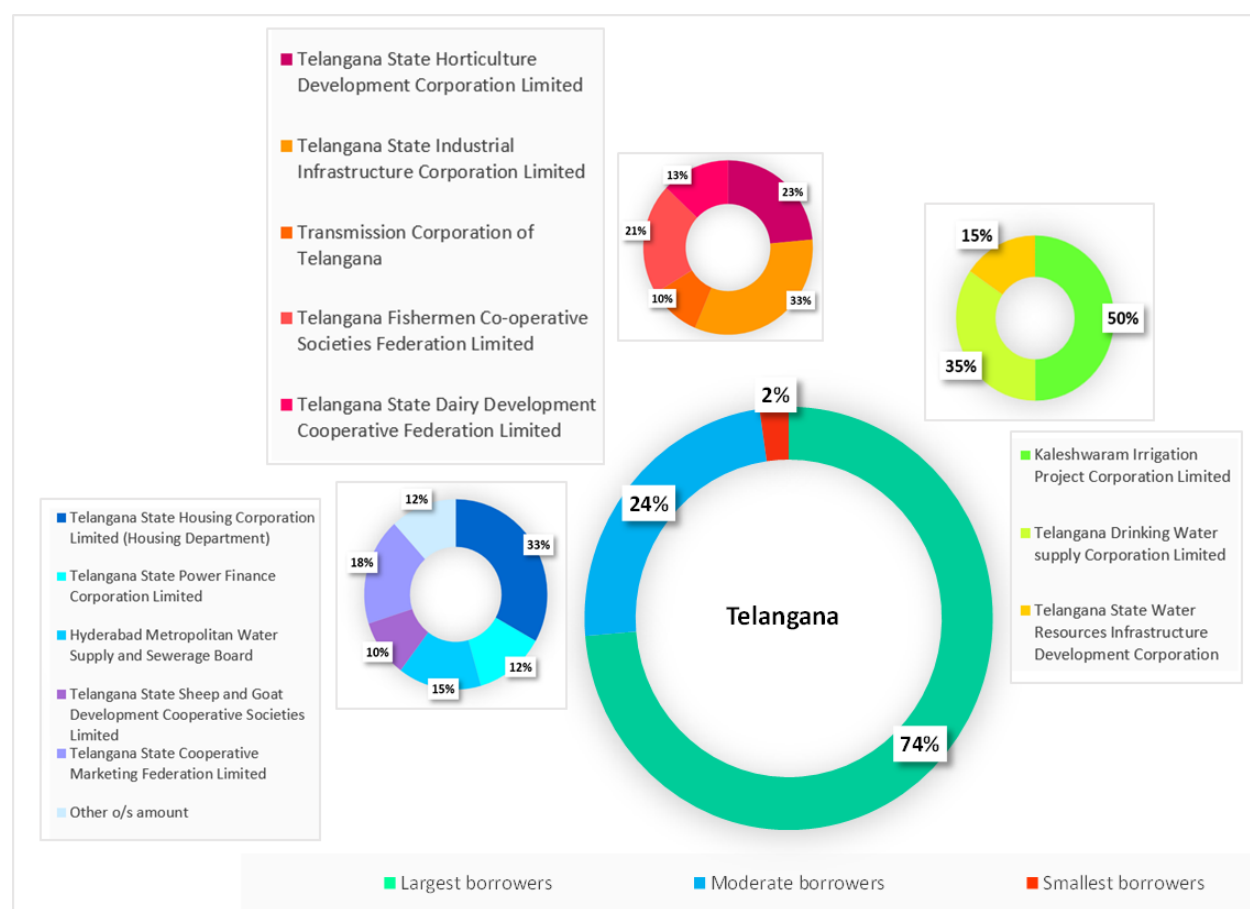
Source: CAG Telangana State Audit Report (2022)

(iii) Other Insights

Interestingly, there are certain states with very high on-budget debts, which are already in breach of their FRL debt targets, and still resorting to low degrees of off-budget borrowing. This is curious, given that one of the reasons why states resort to off-budget borrowing in the first place is to bypass their FRL targets. The three examples in this regard are Punjab, Rajasthan, and

West Bengal. RBI's risk analysis of state finances places them among the states with the highest debt-to-GSDP ratios, 49.1%, 40.5%, and 37.1% respectively (RBI, 2022).

While Punjab's debt-to-GSDP FRL targets have not been revised for quite a few years now[16], Rajasthan missed the target of bringing its ratio down to 34% by the end of 2020. Punjab's off-budget borrowings stood at 1.95% of GSDP, and Rajasthan's was even lower with just 0.5% since 2016.

At the end of 2021, West Bengal's off-budget liabilities were Rs. 3016.64 crore, merely 0.23% of the GSDP (RBI, 2021a). The motivation behind these States opting for off-budget resources with very little pressure on the existing debt, when already in violation of their FRL targets, is unclear. One plausible explanation is that their off-budget numbers are much higher than are currently being projected.

Rajasthan has spent off-budget borrowings primarily on Zila Parishads and Rajasthan Agriculture Marketing Board. Other than that, money has been borrowed for Rural Housing and Infrastructure Development, Civil Supplies Corporation, and Water & Sanitation Pooled Fund.

Punjab, whose off-budget debt was Rs 10,550.62 crore at the end of 2021, had the state power corporation and the civil supplies corporation as largest borrowers. West Bengal borrowed off-budget sums for Women Development Undertaking and State Seed Corporation Limited, besides other small enterprises.

V. Analysing the legal gaps in the regulation of off-budget borrowings

As with many other data gaps, the problem of off-budget borrowing also has a legal dimension. As discussed previously, India lacks a comprehensive PFM law that could standardise and integrate its fiscal reporting. This enables governments to resort to off-budget borrowing, and thereby circumvent the debt limits contained in the FRLs that they are bound to follow.

To address this, in 2018, the Union FRBM Act was amended to widen its definition of debt and include financial liabilities of government-owned or -controlled entities that the Union government was responsible to repay (FRBM Act, 2003, S. 2(aa)). This amendment resulted in better reporting of the Union's off-budget numbers, as discussed above.

However, this still leaves scope for the Union to take new off-budget borrowings to pay back the existing debt. The Union can thus stay within its debt target, and since the repayment in such cases is not being done through the CFI (for the time being), it does not reflect in the fiscal deficit indicator either. In this section, we take a closer look at how state FRLs regulate off-budget borrowing, if at all.

A) How are off-budget borrowings regulated?

Remarkably, we find that state fiscal rules are in fact quite detailed and extensive in their measures to address off-budget borrowing. Table 1 below shows that state FRLs and rules contain a variety of measures, such as including off-budget borrowings in the definition of government debt or liabilities, taking it into account for calculating fiscal and revenue deficits, and requiring it to be reported as part of the Fiscal Policy Strategy Statement or Medium-Term Fiscal Policy Statement, which are tabled in the legislature along with the budget.[17]

Seven states expressly define off-budget borrowings, and only one state—Madhya Pradesh—has no direct or indirect reference to this practice. Therefore, it is not as though state fiscal rules do not envisage, acknowledge, or seek to address off-budget borrowings. On the contrary, they are extensively detailed and varied in their attempts to regulate it.

Table 1: How different FRLs regulate off-budget borrowing

Sr. No.	How off-budget borrowing is regulated		Followed by
1.	Included in definition of debt / total liabilities		Union, Haryana,[18] Chhattisgarh, Meghalaya, Nagaland, Tripura, West Bengal, Bihar, Maharashtra, Andhra Pradesh, Telangana
2.	Separately requires off-budget borrowing to be reflected as government borrowing[19]		Manipur, Nagaland, Tripura, Bihar, Andhra Pradesh, Haryana, Telangana
3.	Interest on off-budget borrowing to be considered as revenue expenditure for calculating revenue deficit		Arunachal Pradesh, Assam, Bihar, Maharashtra, Karnataka
4.	Considered as government borrowings for calculating fiscal deficit		Punjab, Arunachal Pradesh, Assam, Himachal Pradesh, Maharashtra, Karnataka
5.	Expressly defined		Punjab,[20] Odisha, Jharkhand, Maharashtra,[21] Karnataka,[22] West Bengal, Arunachal Pradesh
6.	Included in Fiscal Policy Strategy Statement		Andhra Pradesh, Telangana, Gujarat, Meghalaya, Nagaland, Tripura, Bihar, Sikkim, Mizoram, Chhattisgarh, Haryana, West Bengal
7.	Included in Medium-Term Fiscal Policy Statement		Karnataka, Punjab, Arunachal Pradesh, Odisha, Goa
8.	Included in Fiscal Transparency Statement		Gujarat, Kerala, Arunachal Pradesh, Himachal Pradesh, Uttarakhand, Uttar Pradesh, West Bengal, Karnataka
9.	No express regulation	Indirect reference[23]	Rajasthan,[24] Tamil Nadu, Jharkhand
		No direct or indirect reference	Madhya Pradesh

Thus, the legal gap in the subnational regulation of off-budget borrowings is not in terms of an absence of necessary legal provisions. Rather, the gap is in terms of a vertical inconsistency in Union and subnational regulation of off-budget borrowings, a horizontal inconsistency in how different states regulate it, and an inconsistency between what the laws say and what governments are actually (not) doing.

In other words, state FRLs are not being circumvented by an unforeseen issue that the law was not aware of, as was the case with the constitutional provisions on the Public Account. Rather, they are being subverted through blatant violations of a range of express provisions that seek to regulate off-budget borrowings.

B) How should off-budget borrowings be regulated?

There are thus several different ways in which off-budget borrowing is regulated across India's federal structure. The fact that there is next to no compliance, across the board, means that it is difficult to assess which types of regulation have been more effective than others. That being said, analysing the available range of regulatory options is useful for thinking about what an ideal regulatory framework should look like.

The FRLs that include off-budget borrowings in their definitions of debt or liabilities, fiscal deficit, and revenue deficit, essentially require governments to disclose aggregated numbers that consolidate on-budget and off-budget borrowings. In other words, these types of provisions do not require a specific, separate disclosure of off-budget borrowing figures, so long as off-budget numbers are added to the fiscal indicators that are disclosed. While this is certainly better than reporting numbers that do not include off-budget figures (which is what all governments are doing presently), it still does not reveal the full fiscal picture.

Another category of FRLs requires off-budget borrowings to be separately included in their fiscal statements, such as the fiscal policy strategy, the medium-term fiscal policy, and the fiscal transparency statements. In these cases, governments are required to specifically disclose off-budget borrowings, but are not required to add these figures to their main fiscal indicators, such as their debt numbers. This means that while the government's off-budget numbers are revealed in certain documents, their main fiscal indicators remain under-inclusive. This ultimately paints an incomplete picture of their fiscal affairs.

The ideal regulatory framework for off-budget borrowing should incorporate both elements: It should require off-budget numbers to be added to the major fiscal indicators, while also requiring them to be separately disclosed. Only this combination of requirements can fully address the data gap of off-budget borrowing, because it would require the disclosure of not only the true extent of government liabilities, but also its sources. Presently, the FRLs in only nine states include off-budget borrowings in both, their debt/liabilities definition as well as in one of their fiscal statements.[25]

To increase transparency even further, the requirement to separately disclose off-budget borrowing numbers may also be expanded to include details such as:

- who is borrowing (PSUs, SPVs, government, etc.), from whom, and against which scheme or project, if applicable, or for any other purpose. One example can be found in Statement 27[26] which includes the names of scheme/project under the ministry or department that administers it;

- the modality of the borrowing, whether through the Public Account, selling government bonds, market borrowings, SBAs, etc. For example, Statement 27 is divided into two parts, the first part being EBR mobilised through issue of government fully-serviced bonds, and the second part being financial support extended through loans from NSSF;

- the terms of the loan, including details such as the time period over which the debt would have to be repaid, the interest rate, etc.;

- details of repayments (with interest and principal reported separately) of specific departments under which PSEs operate;

- and estimates of future borrowings. For multi-year capital intensive projects, wherever possible, a medium-term framework of the borrowing requirements and repayment plans of the project.

Annual disclosures along these lines, presented with the budget, would enable the Legislature, markets, and citizens, to develop a thorough and comprehensive understanding of the government's fiscal health, and its prospects over the medium term. It would also ensure that if, for example, the government is repaying its existing debt by resorting to new off-budget borrowing, these details would be fully evident. The government would have to specify that the purpose of the fresh borrowing is to finance previous debt.

Existing provisions in FRLs which include off-budget borrowing in their debt definition are not able to capture such practices. Since these regimes only require a debt percentage to be reported, if there is no net change in debt as a result of fresh borrowings meeting existing liabilities, the reported debt number will remain unchanged and consistent.

As with other aspects of PFM, it is essential to have uniform debt reporting across India's federal structure.[27] If a state government hides the full extent of its debt through resorting to off-budget borrowings, it primarily puts that state at risk. However, given the highly inter-connected and integrated nature of India's federal system, with states receiving substantial resources through vertical and horizontal devolution from a common divisible pool[28] and the Union being constitutionally responsible for overall macroeconomic stability,[29] an under-reporting state has risk implications for the whole Union of States.

Moreover, under the Union FRBM Act, the Union government has to ensure that the general government debt, comprising both Union as well as all state governments' debt, does not exceed 60% of GDP (FRBM Act, 2003, S. 4(1)(b)(i)). To aggregate state (and Union) debt data, or even to simply

compare them across states, it is essential that the debt is calculated and reported in the same manner in every case. This illustrates how heterogeneity in the regulation of off-budget borrowing in India constitutes a legal gap.

Hence, it is crucial that the ideal regulatory framework for off-budget borrowing, in addition to containing the features described in the preceding paragraphs, also needs to be a uniform framework. Given that the RBI already consolidates and publishes information regarding various aspects of the fiscal affairs of the Union as well as states in a uniform manner, it can play a similar role regarding uniform reporting of off-budget borrowings as well, once governments start reporting this information in their budgets. We need to develop instruments of short-run flexibility to incentivise states to move in this direction. Any additional flexibility should only be a transitional arrangement, which should be phased out in a few years once reporting off-budget numbers becomes the norm.

VI. Issues with the Union's attempt to regulate subnational off-budget borrowing

While both the Union and the states are subject to the deficit and debt limits contained in their respective FRLs, the Constitution provides the Union with another handle, via Article 293, to limit state deficit and debt. Under Article 293(3), states are required to take the Union's consent for borrowings if they are indebted to the latter. Since every state is indebted to the Union Government, all are required to get their borrowings approved. The Union gives its approval drawing from Finance Commission recommendations, and sets an annual borrowing limit in the form of a net borrowing ceiling (NBC), pegged to an annual fiscal deficit target. So, for instance, if a state has a fiscal deficit of 3% of GSDP, its NBC is also set at 3% of GSDP.

In March 2022, the Union decided to treat states' off-budget borrowings in 2020-21 and 2021-22 as states' own borrowings, to be adjusted against the states' NBCs in 2022-23. This would have led to a sudden, significant reduction in how much states could borrow. Following concerns expressed by states, the Union decided, in June 2022, to include off-budget borrowings in NBCs only from 2021-22, and adjust it across 2022-23 to 2025-26. While this eased the retrospective burden, the fact remains that states will effectively have lesser borrowing space going forward, given that their off-budget borrowings will also form part of the NBC.

The Union's move has been praised in some quarters, and has also generated severe backlash from several states. As we have argued, the best way to regulate off-budget borrowings is to require full transparency, entailing both separately disclosing off-budget figures as well as adding them to the major fiscal indicators. But to operationalise its decision under Article 293(3), the Union has asked the states to furnish details regarding their off-budget borrowings to the Union itself, and not to release these numbers transparently in the public domain. The Union, now presumably is in

possession of a vast dataset of off-budget borrowings of all states, has also chosen to keep these numbers to itself.

This means that state legislatures, markets, citizens, and researchers remain in the dark regarding off-budget borrowings. Each of these entities have a legitimate and important role to play in analysing and regulating subnational public debt. But by keeping the numbers to itself, the Union risks building a centralised, exclusively vertical, and non-transparent channel of fiscal accountability, instead of advancing the constitutional principle of legislative supremacy over fiscal affairs. In short, despite the Union's intervention, the data gap of subnational off-budget borrowing still remains a data gap.

Moreover, while both FRL limits as well as the NBC limit that is vertically imposed on states through Article 293(3) are numerical in nature, the latter is a hard limit, allowing for no exceptions or explanations. If a state breaches its NBC, then consent for fresh borrowings is withheld. Given the larger subnational fiscal landscape, characterised by pandemic-related fiscal stress and pending GST dues among other constraints, this sudden hard limit might foreseeably result in spending cuts in critical areas, such as capital expenditure and social sector spending.

At least in the case of FRLs, the inherent rigidity in such numerical-based limits is partially balanced by soft compliance measures that allow for some flexibility. For example, most FRLs allow certain grounds for exceeding the fiscal deficit target to an extent, provided that the government tables a statement in the legislature justifying the reasons for the deviation and the path back to compliance. But when a numerical fiscal deficit target is imposed from above in an absolute manner, as the Union does to states via Article 293(3), there is simply no scope for flexibility. This approach can disincentivise states from investing in capital expenditure and human capital.

VII. Addressing off-budget borrowings: Way forward

Data gaps are an entrenched issue in India, with far-reaching consequences for fiscal policy, economic growth, and human capital. The problem of off-budget borrowings, at Union and state levels, serves as an illuminating example of data gaps and illustrates some of the motives, contexts, extents, and consequences that animate and emerge from data gaps.

Data gaps also tend to have an underlying context of legal and institutional gaps. The FFC (2020) had a detailed chapter on reforming India's fiscal architecture, comprising the three pillars of PFM processes, fiscal rules, and independent fiscal institutions. A long-term solution to the problem of off-budget borrowing, and data gaps more generally, necessarily requires reforms across each of these pillars that can improve the coverage, timeliness, quality, and integrity of fiscal reporting.

While there are detailed rules, guidelines, and manuals for various aspects of PFM, and an overarching PFM structure in the Constitution, a comprehensive statute that can tie these two together remains conspicuously absent. Not only does this reflect a literal gap, it also leads to salient constitutional and democratic principles being violated. This gap needs to be bridged, and a holistic,

comprehensive manner in which this can be done is through passing a consolidated PFM law that can apply to the Union and the States (James, Patel, and Singh, 2022).

Such a PFM law could cover several areas in need of reform, including fiscal responsibility, the annual budget, financial management, reporting and accounting, and legislative and executive oversight (Alamuru & Vidhi Centre for Legal Policy, 2020). Without "*Ensuring uniformity in the definition of fiscal indicators and the standard reporting framework of the Union and States*", as the FFC (2020, p. 393) recommended, data gaps will only continue. This kind of uniformity can be ensured if it is mandated through an overarching law that fills the various existing PFM gaps that the FFC (2020) highlighted in its report, and will help in filling the data gap of off-budget borrowings as well.

In the case of India's fiscal rules, the legal gaps are more in the nature of vertical and horizontal inconsistencies in how debt generally, and off-budget borrowing specifically, is regulated across India's federal structure. Gaps in the legal framework are accompanied by vast gaps between the law and its compliance, altogether resulting in off-budget borrowings continuing unreported and unabated. For ensuring that off-budget borrowings are transparently reported, the law should require separate disclosures of off-budget borrowings, along with requiring those figures to be added to the major fiscal indicators. Institutionally, India also lacks a fiscal council that could have anchored, collated, and coordinated its fiscal reporting.

While a long-term solution requires reforms as detailed above, a lot can be done in the immediate, transitional phase as well. In theory, there is nothing stopping the Union from using its powers under Article 293 to require states to transparently report their off-budget operations. While the Union has attempted to regulate subnational off-budget borrowing through its circulars in March and June 2022, the fact that it has done so in a non-transparent manner means that the crux of the problem remains unaddressed.

Reportedly, the Comptroller and Auditor General (CAG) is planning to publish fiscal sustainability report cards for each state, which would capture their off-budget liabilities too (Sahu, 2022). If these plans go ahead, it may prove to be a very useful resource that can help fill this data gap. Ultimately, the true extent of this problem can only be comprehended with more numbers. But even the limited numbers that have been studied in this paper paint a very concerning picture, and points to the need for urgent intervention at all levels of government, and across the fiscal architecture.

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Annex

Table A1: Select gaps and inconsistencies in the existing PFM framework

PFM dimension	Present coverage	Existing gaps / inconsistencies	Existing gaps in implementation
Fiscal discipline and risk management	Existing FRLs, at the Union and state levels, cover a lot of ground in terms of numerical fiscal targets, mandatory disclosures, escape clauses, etc.	<u>Union FRL</u>: definitions of deficit and debt are inconsistent with each other. General government debt target is not consistent with wider definition of 'Central Government Debt.' <u>State FRLs:</u> Many states have not adopted a wider definition of debt and deficit that could cover extra-budgetary operations. Many state FRLs do not have debt as an anchor. Even where debt is a target anchor, it is not defined in alignment with the general government debt target adopted by the Union FRL.	Union government debt is not calculated in full cognisance of the revised definition of debt (post-2018) in the Union FRL. Medium-Term Expenditure Framework and Fiscal Risk Statement are not published by the Union or states
Budget formulation	Constitutional provisions under Articles 112–117 cover budgetary process in the Parliament, and Articles 202–207 do the same for state legislatures. GFR, Delegation of Financial Powers Rules, and Union and state budget manuals cover rules governing appropriations, sanctions, and allocations.	Constitution covers only broad mandate and provides a basic framework. However, downstream operational budgetary processes have no specific legal framework governing them. Documentation requirements and timelines for budget-making are not legally defined.	Budgetary processes are not oriented towards performance budgeting or outcome budgeting. Outcome budget document is prepared in a manner that is de-linked to the main budget outlay and performance.
Public procurement	GFR, 2017, R&P rules, and various orders issued by the Department of Expenditure, MoF, GoI, and finance departments in state governments	No overarching legal framework for public procurement. Fragmented rules, guidelines, and manuals make it difficult for public agencies to follow them comprehensively	Rules hamper efficient procurement rather than aiding competitive, transparent and efficient public procurement.
Monitoring and reporting	Ex-post review and audit by C&AG under Article151 and C&AG (DPC) Act	<u>Both in Union and states:</u> External assessment and evaluation mechanism for fiscal plans, performance and government's macro-economic and fiscal forecasts not in place. There is no provision or mechanism for mid-term review or correction of expenditure plan.	Ad hoc mechanism for year-end expenditure review (at the revised estimates stage), and only when driven by a pressing need. Year-end expenditure cuts are not effective, as payments get postponed to next financial year.

Table A2: Statement 27 – Statement of Extra Budgetary Resources (EBRs) – Govt. Fully Serviced Bonds

Name of the Ministry/Department and Name of the Scheme	2016-17 Actuals	2017-18 Actuals	2018-19 Actuals	2019-20 Actuals	2020-21 Actuals	2021-22 BE	2021-22 RE	2022-23 BE
Part A -EBRs mobilised through issue of Govt. fully serviced bonds								
Department of Civil Aviation Air India Asset Holding Limited (AIAHL)				7,000				
Department of Higher Education Revitalising Infrastructure and Systems in Education (RISE)	---	---	---	---	---			
Department of Health & Family Welfare Pradhan Mantri Swasthya Suraksha Yojana	---	---	---	---	---			
Ministry of Housing & Urban Affairs Pradhan Mantri Awas Yojana (PMAY) - Urban	---	---	20,000	---	---			
Department of Water Resources, River Development & Ganga Rejuvenation								
(i) Polavaram Irrigation Project	---	---	1,400	1,850	2,243		751.80	
(ii) Pradhan Mantri Krishi Sinchai Yojana (Accelerated Irrigation Benefits Programme & other Projects)	2,187	3,105	5,493	1,963	1,922			
Department of Drinking Water &Sanitation								
(i) Swachh Bharat Mission (Rural)	---	---	8,698	3,600	----	NIL		NIL
(ii) Jal Jeevan Mission / National Rural Drinking Water Programme	---	---	---	---	---			
Ministry of New & Renewable Energy								
(i) Grid Interactive Renewable Power, Off-Grid/ Distributed & Decentralized Renewable Power	1,640	---	---	---	---			
(ii) Pradhan Mantri-Kisan Urja Sanrakshan Evam Utthan Mahabhiyan (PM-KUSUM)	---	---	---	---	---			
Ministry of Ports, Shipping and Waterways Inland Waterways Authority of India (IWAI) Projects	340	660	---	----	---			
Ministry of Power								
(i) Deen Dayal Upadhyaya Gram Jyoti Yojana/SAUBHAGYA	5,000	4,000	13,827	3,782	2,500			
(ii) Power System Development Fund Projects	---		5,505	---	---			
Ministry of Railways			5,200	5,000				
Department of Rural Development Pradhan Mantri Awas Yojana (PMAY)- Rural	---	7,330	10,679	10,811	20,000			
Total (Part A)	**9,167**	**15,095**	**70,802**	**34,006**	**26,665**	**0**	**751.80**	**0.00**
Part B - Financial support extended through loans from NSSF								
Department of Food & Public Distribution Food Corporation of India	70,000	65,000	97,000	1,10,000	84,636			
Ministry of Housing & Urban Affairs Building Materials & Technology Promotion Council		8,000		15,000	10,000			
Department of Fertilizers Metals & Minerals Trading Corporation				1,310			NIL	NIL
Support to other public agencies (to meet requirement for additional resources, if any, under some specific scheme/project)						30,000		
Total (Part B)	**70,000**	**73,000**	**97,000**	**1,26,310**	**94,636**	**30,000**		
Grand Total (Part A + Part B)	**79,167**	**88,095**	**1,67,802**	**1,60,316**	**1,21,301**	**30,000**	**751.80**	**0.00**

Note: Entries highlighted in blue were not a present in the original Statement 27 table, but were added from the notes below it. Calculation may vary accordingly.

Table A3: Statement 27 after CAG audits (in Rs. crore)

EBR Resource Utilisation as on 31.03.20XX					
	31.03.2017	31.03.2018	31.03.2019	31.03.2020	31.03.2021
Part-A – EBRs mobilised through issue of Govt. fully serviced bonds	31.03.2017	31.03.2018	31.03.2019	31.03.2020	31.03.2021
Air India Asset Holding Limited (AIAHL)				21,985	
Pradhan Mantri Awas Yojana (PMAY) - Urban			20,000		
Department of Rural Development - PMAY (Rural)		7,329	10,679	10,811	20,000
Pradhan Mantri Ujjwal Yojana (PMUY)		673	2,688		
Department of Water Resources, River Development & Ganga Rejuvenation		14,466	15,202	3,813	4,165
Long Term Irrigation Fund	9,086	20,447	34,249		
Department of Drinking Water & Sanitation-Swachh Bharat Mission Rural			8,698	3,600	
Food Corporation of India (Non-NSSF)	81,303	1,24,879	90,180		
Fertiliser Subsidy	39,057	26,183	32,489	43,483	
Ministry of New & Renewable Energy - Grid Interactive Renewable Power, Off-Grid/ Distributed & Decentralized Renewable Power	1,640				
Ministry of Ports, Shipping and Waterways - Inland Waterways Authority of India (IWAI) Projects	340	660			
Ministry of Power - Deen Dayal Upadhyaya Gram Jyoti Yojana/SAUBHAGYA & Power Systems Development Fund	5,000	9,000	28,332	32,114	34,614
Power Finance Corporation	2,02,588				
MoR - Indian Railway Finance Corporation (IRFC)	1,02,480	1,42,882	1,79,133	2,20,533	2,71,084
MoR - Rail Vikas Nigam Limited (RVNL)				1,408	
Ministry of Road Transport -National Highway Authority of India (NHAI)		1,22,524	1,79,438	2,23,093	
Total	4,41,494	4,69,043	6,01,087	5,60,840	3,29,862
Part-B – Financial support extended through loans from NSSF					
Food Corporation of India	70,000	1,21,000	1,91,000	1,10,000	84,636
PMAY (Urban)		8,000		16,310	10,000
Total	70,000	1,29,000	1,91,000	1,26,310	94,636
Part C - Special Banking Arrangements (SBA)					
DEA expenditure on fertilizer subsidy		7,000	10,000		
Int. on Fertiliser Subsidy Liability	81				
Total	81	7,000	10,000		
Total EBR	5,11,575	6,05,043	8,02,087	6,87,150	4,24,498

Table A4: Internal and External Budgetary Resource (IEBR) allocation to ministries (Rs. crore)

Ministry wise IEBR expenditure	Budget	Actuals					
Ministry	2023-24	2022-23	2020-21	2019-20	2018-19	2017-18	2016-17
Ministry of Agriculture and Farmers Welfare	2.87	2.37	5.11	0	0	0	0
Department of Atomic Energy	13059.12	9110.3	6614.46	6980.1	7325.93	6588.49	6442.51
Ministry of Chemicals and Fertilisers	146.5	25.26	455.52	1525.15	1341.02	783.27	1764.58
Ministry of Civil Aviation	3448.21	0	0	0	4883.4	7134.46	2544.31
Ministry of Coal	21030.01	19656.42	17474.95	14871.07	15749.31	15917.37	14289.29
Ministry of Commerce and Industry	162	96.25	0	0	0	1385.81	2585.85
Ministry of Communications	6637.94	7245.56	8547.6	7678.99	8806.94	11849.19	2821.56
Ministry of Consumer Affairs, Food and Public Distribution	145380	61163.96	56912.35	177831.59	165029.79	211188.42	105.62
Ministry of Defence	3100	2857.25	2768.43	31991.02	605	20.99	0
Ministry of Development of North Eastern Region	1.5	1.28	0.08	0	0	1.09	0
Ministry of Education	0	37.48	30.5	0	0	0	0
Ministry of Electronics and Information Technology			0	0	0	0	0
Ministry of Health and Family Welfare	51.8	523.88	159.54	0	0	0	0
Ministry of Heavy Industries	281.79	274.38	223.11	401.03	341.24	296.52	332.25
Ministry of Housing and Urban Affairs	16962.88	9972.51	10292.77	38464.2	33395.33	18921.25	13860.22
Ministry of Human Resource Development			0	0	0	0	0
Ministry of Information and Broadcasting	356.24	215.53	123.59	191.85	193.74	123.25	111.13
Ministry of Jal Shakti	2	0	4171.82	3895.77	15667.14	3105	0
Ministry of Micro, Small and Medium Enterprises	260	0	110.28	97.57	0	74.87	69.51
Ministry of Mines	2183.92	1944.63	1403.55	1350.08	4753.27	1715.93	1307.09
Ministry of Minority Affairs	886	752.61	0	509.59	0	0	0
Ministry of New and Renewable Energy	37828.15	15880.59	9505.56	10450.85	10459.15	10491.27	8640.81
Ministry of Petroleum and Natural Gas	106400.7	106686.16	111194.38	105602.8	100308.7	132003.88	104426.04
Ministry of Ports, Shipping and Waterways	3633.21	3164.61	2652.48	2934.06	3950.54	4165.54	2721.95
Ministry of Power	60805.22	48135.05	47265.02	62635.92	74013.56	59447.01	0
Ministry of Railways	52783	73388.13	125255.33	80165.53	80538.99	58567.92	64703.24
Ministry of Road Transport & Highways	0	65150	65035	74988	61217	50532.41	33117.74
Ministry of Rural Development			0	10811.02	10678.8	7329.43	0
Ministry of Science and Technology	33	58.2	37.04	46.26	0	0	0
Ministry of Shipping			0	0	105.8	96.77	90.46
Ministry of Social Justice and Empowerment	194.58	159.11	144.35	0	0	0	0
Ministry of Steel	10300.85	10147.33	7266.7	8131.76	8591.28	8946.6	11881.56
Ministry of Tourism			0	0	0	0	0
Ministry of Water Resources, River Development and Ganga Rejuvenation			0	0	0	0	2187
Total	485931.49	436648.85	477649.52	641554.21	607955.93	610686.74	274002.72

Table A5: IEBR spending by Union government (example data)

Notes on Demands for Grants, 2022-2023												58
	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total
C. Investment in Public Enterprises												
Loans to Credit Cooperatives												
2. Central Warehousing Corporation	...	255.29	255.29	...	205.33	205.33	...	205.68	205.68	...	225.16	225.16
3. Central Railside Warehouse Company Ltd	...	20.78	20.78	...	40.00	40.00	...	12.00	12.00	...	22.20	22.20
Total-Loans to Credit Cooperatives	...	276.07	276.07	...	245.33	245.33	...	217.68	217.68	...	247.36	247.36
Food Corporation of India												
1. Food Corporation of India	1040.00	56636.28	57676.28	2555.21	102495.00	105050.21	2510.00	88995.00	91505.00	1930.00	87495.00	89425.00
Total-Food Corporation of India	1040.00	56636.28	57676.28	2555.21	102495.00	105050.20	2510.00	88995.00	91505.00	1930.00	87495.00	89425.00
Total	1040.00	56912.35	57952.35	2555.21	102740.33	105295.54	2510.00	89212.68	91722.68	1930.00	87742.36	89672.36

Table A6: Extra budgetary utilisation by states

State wise off-budget borrowings utilisation in FY 20XX (Rs crore)							
State/Year	2016	2017	2018	2019	2020	2021	2022
Chhattisgarh	1955	631.17	801.35	694.26	325		
Goa				919.21			
Gujarat			0	0.00	0	0	0
Himachal Pradesh					0	0	0
Jharkhand					0	0	
Nagaland			0	0	0	0	0
Rajasthan	160.52	61.34	6.34	1.15	764.12	50.41	
Sikkim	0	0		504.4	245.6	278.64	
Telangana	3719				16077.04		
Uttar Pradesh						1637	
West Bengal						4311.79	

Note: The blanks indicate unavailability of the data

Table A7: List of Fiscal Responsibility Laws

Region	Fiscal responsibility law
Union	Fiscal Responsibility and Budget Management Act, 2003
Andhra Pradesh	Andhra Pradesh Fiscal Responsibility and Budget Management Act, 2005
Arunachal Pradesh	Arunachal Pradesh Fiscal Responsibility and Budget Management Act, 2006
Assam	Assam Fiscal Responsibility and Budget Management Act, 2005
Bihar	Bihar Fiscal Responsibility and Budget Management Act, 2006
Chhattisgarh	Chhattisgarh Fiscal Responsibility and Budget Management Act, 2005
Goa	Goa Fiscal Responsibility and Budget Management Act, 2006
Gujarat	Gujarat Fiscal Responsibility Act, 2005
Haryana	Haryana Fiscal Responsibility and Budget Management Act, 2005
Himachal Pradesh	Himachal Pradesh Fiscal Responsibility and Budget Management Act, 2005
Jharkhand	Jharkhand Fiscal Responsibility and Budget Management Act, 2007
Karnataka	Karnataka Fiscal Responsibility Act, 2002
Kerala	Kerala Fiscal Responsibility Act, 2003
Madhya Pradesh	Madhya Pradesh Fiscal Responsibility and Budget Management Act, 2005
Maharashtra	Maharashtra Fiscal Responsibility and Budgetary Management Act, 2005
Manipur	Manipur Fiscal Responsibility and Budget Management Act, 2005
Meghalaya	Meghalaya Fiscal Responsibility and Budget Management Act, 2006
Mizoram	Mizoram Fiscal Responsibility and Budget Management Act, 2006
Nagaland	Nagaland Fiscal Responsibility and Budget Management Act, 2005
Odisha	Orissa Fiscal Responsibility and Budget Management Act, 2005
Punjab	Punjab Fiscal Responsibility and Budget Management Act, 2003
Rajasthan	Rajasthan Fiscal Responsibility and Budget Management Act, 2005
Sikkim	Sikkim Fiscal Responsibility and Budget Management Act, 2010
Tamil Nadu	Tamil Nadu Fiscal Responsibility Act, 2003
Telangana	Telangana Fiscal Responsibility and Budget Management Act, 2005
Tripura	Tripura Fiscal Responsibility and Budget Management Act, 2005
Uttar Pradesh	Uttar Pradesh Fiscal Responsibility and Budget Management Act, 2004
Uttarakhand	Uttaranchal Fiscal Responsibility and Budget Management Act, 2005
West Bengal	West Bengal Fiscal Responsibility and Budget Management Act, 2010

Notes

[1] See table A1 in the Annex; PFM broadly refers to how governments manage public resources, and covers "a set of systems aimed at producing information, processes, and rules that support fiscal policymaking" (Andrews et al, 2014; Cangiano, Curristine, and Lazare, 2013).

[2] CAG audits of government accounts often takes more than a year after the accounts are published.

[3] CAG reports discrepancy in figures of State Finance Accounts of West Bengal and the financial statements of State Public Sector Enterprises (SPSEs). Difference in equity figures of 64 SPSEs to the extent of Rs. 384 crore and loan amounts of 53 SPSEs of Rs. 1,158 crore was found.

[4] As per CAG, very often, States misclassify revenue expenditure as capital expenditure. Uttar Pradesh, for example, understated revenue deficit by Rs. 86.57 crore in 2020-21 by misclassifying maintenance of vehicles, purchase of petrol, legal/consultancy fees, minor construction works, and computer purchase as capital expenditure, instead of revenue expenditure. Capital expenditure of purchase of vehicle was misclassified as revenue expenditure.

[5] For example, different States define debt differently in their Fiscal Responsibility Legislations (FRLs), which makes it difficult to compare reported debt figures across States.

[6] The DGI was launched to address the gaps that had been identified by the IMF & FSB (2009). It has now completed two phases (DGI-1 & DGI-2),

[7] Two illustrative examples of such misclassification are: (i) The Union classifying grants-in-aid disbursed to States under Article 275 (as per Finance Commission recommendations) as capital expenditure, despite the relevant Indian Government Accounting Standard (IGAS 2, on Accounting and Classification of Grants-in-aid) requiring them to be accounted as revenue expenditure (Ministry of Finance, 2011, para 9); (ii) classifying expenditure on routine maintenance of assets as capital expenditure, despite the Government Accounting Rules clearly specifying that the criteria for classifying an expenditure as capital expenditure is that it should be incurred for increasing concrete assets of a material or permanent character (Government Accounting Rules, 1990, rule 30(1)).

[8] One such case is explained in Box 1.

[9] See Table A2 in the Annex.

[10] See Table A3 in the Annex.

[11] The reply was offered by the Ministry of Finance to CAG in the context of non-disclosure of NHAI off-budget borrowings.

[12] Based on the SBEs of all the ministries, we have compiled the total extra budgetary spending of the central government from 2016 to 2021. Table A4 in the Annex shows the details of IEBR allocation from 2016 to 2021.

[13] See Table A5 in the Annex for a snippet from the original statement.

[14] See Table A6 in the Annex for year-on-year extra budgetary debt for some States.

[15] Kerala has not updated the total liabilities target in its FRL for years after 2019-20. Telangana and Karnataka have not updated their respective targets post-2014-15.

[16] The last debt-to-GSDP FRL target of Punjab was to bring down the ratio to 40% by 2006-07.

[17] For a list of FRLs, see table A7 in the Annex.

[18] Includes a separate definition of 'special purpose vehicles', as "*an organisation or institution set up by State Government to discharge specific assignments/duties within a specified period in respect of financial transactions or raising of loans from financial institutions or the market for specific purposes against State guarantees*". (Haryana FRBM Act, 2005, S. 2(l)). Rajasthan defines it as well: "*instruments*

set up for financing of investments through borrowings not routed through the annual budget of the Government of Rajasthan". (Rajasthan FRBM Act, 2005, S. 2(n)).

[19] Typically framed as, " *Whenever the State Government undertakes to unconditionally and substantially repay the principal amount and/or interest of any separate legal entity, it has to reflect such liability as the borrowings of the State.*" (Manipur FRBM Act, 2005, S. 9(3)).

[20] "off budget borrowings" means borrowings by the State Government or its Agencies which are not reflected in the Budget. (Punjab FRBM Act, 2003, S. 2(d)).

[21] "Off-Budget Borrowings" mean non-budgetary receipts that need to be serviced by way of interest and principal repayment directly from the budget and in which the liability is not contingent in nature. (Maharashtra FRBM Rules, 2006, rule 2(h)).

[22] "Off-budget borrowings" means borrowings by Public Sector Undertakings and Special Purpose Vehicles and other equivalent instruments where liability for repayment is on the State Government (Karnataka Fiscal Responsibility Rules, 2003, rule (2)(e)).

[23] Typically, either the Medium-Term Fiscal Plan or the Fiscal Policy Strategy Statement is required to include a "*... description of other activities, such as, ... activities of Public Sector Undertakings which have potential budgetary implications...*" (Tamil Nadu Fiscal Responsibility Act, 2003, S. 3(4)(c)). Since off-budget borrowing that is routed through Public Sector Undertakings has clear budgetary implications, this wording should be seen as inclusive of off-budget borrowing.

[24] Under its FRBM rules, Rajasthan requires its Fiscal Policy Strategy Statement to include sub-paragraph on 'Contingent and other liabilities', under which it is stated "*Any change in the policy related to special purpose vehicle (SPV) and other equivalent instruments where liability for repayment is on the State Government shall be indicated*" (Rajasthan FRBM rules, 2006, rule 4 read with Form F-2). While this is a direct reference to off-budget borrowings that are routed through Special Purpose Vehicles, the rules only require changes in off-budget borrowing policies to be disclosed, which falls short of a requirement to disclose all details pertaining to off-budget borrowing.

[25] These States are Haryana, Chhattisgarh, Meghalaya, Nagaland, Tripura, West Bengal, Bihar, Andhra Pradesh, and Telangana.

[26] See Table A2 in the Annex for Statement 27.

[27] This is constitutionally permissible because, even though public debt of the State forms part of the State List, an overarching central PFM law that mandates a uniform debt reporting structure across States would represent more of a procedural requirement, with States remaining free to make substantive decisions regarding their debt (like setting their own debt target under their respective FRL). In other words, a centrally mandated uniform debt reporting requirement would be about *how to* report debt (a procedural aspect), rather than *how much* debt can be undertaken (a substantive aspect).

[28] As per Finance Commission recommendations (India Const. arts. 270 & 280).

[29] This is implied by the power conferred by the Constitution upon the Union to regulate subnational borrowings under Article 293.

Sustainability and Threshold Value of Public Debt of Centre and All State Governments in India

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Abstract

This study examines the sustainability and the threshold level of public debt of the Centre and all State Governments in India, using the latest data from 1990-91 to 2020-21, and using statistical methods and threshold regression method. The results suggest that the current levels of public debt of both the Centre and all States are unsustainable, and the debt sustainability threshold is about 40% for the Centre and 22% for all States. There is a greater need for the Centre and all States to control their debt levels as they are currently growth reducing. The simulation exercises based on the debt dynamics suggest that the Indian economy (nominal GDP) should grow at 12%, and the fiscal deficit target should be 2% each for the Centre and all States from 2023-24 onwards, for the Centre to attain the debt sustainability target before 2027-28 and all States to do so in 2030-31. The relevant policy strategy for all governments is revenue augmentation and containing public expenditures, including unproductive subsidies.

Keywords: Sustainable Debt, Bohn Model, Penalized Spline, threshold model

JEL Codes: E52; E63; E65

Publication Date: 31 May 2023

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1. Introduction

Public debt sustainability is an important public policy issue for any national or sub-national government. The Government borrows when its revenues fall short of its expenditure commitments. The fiscal deficit in the budget reflects the net borrowing or debt of the Government. The public debt is the total debt (or liabilities) or accumulation of debt over the years. Many economists believe that debt is one way to raise money for development. Borrowing can enable the government to finance important development programs/projects (Hakura, 2020).

If a government productively employs its borrowings to finance social and infrastructure development projects, which can trigger economic growth and bring higher income in the future, it will be able to service its debt with such increased income. In such a case, the public debt is not at all an issue for the government. This is, in fact, true in many developed countries, with high debt-GDP ratios. For instance, as per the World Development Indicators of World Bank, the five year (2017-2021) average debt-GDP was 244.43% in Japan, 126.04% in Singapore, 117.87% in the USA, and 104.16% in France. These countries also have high tax-GDP ratios.

In other countries, the situation is entirely different. They find it difficult to service their debt obligations. If the government is able to meet all its current and future debt obligations without external financial assistance or going into default, the debt is considered as sustainable (IMF, 2011). Alternatively, if the debt growth over the period is less than the interest-growth differential, then the debt is not considered detrimental. Another definition is that the debt is sustainable if the current level of debt is not exceeding the present value of all future primary surpluses [1](Blanchard et al., 1991).

If the debt-GDP ratio exceeds certain prudent limits, it becomes unsustainable, and this will lead to an excessive burden of debt servicing for the future. Excessive debt (i.e., debt overhang) will lead to debt trap, which is bad for growth, development, and stability; it can negatively affect the capital stock accumulation and economic growth through higher long-term interest rates, higher distortionary tax rates, inflation, and a general constraint on countercyclical fiscal policies (Rugy and Salmon, 2020). In the worst case, it can lead to government default, which can cause the borrowing government to lose market access and suffer from higher cost of future borrowing.

Debt unsustainability is not a new phenomenon. Recent decades have also witnessed the debt crises of many economies: the East Asian Economic Crisis (1997-2001), the Russian Economic Crisis (1992-97), the Latin American Debt Crisis in Mexico, Brazil and Argentina (1994-2002), the Euro-Sovereign Debt crisis (2008 onwards), and the Global Financial crisis of 2008 (Srinivas, 2018) – with Sri Lanka and Pakistan being the latest examples.

The spread of the COVID-19 virus has caused recession in the world economy, and also pushed up the overall amount of debt worldwide to unprecedented levels (Kose et al., 2021). India is no exception to this trend. The recurring episodes of the pandemic and corresponding increased public spending, coupled with an output contraction in the post-pandemic period, has resulted in a surge in its public debt-GDP ratio.

According to the Economic Survey of India (2021-22), the Centre's debt relative to GDP would reach 60.2%, and all States' debt ratio would reach about 30% at the end of 2022-23. The New Fiscal Responsibility and Budget Management (FRBM) Review Committee suggested a 40% debt-GDP limit for the Central Government and 20% for all States together. Studies such as Srivastava et al., (2021) and Tiwari (2012) show that the combined debt of Central and State Governments in India today is unsustainable.

Against this backdrop, this study attempts to empirically analyse the debt sustainability conditions of the Centre and all States together in India from 1990-91 to 2020-21. The rest of this study proceeds as follows: Section 2 briefly reviews both theoretical and empirical studies on public debt sustainability; Section 3 discusses the trends in total outstanding liabilities of Centre and States over the years; Section 4 presents and discusses the empirical results of debt sustainability and debt threshold value; Section 5 provides a few simulation results using the debt dynamics of the Centre and all States, to find out when they will achieve the debt sustainability target; finally, Section 6 suggests policy strategies to control debt and achieve the sustainable level of debt in both, the Centre and all States.

2. A Brief Review of Literature

2.1 Theoretical Literature

Conceptually, debt sustainability is a situation where the debt does not accumulate at a rate considerably exceeding the government's capacity to service it (IMF, 2011). On the theoretical front, there are three schools of thoughts on debt/deficit financing in the literature: (i) Classical or Ricardian Equivalence theorem, (ii) Keynesian theorem, and (iii) Neo-classical theorem.

The Ricardian Equivalence theorem argues that the fiscal deficit does not matter except for smoothing the adjustment to expenditure or revenue shocks. Given that households are forward-looking, they will realize that they need to pay higher taxes in the future so that their total tax burden remains unchanged. As a result, they will reduce their consumption and increase savings to meet their future tax burden. This view rests on the inter-temporal budget constraint of the government and on the permanent income hypothesis.[2]

The Keynesian theorem envisages that deficit financing can boost aggregate demand and thereby stimulate economic growth. That is, an increase in government spending financed by borrowing would cause the output to expand through a multiplier process; financing of this kind predominantly implies a re-allocation of resources from taxpayers to bond-holders. Hence, this is beneficial for the economy.

The neo-classical view considers that deficit financing will adversely affect the economy as the component of revenue deficit in the fiscal deficit implies Government dis-saving, which – if not offset by the corresponding increase in private savings – will pull down the overall savings, exerting pressure on the interest rates, which will eventually distort the rate of growth.

Thus, there is no consensus among economists on whether deficit financing is good, bad, or neutral (Rangarajan and Srivastava, 2005). It needs to be resolved empirically, i.e., it is necessary to examine whether public debt is beneficial or not – and if beneficial, then up to what level? However, on the empirical front also, there is no universal agreement on how public debt sustainability can be assessed (Akhmadev et al., 2018).

2.2 Literature on Empirical Approaches

(i) Traditional Domar Approach: Traditional studies employed the Domar (1944) stability condition: "As long as the real economic growth (g) is greater than the real interest rate (r), the Government can have a positive primary deficit, such that its debt will not rise, and so the debt is sustainable". This debt dynamic equation is given as:

$$d_t = p_t + d_{t-1}\left[\frac{(1+r)}{(1+g)}\right] = f_t + d_{t-1}\left[\frac{1}{(1+g)}\right] \qquad (1) \text{ where:}$$

- d_t is the debt-GDP ratio at year t,
- p_t is the primary balance relative to GDP, and
- f_t is the fiscal deficit-GDP ratio.

When the primary deficit is zero and r=g, the debt-GDP ratio remains constant; if r>g, the debt-GDP ratio will rise and is unsustainable.

This approach was extended later by considering the inter-temporal budget constraint (IBC) of the Government (i.e., outstanding debt today must be equal to the current value of future primary surpluses) and also additional indicators (growth, liquidity, creditworthiness, fiscal burden, fiscal space, etc.) and renamed as "Indicator approach" (Blanchard et al., 1991; Pattnaik et al., 2003).[3] However, this approach was criticized as it applied the condition on a year-to-year basis, and didn't validate whether IBC of the Government was satisfied or not.

(ii) Modern Time Series Approach: This approach on debt sustainability utilizes statistical/econometric tests. The pioneer of this approach was the seminal work of Hamilton and Flavin (1986). It introduced the unit root test (using the popular Augmented Dickey-Fuller Test) to check whether the public debt series (in the US) was stationary or not (i.e., whether the series of public debt contains a bubble term), which was later widely adopted to examine the mean reversal process of debt series (Feve and Henin, 2000; Makrydakis et al., 1999; Uctum and Wickens, 2000). Uctum, Thurston, and Uctum (2006) used the unit root test to check debt sustainability in G7 countries and selected Latin American and Asian countries, and found that the debt was sustainable only in G7 countries.

Trehan and Walsh (1991) employed another test to analyse whether a quasi-difference of public debt [$(D_t - \nu D_{t-1})$ with $0 \leq \nu < 1 + r$, where r is the interest rate] is stationary, and whether

public debt and primary surpluses (S_t) are cointegrated. If the public debt is quasi-difference stationary and public debt and primary surpluses are co-integrated (or alternatively, if total expenditure and revenue receipts are co-integrated), then the public debt is sustainable (Greiner and Fincke, 2009).[4] The co-integration approach gained popularity as a test for debt sustainability, and was greatly accepted in literature (Quintos, 1995; Martin, 2000; Goyal et al., 2004; Lusinyan and Thornton, 2009; Gabriel and Sangduan, 2011).

Despite their wider applicability, the time series approaches were criticised because:

    i.   the unit root test is very sensitive to structural breaks, and the results could be misleading when structural breaks are present (Uctum et al., 2006);

    ii.   rejecting a unit root in real debt or in the debt-to-GDP ratio is a very difficult task, and

    iii.   the IBC may well be satisfied even if the components of the budget are not co-integrated, and even if debts or deficits, revenues, or spending are differencing stationary (Bohn, 2007).

(iii) Bohn's Model-Based Approach: In order to overcome some of the drawbacks of time series approaches, Bohn (1995) constructed a general equilibrium model with a stochastic version of IBC. Following this stochastic framework, he formulated a model-based approach in 1998 to test whether the primary surplus-GDP ratio (s_t) is positive and, at least, a linearly rising function of the debt-GDP ratio (d_t) as:

$$s_t = \alpha + \psi\, d_t + \varepsilon_t \qquad\qquad (2)$$

Where:

- s_t is the primary surplus-GDP ratio in year t
- d_t is the debt-GDP ratio in year t
- ε is the random error, and
- α and ψ are parameters to be estimated.

A positive and statistically significant value of ψ indicates that debt is sustainable, i.e., the initial stock of debt is equal to the sum of the present discounted values of the primary surpluses.

Later, Bohn (1998) utilized the Barro (1979) tax-smoothening hypothesis, according to which public deficits should be used in order to keep tax rates constant, which in turn minimizes the excess burden of taxation. Hence, normal expenditure can be financed by regular revenues, and deficits will be incurred only as a result of financing unexpected spending. Based on this, he derived the following fiscal rule or reaction function:

$$s_t = \alpha + \psi\, d_t + \phi_1 yvar_t + \phi_2 gvar_t + \varepsilon_t \qquad\qquad (3)$$

Where, in addition to the terms in (2) above:

- *yvar* accounts for fluctuations in revenues, and reflects the deviation of real GDP from its trend, computed using the Hodrick-Prescott (HP) filter -- positive values indicate booms, and negative values indicate recessions. [5]

- *gvar* reflects the deviation of real primary spending from its normal value -- positive values indicate expenditures above the normal level, and negative values indicate expenditures below the normal level (Greiner and Fincke, 2009). [6]

This model received great attention in the literature because of its intuitiveness (*i.e.,* if Governments run into debt today, they would have to take corrective actions in the future by increasing the primary surplus) and robust statistical properties (the positive response of primary surplus to public debt implies a mean reverting process).[7] It was later extended by researchers by adding other determinants of primary balance, incorporating unobserved heterogeneity factors using panel data structures, and specifying non-linearity and time-varying coefficients in the model.

In the non-linear context, the Bohn model (for usual time series data) can be re-written as:

$$s_t = \alpha + \psi_t \, d_{t-1} + \phi_1 yvar_t + \phi_2 gvar_t + \varepsilon_t \qquad (4)$$

In (4), the reaction coefficient ψ_t is time-varying. Mathematically, any non-linear model can be approximated by a linear model with time-varying coefficients.

This approximation holds good under certain smoothness assumptions. Empirical estimations using these linear approximations employ the popular penalized spline (p-spline) method.[8] The functional forms or smoothness can be shaped by deviation on individual points (i.e., changing points which are termed as knots). To avoid the endogeneity issues, Greiner and Fincke (2009) replaced d_t with d_{t-1}.

(iv) Debt Sustainability Threshold Model: Ghosh et al. (2013) introduced the concept of 'fiscal fatigue'. It happens when public debt achieves some threshold, and departs from this threshold value when the primary balance does not adjust to debt. Therefore, it is essential to test for the responsiveness of primary balance to lagged levels of debt (relative to GDP) in different regimes, using the threshold regression method. The threshold model allows coefficients of region-varying variable(s) to differ across regions. Those regions are identified by a threshold variable being above or below a certain value. It uses the conditional least squares method to estimate the parameters of the model. The threshold value is estimated by minimizing the SSR obtained for all alternate thresholds.[9]

Later, some authors argued that higher debt amounts may lead to higher growth or welfare, if the debt amounts are invested in development projects (Ghosh, 1998; Greiner and Fincke, 2015). They suggest testing whether the public debt is growth-inducing or not, using either a threshold regression method or an estimation quadratic model, where the dependent variable is real growth and independent variables are debt-GDP ratio and its squared term, or spline method (Greiner and Fincke, 2009).

2.3 Empirical Studies

Some empirical studies have used the above approaches to verify whether the public debt is sustainable or not in various countries. For instances, Kaur et al., (2014) used the indicator approach to verify the debt sustainability of Indian states; Hakkio and Rush (1991) and Jha and Sharma (2004) analysed the sustainability by verifying the cointegrating relationship between public revenue and expenditure.

Abiad and Ostry (2005) employed the extended version of the Bohn model to test the debt sustainability of 31 emerging market countries from 1990 to 2002. Greiner and Kauermann (2008) used the p-spline method and found that debt is sustainable in Germany and not in Italy. Griener and Fincke (2009) used the Bohn framework and p-spline technique to analyse the debt sustainability issue of the USA and 6 Euro countries (Austria, France, Germany, Italy, The Netherlands, Portugal) and 6 developing countries (Botswana, Costa Rica, Mauritius, Panama, Rwanda, and Tunisia). The debt was sustainable in the USA and 5 Euro countries, the exception being France. In the developing countries, debt was sustainable in only Botswana and Rwanda.

Tiwari (2012) used the Bohn framework and spline methodology and found that debt is unsustainable in India from 1970 to 2009. Shanmugam and Renjith (2021) used panel version of Bohn framework and p-spline technique to test the debt sustainability of 20 Indian states. Lixin (2019) employed the threshold estimation and found that from 1985 to 2015, China's public and external debt were both sustainable.

Srivastava et al., (2021) estimate the sustainability threshold for the general government debt-GDP ratio for India using a threshold regression, in which the primary balance-GDP ratio (s_t) is the dependent variable, and is related to the lagged debt-GDP ratio (region-varying variable) and other determinants of s_t (region-invariant variables). It shows a 59.3% threshold level for India. Since the debt-GDP exceeded this level, the debt was unsustainable.

Shanmugam and Shanmugam (2022) show that the sustainable debt threshold limit for Tamil Nadu state is 18.36%. Afonso (2005), Neck and Sturm (2008), Fincke and Greiner (2011) and D'Erosmo et al., (2016) further provide a review of empirical studies.

Studies examining the debt-growth relationship at the international, national, and sub-national levels provide four alternative conclusions on the effect of debt on economic growth:

    i.   growth is independent of debt (e.g., Paniza and Presbitero, 2014),

    ii.   growth is a positive function of debt (e.g., Fincke and Greiner, 2015),

    iii.   growth is a negative function of debt (e.g., Hussain et al., 2015), and

    iv.   the relationship between public debt and economic growth is positive when the debt level is low; if the debt exceeds the sustainability threshold, the relationship is negative (Kumar and Woo, 2010; Megarsa, 2015).That is, the relationship is non-linear (Reinhart and Rogoff, 2010). The advantage of this last approach is that it is useful for computing the threshold level of public debt. [10]

In the Indian context, the debt-growth relation was studied by many researchers mainly under two schools: the orthodox school (Rakshit, 2000; Patnaik, 2001) and the Keynesian school (Buiter and Patel, 1992; Lahiri and Kannan, 2002). Studies such as Bal and Rath (2014) and Manik and Khan (2018) assessed the debt-growth relation in the Indian context for different time periods, with no uniformity in their results.

3. Trends in Public Debt of Centre and All States Together in India

India is a federal country with a central government and many state governments. The Indian Constitution assigns different borrowing powers to central and state governments. The central government debt comprises domestic debt and external debt.[11] The public account liabilities are also considered as central debt, which includes the national small savings funds (NSSF), provident funds, reserve funds of railways, post, and telecommunication, etc.

State governments are allowed to borrow only from the domestic market, and to raise loans and advances from the central government. They have no power to raise loans outside India except loans for externally-aided projects intermediated by the central government.[12] The public account debt of the state includes small savings, provident funds, reserve funds, deposits bearing interest, deposits not bearing interest, etc.

The outstanding liabilities (or debt) of the central government was Rs. 3,14,558 crore in 1990-91, and increased to Rs. 6,75,676 crore in 1996-97. It further increased to Rs. 19,94,421 crore in 2004-05, Rs. 62,42,519 crore in 2014-15, and further to Rs. 120,79,018 crore in 2020-21.[13] In 1990-91, all States' debt was Rs. 1,10,289 crore; it increased to Rs. 2,81,207 crore in 1996-97, Rs. 10,14,065 crore in 2004-05, and further to Rs. 27,03,759 crore in 2014-15. In 2020-21, it reached Rs. 61,49,126 crore.

The debt-GDP ratio (using 2011-12 series GDP) of the Centre declined from 54.60% in 1990-91 to 48.44% in 1996-97, but the debt-GDP of all States increased marginally from 19.14% to 20.16% (Figure 1). Government finances have deteriorated since the mid-1990s in India due to reform-induced loses in revenues from customs and excise duties, poor tax performance and low tax buoyancy, and increased government spending, particularly due to implementation of the recommendations of the Fifth Pay Commission. As a result, the debt-GDP ratio of the Centre started increasing continuously, reaching a peak of 62.59% in 2005-06, and that of States to 32.34% in 2003-04.

Figure 1: Outstanding Liabilities to GDP of Centre and All States (1990-91 to 2020-21)
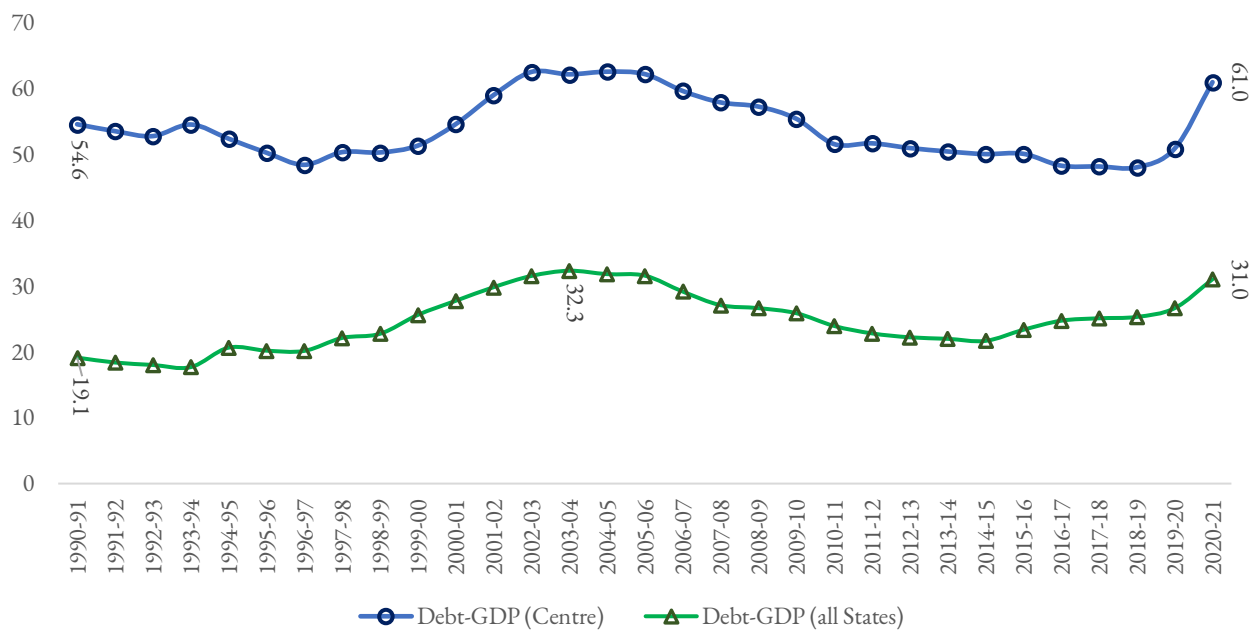
Thereafter, both started to decline continuously due to various fiscal measures, notably including the implementation of the FRBM Act in 2003 by the Government of India and subsequently by all State Governments (starting from Karnataka in 2002 to Sikkim in 2010). The Centre's debt-GDP ratio declined to 50.07%, and States' to 21.69% in 2014-15. The Centre's debt-GDP ratio continued to decline to 48.06% in 2018-19, while the States' continued to increase to 25.33%. The COVID-19 pandemic created further trouble, with these ratios rising further to 61.00% and 31.05% respectively in 2020-21 (Figure 1).

The interest burden of the Centre relative to GDP increased from 3.77% in 1990-91 to 4.44% in 2003-04. At the same time, the States' interest-GDP ratio increased from 1.51% to 2.90%. After that they declined to 3.08% and 1.69% respectively in 2018-19; however, they increased to 3.43% and 1.99% in 2020-21(Figure 2). The path of interest-to-GDP ratio changes clearly indicates that it increased (decreased) whenever the debt-GDP ratio increased (decreased), in the case of both the centre and all states.

The trends in revenue receipts and total expenditures (primary expenditure+ interest payment) relative to GDP of centre and states together, as shown in Figure 3, explain the movement of debt-GDP ratio of the centre and states over the years.

- The gap between the total expenditures-GDP ratio and the revenue receipts-GDP ratio of Centre was larger from 1996-97 to 2003-04. This was the period when the debt-GDP ratio started increasing continuously.

- After that, the gap declined till 2007-08, before starting to increase again. During this period, the debt-GDP ratio of the Centre decreased continuously.

- The gap between revenues and total expenditure increased in 2019-20 and again significantly in 2020-21 due to the pandemic.

- For all states, a more or less similar trend exists.

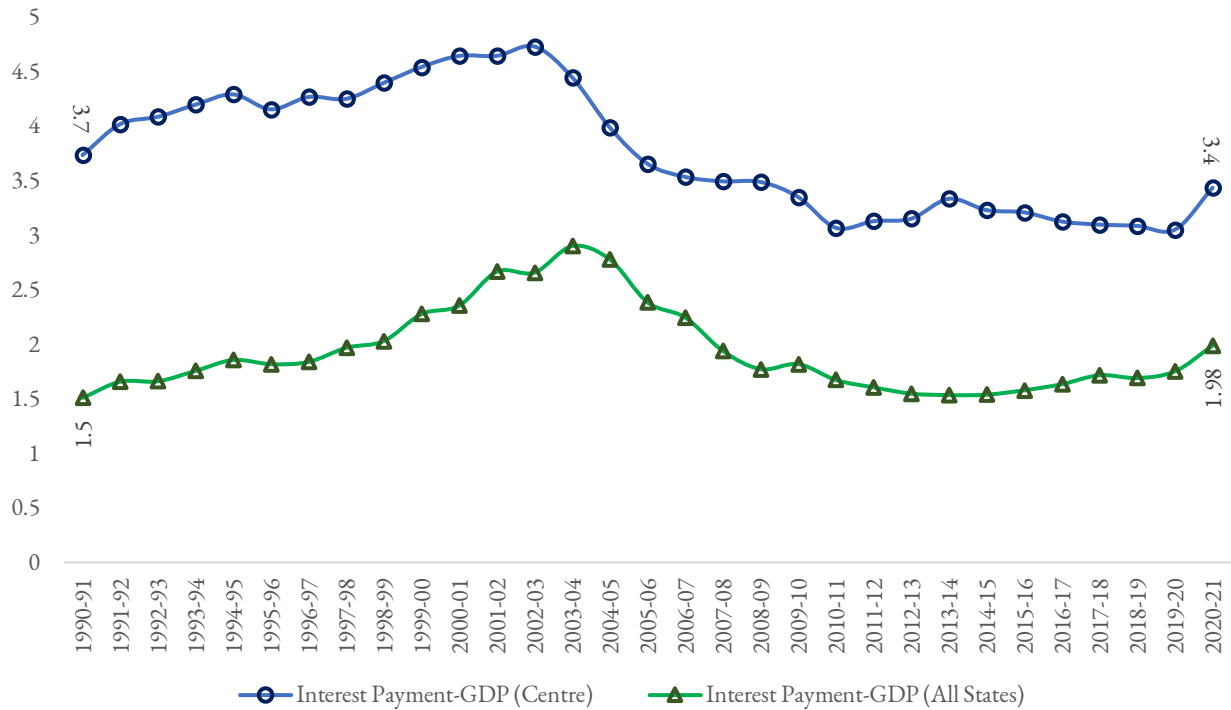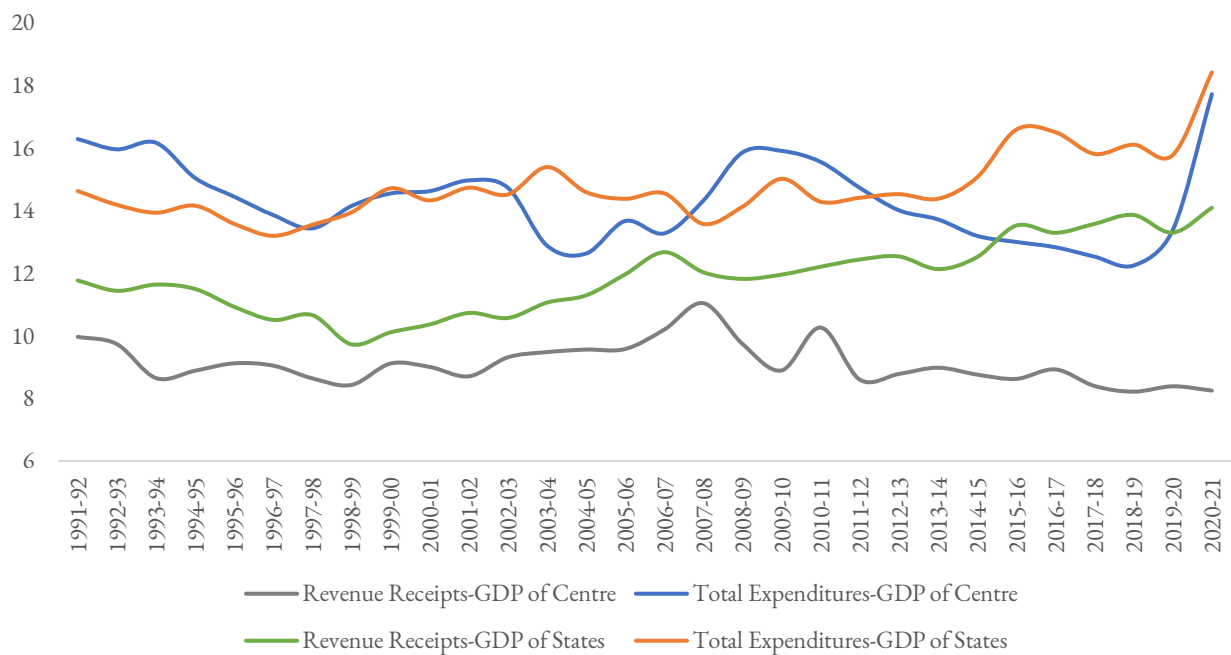**Figure 2: Interest-GDP Ratio of Centre and All States (1990-91 to 2020-21)**

Figure 3: Revenue Receipts and Total Expenditures Relative to GDP: Centre and All States (1991-92 to 2020-21)

4. Empirical Analyses of Debt Sustainability and Debt Threshold

(i) *Unit Root Test*: The simplest modern statistical test on debt sustainability is to check whether the debt-GDP series is stationary or not. Table 1 reports the Augmented Dicky-Fuller (ADF) test results. The debt-GDP ratios of both the centre and all states have unit root, i.e., both are not stationary, indicating that the public debt of the centre and all states in India is unsustainable.

Table 1: Stationary (ADF) Test Results for Debt-GDP Ratio (1991-92 to 2020-21)

Augmented Dickey-Fuller Test Statistics	Centre		All States	
	t-statistics	Prob*	t-statistics	Prob*
	-2.1598	0.2244	-2.8950	0.0607
Test Critical Values	1% level	-3.689		-3.738
	5% level	-2.972		-2.992
	10% level	-2.625		-2.636

*Mackinnon (1996) one-sided p-values

(ii) *Co-integration Test*: It examines whether the government revenues and total expenditures relative to GDP are co-integrated or not. It basically examines whether they move together such that the resultant of their relationship produces a stationary series (Hamilton and Flavin, 1986). Table 2 indicates that these two series for the centre are not co-integrated at 5% level of significance. Two series for all States are also not co-integrated. These results imply that the debt is not sustainable in the case of both the centre and all states.

Table 2: Results of Johansen's Cointegration (Rank) Test*

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**
(i) Centre				
None	0.2924	12.1851	15.4947	0.1483
Atmost 1	0.0854	2.4995	3.8415	0.1139
(ii) States together				
t-statistics	0.3258	11.3796	15.4947	0.1892
t-statistics	0.0121	0.3409	3.8415	0.5593

Trace test indicates no cointegration at the 0.05 level for the centre and all states; * Max test also provides similar results (not reported).

** Mackinnon (1996) p-values.

(iii) *Bohn Model-Based Non-linear Test*: As discussed in Section 2 (equation 4) above, this test is basically to test whether the primary surplus-GDP ratio (s_t) is positive and, at least, a linearly rising

function of the debt-GDP ratio (d_{t-1}). Table 2 presents the penalized spline estimation results of both the central and state governments. As expected, the parameter of business cycle variable *yvar* is positive and significant, and that of *gvar* is negative and significant at 1% level of significance, indicating that the GDP above its normal value has increased the primary surplus, while the primary spending above its normal value has reduced the primary surplus of Indian states. In the case of the centre, *yvar* is positive and *gvar* is negative as expected, but only the parameter of *gvar* is statistically significant at 5% level.

As expected, the parameter associated with the lagged debt-GDP ratio is positive in both cases, but it is not statistically significant at 5% level, implying that the public debt is unsustainable in both the centre and states. Thus, all the three modern statistical tests confirm that the public debt of both central and state governments in India is not sustainable. This result deserves policy intervention.

Table 3: p-spline Estimation Results of Debt Sustainability Equation for Central and States Governments in India

(Dependent variable: Primary Deficit to GDP%, s_t)

Variables	Notation	Central Govt Co-efficient (t-value)	All States Govt Co-efficient (t-value)
(1)	(2)	(4)	(5)
Intercept	$\hat{\alpha}$	-3.6150 (-2.445)	-1.483 (-0.805)
Lagged Debt-GDP	d^c_{t-1}	0.0238 (1.735)	-
ratio (%)	d^s_{t-1}		0.0238 (0.690)
Real GDP gap	$yvar_t$	0.00001 (1.514)	0.00001 (3.596)
Real Primary	$gvar^c_t$	-0.00001 (-5.372)	
Expenditure Gap	$gvar^s_t$		-0.00001 (-3.903)
edf (ref. edf)		1.500	6.539
F [p-value]		9.680 [0.027]	6.237[0.000]
R-sq.(adj)		0.758	0.773
GCV		0.490	0.173
DW Statistics		1.870	1.837
N		30	30

(iv) *Debt Sustainability Threshold*: Table 4 presents threshold regression results, in which the lagged debt-GDP ratio (d_{t-1}) is the threshold variable. This model considers a single threshold, dividing the sample into two regimes or regions. It considers that the behaviour of the primary deficit relative to GDP may change if the debt-GDP ratio crosses a certain threshold.

The sustainable debt-GDP threshold for Centre is 48.44%, which is higher than the 40% norm given by the new FRBM Review Committee for the Centre. It is noted that the current level of debt of the Centre is about 61% of GDP. This is significantly higher than the threshold level. It is observed from Table 4 that when debt-GDP of the Centre increased by one unit, the primary balance increased by about 3.2 units in region 1 (where the debt level was below the threshold) and by 0.03 unit in

region 2 (where the debt exceeded the threshold). However, parameters associated with this variable in both regions are not significant. *yvar* and *gvar* are regime-invariant variables in this model. As expected, they have positive and negative coefficients respectively, and both effects are significant.

Table 4: Threshold Regression Results for Centre and States (1991-92 to 2020-21)

Dependent Variable: Primary Deficit to GDP % (s_t)

Threshold Variable: Lagged Debt-GDP ratio % (d_{t-1})

Variables	Notation	Centre Govt		States Govt	
		Coefficient	t-stat.	Coefficient	t-stat.
Region 1		$d_{t-1} < 48.4419$		$d_{t-1} < 21.999$	
Lagged Debt-GDP ratio	d_{t-1}	3.2835	0.912	0.1537	3.464
Constant	$\hat{\alpha}$	-161.225	-0.929	-	-
Region 2		$48.4419 \leq d_{t-1}$		$21.999 \leq d_{t-1}$	
Lagged Debt-GDP ratio	d_{t-1}	0.0361	1.307	0.1073	3.387
Constant	$\hat{\alpha}$	-2.7936	-1.853	-	-
Region Invariant Variables					
Real GDP gap	yvar	0.000002	3.576	0.000001	3.400
Real Primary Expenditure Gap	gvar	-0.00001	-4.764	-0.00001	-4.589
Constant	$\hat{\alpha}$	-	-	-3.8523	-4.568
Sum Squared Resid.	SSR	9.312		6.449	
Akaike Info Criterion	AIC	2.068		1.634	
R Square	R^2	0.8094		0.5629	
Durbin-Watson Statistics	d stat	1.764		1.666	

In the case of all states, the sustainable debt-GDP threshold is 21.99%, which is slightly higher than the 20% norm given by the new FRBM Review Committee. The current level of debt-GDP of the States is about 31%. This is significantly higher than the threshold level. It may trigger suitable responses by policymakers to reduce the primary deficit-GDP ratio if the debt-GDP ratio crosses the prudent norm of 22% (in our case).

In Table 4, when debt-GDP of the States increased by one unit, the primary balance increased by 0.15 unit in region 1 (where the debt level was below the threshold) and by about 0.11 unit in region 2 (where the debt exceeded the threshold). As expected, *yvar* and *gvar* have similar effects as in Table 3.

(v) Debt-Growth Relationship and Debt Threshold: To examine the impact of debt-GDP ratio on (real) growth of the economy, the growth rate (in percentage terms) is regressed on debt-GDP and its squared term. This non-linear form is useful to find out the debt threshold, wherein a value up to this debt-GDP ratio is growth-inducing, and beyond which it is not.

Table 5 depicts the non-linear relation between growth and debt-GDP ratios for both the centre and all states from 1991-92 to 2020-21. The debt-GDP coefficient is positive, while its squared term's coefficient is negative in both cases.

The threshold level is computed using the formula: threshold = Coefficient of Debt-GDP / 2 x Coefficient of Debt-GDP^2 = 0.3467/ (2 x 0.0044) = 39.4% for the Centre, which is closer to the debt sustainability threshold value of 40% given by the new FRBM committee.

For the States the threshold value is = 0.5573/(2 x 0.0126) = 22.12%, which is nearly equal to the debt sustainability threshold value of 21.99% given in the threshold regression model in Table 4.

Table 5: Non-Linear Relation Between Growth and Debt-GDP: Centre and States

(Dependent variable: Real GDP Growth)

Variables	Central Govt Coefficient	Central Govt t-statistics	States Govt Coefficient	States Govt t-statistics
Debt-GDP	0.3467	3.063	0.5573	4.007
Debt-GDP Square	-0.0044	-2.136	-0.0126	-2.419
Intercept	0.0000	0.000	0.0000	0.000
R Square				
Debt Threshold	39.4		22.12	

5. Simulation Models: Examining the Period of Attaining the Debt Threshold Target

The above analyses clearly indicate that the current levels of debt of the centre and all states are unsustainable, and that they are significantly higher than the debt sustainability threshold level of 40 (≈39.4)% and 22% respectively. These are growth-reducing levels of public debt. There is a need to cut down the debt ratio by about one-third in both cases. This section examines whether the Centre and all States will attain the sustainable level of debt or not, and if so, when they will they reach these thresholds?

For this purpose, it employs the following debt dynamic equation given in (1) above:

$$d_t = f_t + d_{t-1}\left[\frac{1}{(1+g)}\right]$$

In this equation, the debt-GDP ratio (d_t) at the end of a fiscal year depends on

    i.   fiscal deficit-GDP ratio (f_t),

    ii.   previous year debt-GDP ratio (d_{t-1}), and

    iii. nominal growth rate (g_t).

Subtracting d_{t-1} on both sides, we get:

$$d_t - d_{t-1} = f_t + d_{t-1}\left[\frac{1}{(1+g)}\right] - d_{t-1} = f_t - d_{t-1}\left[\frac{g}{(1+g)}\right] \tag{5}$$

The left side is the change in debt-debt ratio between two successive years (i.e., between year t and previous year t-1). Using this standard debt dynamic formula, we simulate debt-GDP level in future period, given assumptions on f_t, g_t, and previous year debt (d_{t-1}). With different assumptions on these three components, when will the centre and all states achieve the sustainable level of debt?

The following initial values of debt to GDP, fiscal deficit, and nominal growth of Indian economy from the recent RBI and MOSPI documents are used:

For the centre:
  i.   debt to GDP ratio for 2020-21: 61%;
  ii.   fiscal deficit for 2021-22: 6.9%.
For all states:
  i.   debt-GDP for 2020-21: 31.1%;
  ii.   fiscal deficit for 2021-22: 3.7%.

For both: nominal growth for 2020-21: -1.3646% and for 2021-22: 19.51%.

In fact, the average real GDP growth was 6.31% during 2016-17 to 2019-20, 6.41% during 2011-12 to 2019-20 and 6.8% during 2004-05 to 2019-20 (Table 6). From 2004-05 to 2010-11, the average rate was 7.29% and from 2009-10 to 2016-17 it was 7.14%. Thus, the recent trend indicates 6 to 7% average (real) growth of the Indian economy.

Assuming an inflation of 4%, the nominal growth will be 10-11%. Given the global scenario, it is difficult to push beyond 12%. While both the central and all state governments gave up on compliance in recent years, the FRBM norm of 3% fiscal deficit level for the Centre and 3% for all States can be assumed.

Table 6: Average Annual GDP (Real) Growth in India

Period	2017-18 to 2020-21	2016-17 to 2020-21	2016-17 to 2019-20	2011-12 to 2019-20	2004-05 to 2019-20	2004-05 to 2010-11	2009-10 to 2016-17
GDP Growth	2.60	3.73	6.31	6.41	6.80	7.29	7.14

In exercise 1, the nominal annual growth rate is assumed to be 10% from 2022-23 onwards, and the fiscal deficit is assumed at 3% each for centre and also for all states from 2022-23 onwards. The centre's debt-GDP ratio will continuously decline, and reach the sustainability threshold level of 40% in 2034-35 (i.e., after 13 years). [14] All states' debt-GDP ratio, however, will start increasing and will marginally increase every year even after 2074-75, i.e., even after 53 years with 10% growth (Figure 4). In fact, it will stabilize from 2090-91 at 33% (not shown). Figure 4 also shows that the centre's Debt-GDP ratio will reach the threshold level in 2031-31 with 11% growth, and in 2029-30 with 12% growth.

Figure 4: Simulation Results of Debt-GDP Ratio of centre and all states (Exercise 1)
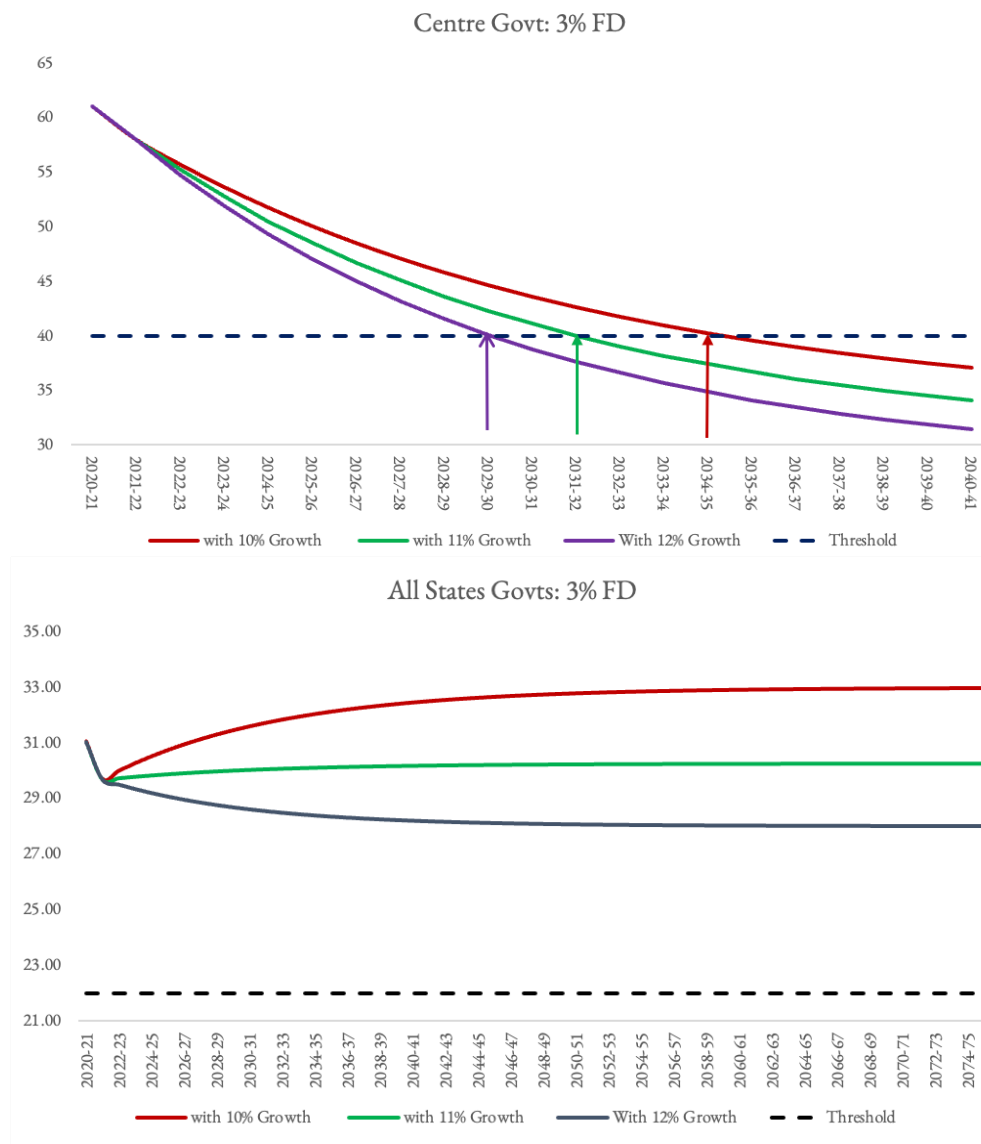
In exercise 2, three alternative growth rates are assumed, but 2.5% fiscal deficit each for centre and all states is assumed. The centre's debt-GDP ratio will reach the target level in 2030-31 with 10% nominal growth, in 2029-30 with 11% nominal growth, and in 2028-29 with 12% growth (Figure 5). All states' debt-GDP ratio starts declining, but till 2074-75 it will not reach the threshold level in these three alternative growth scenarios.

Figure 5: Simulation Results of Debt-GDP Ratio of centre and all states (Exercise 2)
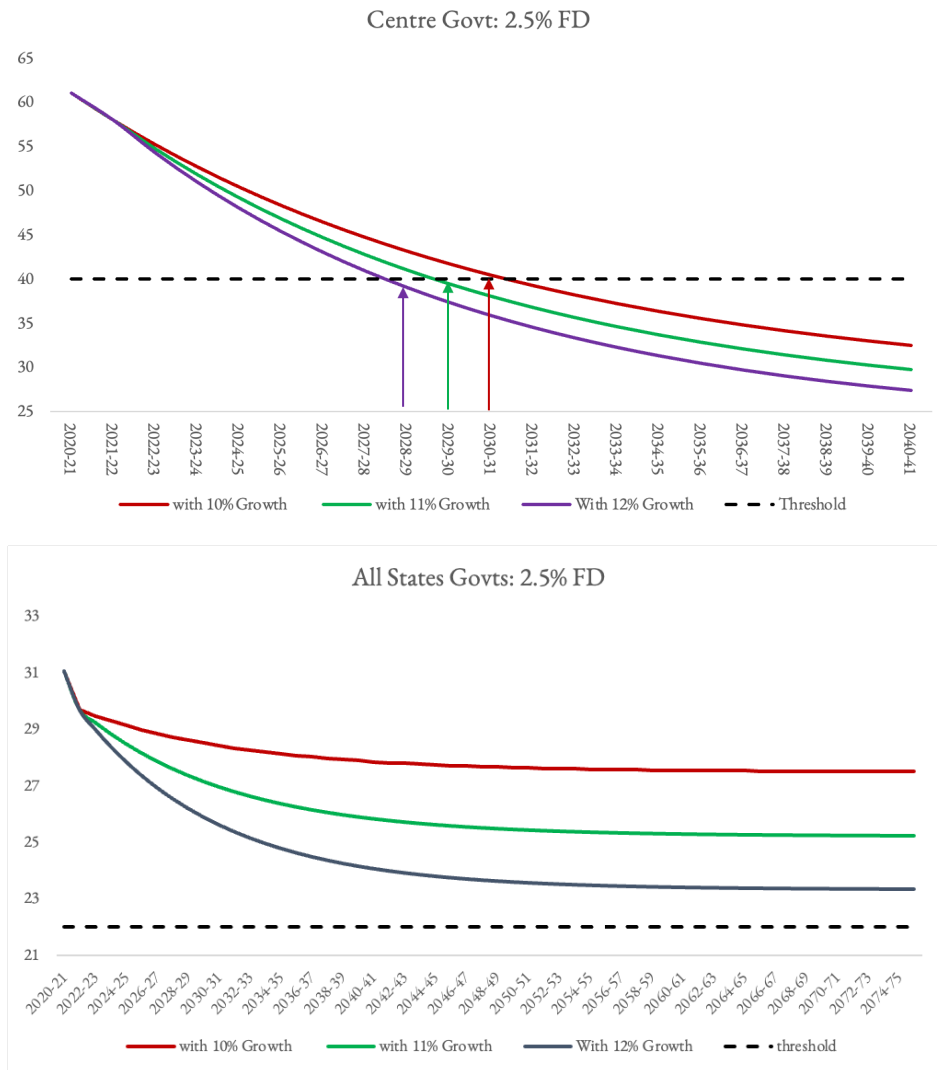
In exercise 3, 2% fiscal deficit is assumed for the centre as well as for all states. The centre's debt-GDP ratio will reach the target level before 2029-30 with 10% growth, before 2028-29 with 11% growth, and before 2027-28 with 12% growth (Figure 6). All states' debt-GDP ratio will achieve the target level of 22% in 2031-32 with 12% growth, 2035-36 with 11% growth, and around 2050-51 with 10% growth.

Figure 6: Simulation Results of Debt-GDP Ratio of centre and all states (Exercise 3)
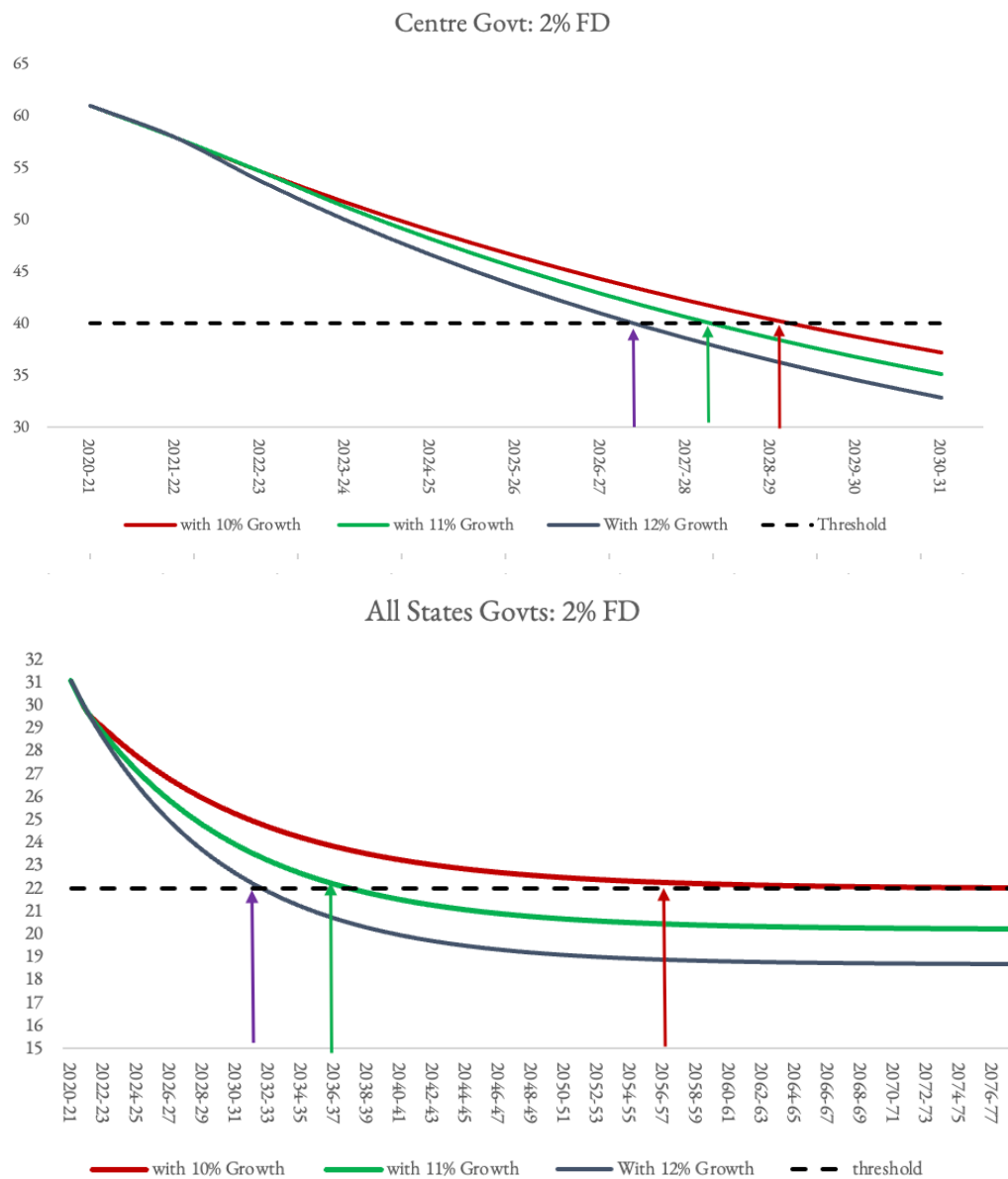
Therefore, by targeting at least 12% nominal growth and 2% fiscal level, the centre will achieve its sustainable threshold debt level before 2027-28, and all states will do so around 2030-31. In order to use the fiscal deficit for investment purposes, both the centre and all states should target a revenue surplus from 2022-23 onwards.

6. Strategies to Control Debt and Reach the Sustainable Level

The results of the study suggest the following policy viewpoints:

(i) Our analysis clearly indicates that the sustainability threshold level of debt is about 40% for the Centre and 22% for all States. Beyond these levels, debt is growth-reducing. Maintaining a sustainable

level of debt will be growth-inducing, which will help the country to increase its own revenues further, if they are buoyant;

(ii) The reduction of debt-GDP ratio will automatically reduce the interest relative to GDP for both the Centre and all States. This will obviously further improve the fiscal status of the country, as this saving can be spent on growth-inducing investments.

(iii) The country should aim to attain 12% or above nominal growth rate to create buoyancy in tax revenues and additional resources to control the debt level. This requires critical analysis of component (or sector) wise GDP, and clear short term and long-term growth-inducing strategies/interventions on high-weightage components to sustain growth at a higher level. Increasing the share of manufacturing in the total GDP, strengthening the contribution of services sector, increasing export share, and attracting more FDI will help the country to grow faster. It is also noticed that India's economic performance depends on world economy. The global environment for trade is becoming increasingly a matter of concern. Many international agencies including OECD also forecast a secular slowdown in growth in developed countries. Environmental considerations can also act as a dampener on the growth path, even of developing countries.

(iv) Apart from aiming for higher growth, debt sustainability is possible only if the fiscal deficit is brought down to 2% of GDP from 2023-24 onwards for the centre as well as for all states. Therefore, the appropriate policy strategy is revenue augmentation and/or containing (wasteful) expenditures, including unproductive subsidies, by both the centre and states. Fiscal stability is critical for sustained growth. Since the tax-GDP ratio of our country is about half of developed countries' tax-GDP ratio, there is a greater scope to increase revenues by increasing rates of all taxes. Otherwise, major reforms are required to increase the tax base so as to increase the tax-GDP ratio. As many states are providing various subsidies and freebies, they need to restructure their subsidies to avoid wasteful expenses.

(v) Considering the fact that the Public Sector Undertakings are already fiscally stressed, which could have been one of the reasons for higher level of debt, it is absolutely necessary to restructure their finances so that the debt sustainably is achieved.

We hope that this study is useful to policymakers, and other stakeholders to understand the debt dynamic, in both the centre and all states at aggregate level in India, and take appropriate policy strategies to attain and maintain debt sustainability, so that the economy can grow faster and fiscal stability is maintained.

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NOTES

[1] Primary deficit is the excess government spending (GE), excluding the interest payment, over the receipts (R) of government. If GE is less than R, then there is a primary surplus.

[2] The first principle of public finance states that public debt must be sustainable in the sense that outstanding debt today must be equal to the present value of Government's future surpluses. The second principle states that the households do not base their consumption on current income but on permanent income so that they will not raise consumption as long as their income increases temporarily.

[3] The IBC is $d_t^* = \sum_{j=1}^{\infty} \frac{1}{(1+r)^j} E_t [s_{t+j}]$, where $d_t^* = (1 + r_t). d_{t-1}$ is the stock of the debt-output ratio in the beginning of period t, $E_t [.]$ denotes the expectation operator conditional on the information available at time t, and s_t is the primary surplus-GDP ratio. The IBC of the Government requires that the present value of public debt asymptotically converges to zero, and the interest rate r is resorted to in order to discount the stream of public debt, and this plays an important role.

[4] If total expenditures and revenues establish long run relationship, then they are co-integrated. Since the deviation between these components leads to deficit and debt, the co-integration between total expenditure and revenues is in general consistent with the co-integration between primary balance and public debt.

[5] The Hodrick-Prescott (HP) filter is a data smoothing technique. It removes short-term fluctuations associated with the business cycle. Removal of these short-term fluctuations reveals the long term trend.

[6] *yvar* and *gvar* are business cycle variables accounting for fluctuations in GDP and primary spending respectively. They are considered as the other determinants of primary surplus.

[7] Because higher debt ratios lead to an increase in the primary surplus relative to GDP, making the debt ratio decline and return to its mean.

[8] This allows to estimate the reaction coefficient ψ_t in equation (4) as a function of time showing how that coefficient evolves over time. Suppose we specify s_t which depends on d_t and other variables in a flexible non-parametric form: $s_t = \alpha + f_1(d_t) + f_2(yvar_t) + f_3(gvar_t) + \varepsilon_t$; where *f(n=1,2,3...)* are considered smooth non-parametric functions which are kept unspecified and estimated from the data. For estimation purposes, this procedure, however, uses the following parametric form: $f(d_t) = d_t \beta_d + Z(d_t)\gamma$; where Z is a high-dimensional basis in d (for instance a cubic spline basis) and γ is a corresponding coefficient. This high dimensionality restricts the use of OLS. So, one can impose an additional penalty term on γ, shrinking its value to 0. One can also obtain an estimate by minimizing the penalized OLS criteria:$\sum\{s_t - d_t\beta_d - Z(d_t)\gamma\}^2 + \theta\gamma^T P\gamma$; where θ is smoothing the penalty parameter and $\gamma^T P\gamma$ is the penalty. The penalty prevents over fitting.

[9] In the threshold model. The threshold variable may be one of the region-varying variables or a region-invariant variable. If the dependent variable is a function of its own lags, the model is called threshold auto-regression model (TAR). If the lagged dependent variable is used as the threshold variable, the model

becomes self-exciting threshold model (SETAR). The thresholds are estimated sequentially as follows. Let $\gamma_1^*,...,\gamma_m^*$ represent the m thresholds. The first threshold (γ_1^*) is estimated assuming a model with two regions. Conditional of the first threshold, the second threshold is estimated as the value that yields the minimum sum of squared errors (RSS) over all observations in that model excluding the first threshold. The estimator of the second threshold γ_2^* is obtained by minimizing the least squared of the regression with three regions conditional on the first estimated threshold. In general, the ith threshold minimizes the RSS conditional on the i-1 estimated thresholds.

[10] The threshold level of debt is obtained from the regression: Growth rate= α+β debt-GSDP +γ debt-GSDP^2 or from threshold regression model.

[11] Domestic debt of Centre includes market loans-dated securities, floating rate debt, inflation index bonds, treasury bills, 14-day intermediate treasury bills, cash management bills, securities issued to international financial institutions, market stabilization scheme, compensation and other bonds, securities against small savings etc. The external debt is from multilateral agencies like Asian Development Bank etc.

[12] The internal debt of state Government consists of market loans, loans from Financial Institutions like commercial banks, NABARD, LIC, NCDC etc. (mostly project funding), ways and advances from RBI (and overdraft), special securities issued to NSSF etc. The loans and advances comprise non-plan loans, loans for state/union territory plan schemes, loans for central plan schemes, loans for centrally sponsored schemes, loans for special schemes and other loans.

[13] The data sources for the study are: (i) For all fiscal variables, Indian Public Finance Statistics till 2015-16 and RBI from 2016-17 onwards; and (ii) GDP data from MOSPI (NAS).

[14] Assuming 4% fiscal deficit, the Centre's debt-GDP will not reach the threshold even after 100 years with 10% nominal growth, but will reach the threshold in 2072-73 with 11% growth and in 2038-39 with 12% growth.

Unlocking India's Potential in Industrial Revolution 4.0:
National Innovation System, Demography, and Inclusive Development

Nagesh Kumar[*][#]

Abstract

Abstract: Industrial Revolution 4.0 (IR4.0) has many opportunities and important challenges for developing countries such as India. This article takes stock of India's opportunities in harnessing IR4.0 for inclusive development, and the challenges that the revolution presents before the country. It argues that with India's extant capabilities in ICT software development, a youthful demography, and skill development potential, the country can be at the centre of IR4.0 -- becoming the world's skill or talent capital, besides leveraging the potential of the new technologies for closing development gaps. It also summarizes some policy lessons for tapping the potential of India in IR4.0; these include, among others, the need to quickly transform the educational system to make it fit-for-purpose for the digital revolution, step up enterprise-level innovative activity, facilitate the adoption of relevant technologies by MSMEs, closing the digital divide, and evolving a new architecture for social protection designed to protect displaced workers, as well as gig economy workers.

Keywords: Innovation, Industrial Revolution 4.0, Inclusive development, demography, skill development

Publication Date: 31 May 2023

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# Earlier versions of the paper have been presented at the Kautilya Economic Conclave, organized by the Institute of Economic Growth and the Ministry of Finance, Government of India, in New Delhi, on 8-10 July 2022, and at the Session on India' National Innovation System and Sustainable Development at the Science Summit at the 77th Session of the UN General Assembly held on 15 September 2022 and benefitted from the discussions as well as from comments of Suma Athreye, Rajat Panwar, Satyaki Roy, and Sanjaya Malik. The author alone is responsible for errors, omissions, and/or views expressed.

1. Introduction

The rise of new technologies such as artificial intelligence (AI), blockchain, cloud computing, big data analytics, machine learning (ML), internet of things (IoT), 3-D printing -- collectively referred to as Industrial Revolution 4.0 (IR4.0) -- presents a lot of opportunities as well as important challenges for developing countries such as India.[1] Hence, they are attracting the attention of policymakers across the world.

Some of the defining features of IR4.0 technologies, sometimes also called the digital revolution, include their widespread applications across the fields of agriculture, industry, and services. They could bring hugely disruptive consequences, including extensive job losses and potential restructuring of value chains, and hence could shape a new international division of labour. But they also have a very substantial potential for inclusive development and societal transformation, and if leveraged well can have a profound development impact.

Furthermore, IR4.0 is highly driven by skills. Hence, smaller and nimble organizations have an advantage in developing applications. This is the key reason for the success of start-ups in tapping the potential of IR4.0.

Finally, one challenge arises from the speed of their evolution. Unlike the previous industrial revolutions, IR4.0 is evolving and advancing rapidly. For instance, the global market size of the new technologies was expected to rise to $3.2 trillion in 2025 from $350 billion in 2018 (UNCTAD 2021). Another study has simulated that AI alone could add around $13 trillion (or 16%) to global output by 2030 (McKinsey Global Institute 2018).

The COVID-19 pandemic, which has affected a number of economic activities adversely, has actually helped to boost the digital transformation. The rapid evolution of IR4.0 technologies, almost on a real-time basis, leaves little time for developing countries to develop capabilities and adopt them. The first movers in the technology also enjoy a big advantage, as latecomers face huge entry barriers. Countries like India, therefore, need to move very fast to tap their potential if they wish to not be left behind.

As the Information and Communication Technology (ICT) Revolution (or IR3) morphs into IR4.0, this article takes a stock of the opportunities that India has in harnessing IR4.0 for inclusive development, and the challenges that the revolution presents before the country. It argues that, with India's extant capabilities in ICT software development, a youthful demography, and skill development potential, the country can be at the centre of IR4.0 and become the world's skill capital, besides leveraging the potential of the new technologies for closing its own development gaps. It also summarizes some policy lessons for tapping the potential of India in IR4.0.

2. India's IR4.0 readiness and relative strengths

Assessments by the United Nations and other international organizations corroborate India's considerable potential in the digital economy, readiness, and other strengths, as summarized below.

Relatively high level of readiness vis-à-vis the level of economic development: India, was found to be the 'greatest outperformer' in terms of the frontier technology readiness index, with a rank of 43, which was 65 positions higher than its rank according to per capita incomes (UNCTAD 2021:26) (Table 1). India has been classified among the countries with high levels of 'Opportunities' but low levels of 'Skills', in terms of IR4.0 indicators of readiness, along with a number of much richer countries such as China, Thailand, and Mexico (UNCTAD 2022:18) (Figure 1).

Another assessment, the Asia-Pacific AI Readiness Index 2021, put India 3rd in business readiness, 6th in consumer readiness, and 7th in government readiness (Salesforce 2022). Similarly, a Brookings paper put India among top 10 countries in terms of having a robust technology and research platform, and substantial public/private investments for AI preparedness (Fatima et al. 2022) (Figure 2).

Table 1: Readiness toward the use, adoption and adaptation of frontier technologies (Rankings)

Country	Total	ICT	Skills	R&D	Industry	Finance
Top 10						
United States of America	1	14	17	2	20	2
Switzerland	2	7	13	13	3	3
United Kingdom	3	17	12	6	11	14
Sweden	4	1	7	16	15	16
Singapore	5	4	9	18	4	18
Netherlands	6	6	10	15	8	23
Korea, Republic of	7	19	27	3	9	8
Ireland	8	24	6	21	1	87
Germany	9	23	16	5	10	39
Denmark	10	2	4	25	21	5
Selected Transition and Developing Countries						
China	25	99	96	1	7	6
Russian Federation	27	39	28	11	66	45
Brazil	41	73	53	17	42	60
India	43	93	108	4	28	76
South Africa	54	69	84	39	71	13

Source: UNCTAD (2021)

Figure 1: Indicators of readiness to benefit from Industry 4.0
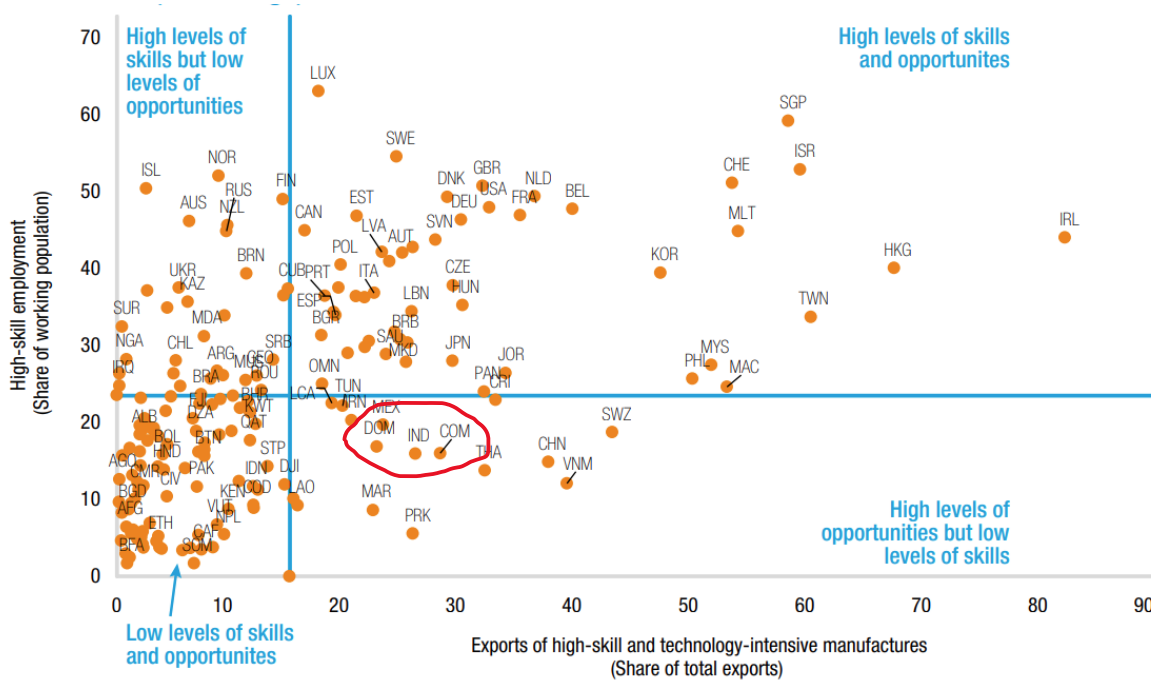
Source: UNCTAD (2022).

Figure 2: AI Preparedness in terms of Technology and Investments
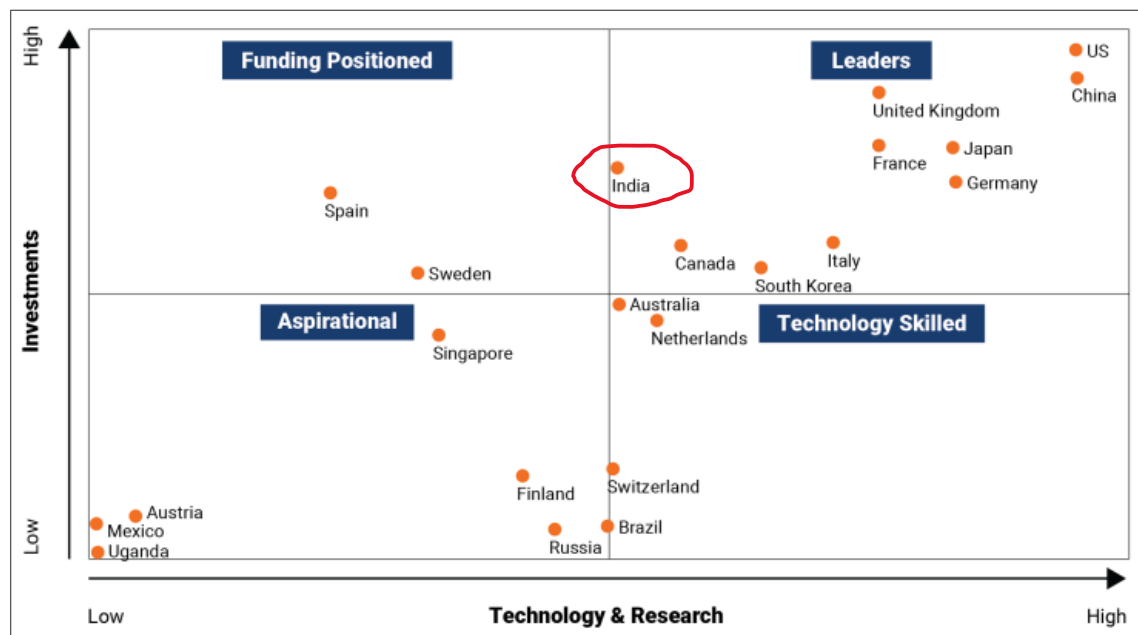
Source: Brookings (2022)

Leadership in ICT and BPO capabilities: One of India's advantages is its ICT software services and business process outsourcing capabilities, which resulted in exports of nearly US$150 billion in 2021. Since its introduction, India has retained the top slot globally in Kearney's Global Services Location Index (GSLI). The software development capabilities provide an important base for upgrading into AI/ML, among other IR4.0 technologies. **India** was put at 17th place in the digital-resonance

ranking.[2] NASSCOM (2022a) puts India at a score of 2.45 (enthusiast) out of a 4-stage AI maturity model.

The Skills and Demographic Advantage: India has a relatively large skills base. India produces over 2.7 million graduates annually, of which nearly 32% are in Science, Technology, Engineering and Mathematics (STEM) -- the types of skills needed for IR4.0 technologies (Figure 3). A McKinsey study puts India (along with Italy and Malaysia) among economies with moderate foundations, noting that the country produces around 1.7 million STEM graduates a year -- more than the total STEM graduates produced by all G-7 countries (McKinsey Global Institute 2018).

NASSCOM (2022a) finds that India was emerging as one of the biggest talent hubs for AI, with a burgeoning number of STEM graduates and digital natives. The abundance of skilled manpower has helped India to attract 40+ Global Capability Centres (GCC) focussed on AI/ML established by multinational enterprises (MNEs). The NASSCOM Survey also found that the rapid growth of AI applications has led to a surge in hiring of AI professionals, resulting in a talent demand-supply gap with a shortage of 200,000 professionals in 2021 (ibid: 31). India can rapidly expand the supply of skilled personnel, due to the demographic sweet spot in which it finds itself.

Figure 3: Key Producers of STEM Graduates
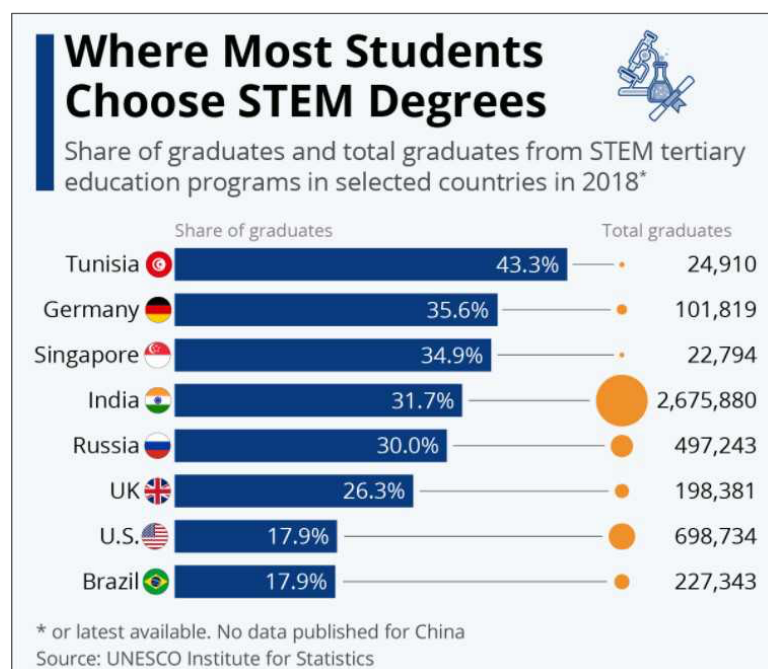
Source: Scoonews (2020)

India's large population base, combined with a relatively low dependency ratio, provides the country with the potential to expand the skills base needed for IR4.0. Unlike the already aged or rapidly-ageing societies of European countries, Japan, China, and the Republic of Korea, India is among the few countries where the proportion of working-age population would be rising in the coming decades (Figure 4).

Furthermore, with the large population base passing through a youth bulge in its demographic transition, India would have the largest workforce globally (Figure 5). The favourable demographic window or the demographic dividend that would continue to be available to India for the next couple of decades provides the country with a huge potential to emerge as the key provider of skills globally, beyond providing for its own needs for harnessing IR4.0. This would, however, require substantial investments in skill development, as discussed later.

Figure 4: Changing proportions of Working Age Population, 2020-2060

Source: World Economic Forum, https://www.weforum.org/agenda/2020/02/ageing-global-population
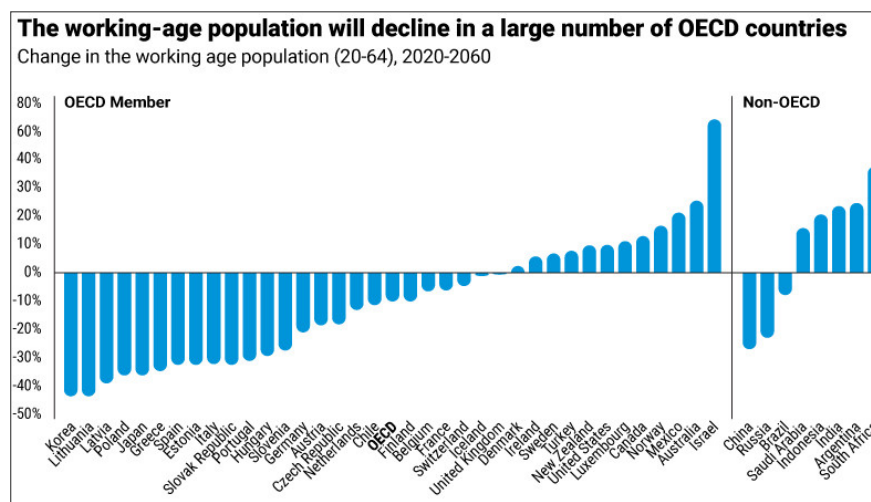
Figure 5: Demographic Transition in India
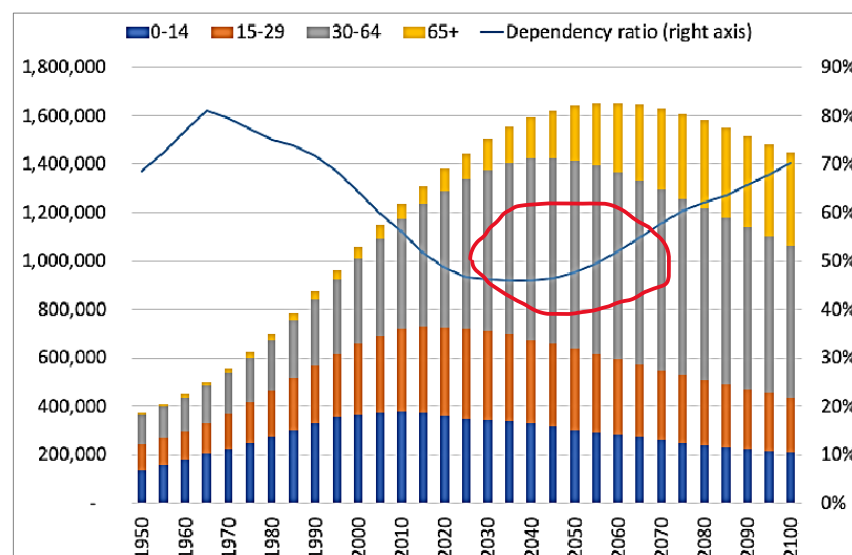
Source: UNCT-India Calculations based on UN_DESA (2019).

Vibrant Start-Ups Ecosystem: Given the skill-intensive nature of IR4.0, start-ups with their flexible and nimble organizational structures enjoy an edge over larger organizations riddled with bureaucracy. Many of these start-ups are later acquired by larger corporations, which are better equipped to leverage the revenue productivity of their innovations. India has over the past few years developed a very

vibrant ecosystem covering incubators, infrastructure, and venture capital, facilitated by the Start-Up India Mission of the Indian Government launched in 2016. This ecosystem, considered the third-largest globally after the US and China, has helped establish over 75,000 start-ups recognized by DPIIT, of which over 100 have become unicorns with a valuation over $1 billion (Invest India 2022).

3. IR 4.0 and India's Industrial Transformation

India's development trajectory has moved from an agriculture-dominated economy to a services-dominated economy, bypassing the industrial sector (especially manufacturing). While services sector has grown rapidly, it has failed to create jobs in a commensurate manner, leaving agriculture to sustain nearly 45% of the workforce.

Realizing the criticality of the manufacturing sector for creating an adequate number of productive jobs, India is now seeking to harness its potential through the Make-in-India programme. A number of steps have been taken to boost the manufacturing sector, including the production-linked incentives (PLI) scheme announced as a part of the *Aatamnirbhar Bharat* package, announced by the Government to revive the economy in the aftermath of the Covid pandemic.

IR4.0 could play an important role in the success of the industrial transformation strategies of India. This is because global competitiveness is a key factor for success in manufacturing in an open economy context. IR4.0 is emerging as the key driver of manufacturing productivity and competitiveness. The convergence of ICT with Operational Technologies (OT) creates new possibilities for efficient process controls, as well as more efficient product designs, customization, delivery and logistics.

IR4.0 technologies can substantially boost labour productivity, and reduce defect rates and delivery cycle times through real-time management, production optimization, personnel management, data-driven decision making and predictive maintenance, all part of 'smart factories'. IR4.0 technologies could also accelerate the circular economy and green transition of the industry through expanding opportunities for material saving, energy efficiency, waste reduction, and waste recycling possibilities.

Therefore, the adoption of IR4.0 technologies could be a game-changer for productivity and competitiveness in the manufacturing sector. However, the landscape of IR4.0 adoption by Indian industry is highly uneven. There are islands of excellence, for instance, Tata Steel's Kalinganagar plant was nominated by the World Economic Forum (WEF) as a member of the Global Lighthouse Network (GLN), in recognition of its excellence in the adoption of IR4.0 technologies in 2019. In 2021, another Indian company Renew Power joined the GLN, followed by Tata Steel's Jamshedpur facility as well as Hindustan Unilever's Dapada (Dadra and Nagar Haveli) factory joining the league in 2022, out of some 100 plants worldwide.[3]

A NASSCOM (2022a) study finds that starting from a low base, AI investments in India are growing at a CAGR of 30.8%. The potential value added from AI use on India's GDP by 2025 was estimated to be of the order of US$ 450-500 billion. As much as 60% of AI-led value addition is expected from consumer goods & retail, banking, financial services & insurance, energy & industrials, automotive manufacturing, and health care. NASSCOM also finds that a unit increase in AI intensity can increase the total factor productivity growth by 0.05%.

While larger companies are gradually gearing up to tap the potential of IR4.0 technologies for productivity enhancements of their operations, there is a serious risk of MSMEs getting left behind. Given the fact that MSMEs form the backbone of Indian industry, employing 111 million people, their inability to harness the productivity-enhancing potential of IR4.0 technologies threatens to marginalize them further and aggravate the inequalities (ISID 2021a). This is a serious challenge requiring policy attention from both the government and industry.

4. IR4.0 and Inclusive Development and Societal Transformation

IR4.0 technologies can be very helpful for societal transformation and inclusive development. This potential is of particular relevance for India. As India celebrates the 75th Anniversary of its Independence in 2022, there are many achievements in socio-economic development, yet some development gaps also persist. The inequalities of opportunities or basic amenities, such as drinking water, sanitation, education, health, and electricity, along rural-urban, rich-poor, or gender lines continue to persist, although remarkable improvements have been made in recent years in closing these gaps (Kumar 2022). In recent years India has also tried to exploit the potential of the digital revolution or IR4.0 technologies for closing these gaps and fostering inclusive development.

To harness digital technology for societal transformation and inclusive development, the Indian Government adopted a comprehensive **Digital India** programme in 2015, covering 9 goals and 30 digital themes implemented by multiple ministries, that are expected to create a digital economy of between US$800 billion to $1 trillion by 2025. This will be roughly 18-23 % of India's GDP (India, Meity 2019). These 9 broad goals, which are aligned with the Sustainable Development Goals (SDGs), are summarized below:

- IT Infrastructure: universal broadband coverage and software capabilities for the future
- E-Governance: digital identity, Government Electronic Marketplace (GeM), digital land records, digital urban governance, direct benefit transfers (DBT)
- Healthcare for all: digital health records, COVID management app, public health insurance, health delivery
- Education: Digital education platform, content delivery, and learning
- Energy for all: digitally-enabled access, smart grid, renewables

- Financial services: UPI digital payments interface, flow-based lending, and credit underwriting
- Agriculture/ doubling farmers income: crop insurance pay-outs, e-NAM
- Manufacturing: e-enabled trade, Open Network for Digital Commerce (ONDC), shared platforms for transportation, integrated logistics, manufacturing automation and IOT-based advanced analytics, electronics and semiconductor manufacturing
- Jobs and skills: skill-building, online talent marketplaces, digitally-enabled jobs

The digital ecosystem is guided by creating presence-less, paper-less, cash-less, data-driven service delivery by linking them through open standards and interfaces collectively referred to as India Stack.[4] Some of the highly visible and successful platforms include:

- *Aadhar* the digital identity for nearly 1.3 billion people, covering 99% of India's population, which has also served as an identity marker for 410 million Jan Dhan bank accounts facilitating direct benefit transfers (DBT) helping to save resources and avoiding leakages;
- Government e-Marketplace (GeM), the government e-procurement system launched in 2017 linking more than 4 million suppliers including MSMEs and women entrepreneurs;
- the highly successful Covid and vaccine management app, COWIN, besides public health delivery and insurance under *Ayushman Bharat*;
- UPI, a highly successful mobile app based digital payments interface that accounts for over 60% of all digital transactions in the country;
- a digital platform TReDS to facilitate MSMEs by financing their receivables;
- National Agriculture Market or e-NAM, an online trading platform for agricultural commodities in India, that can be used by farmers, traders and buyers;
- the upcoming Open Network for Digital Commerce (ONDC) that could provide an e-Commerce platform for MSMEs.
- There is also an Application Programming Interfaces (APIs) Setu to build interoperable digital platforms for seamless governance delivery.[5]

The Indian Government has also drawn up an ambitious manufacturing programme for electronics and semiconductors under the Semiconductor Mission, with a budget of US$ 10 billion. Five proposals, with a projected investment of over $20 billion, have been lined up for the manufacture of microchips in the country as a part of the Mission.[6] There is also Skill India mission for skill development programmes.

It has been argued that digital empowerment can redefine the education system, transform the agriculture ecosystem, and health care, and drive the productivity of MSMEs to the levels of big companies (Zainulbhai 2022; Sawhney 2021).

Indian start-ups are also helping to exploit the potential of the digital revolution for inclusive development. Several of them are active in financial inclusion, edtech, and health care, among others. Some of them have also started exporting software. For instance, the Postman API Platform, developed by an Indian start-up, is used by more than 17 million developers and 500,000 companies, including 98% of Fortune 500 companies.[7]

To sum up therefore, IR4.0 technologies can be helpful in enhancing inclusivity of the access to public services including in rural areas. However, they cannot substitute for the public (or private) investments required for closing the gaps in physical and social infrastructure, such as roads, hospitals, and schools. Therefore, there is no room for complacency and public (and private) investments should continue to receive the same priority as before.

5. Threats and Potentially Disruptive Consequences

Like previous industrial revolutions, IR4.0 also has potentially disruptive consequences; one needs to be aware of these, and take steps to minimize their incidence. The challenges in the case of IR4.0 include widespread risk of job losses as machines begin to displace workers, new forms of work, widening of inequalities within and between countries, and possible restructuring of global value chains to the disadvantage of developing countries like India.

Employment effects and new forms of work: IR4.0 is likely to lead to creative destruction, with the loss of some jobs and the creation of others. There is a lively debate about the extent of possible job losses (see for instance, Autor and Solomons, 2018; Acemoglu and Restrepo 2020). There have been some studies, including those by OECD, that have found that up to 50% of jobs in 32 industrialized countries are vulnerable to substitution with automation.[8]

A Forrester (2022) study finds that as many as 69% of India's jobs are under threat from automation by 2040. This observation is based on perception surveys; it may appear to be alarming, but it refers to potential threats. The actual incidence may depend on a number of factors. There are others that suggest a more moderate level of vulnerability. For instance, a survey conducted by the World Economic Forum (2018) suggests a decline of 0.98 million jobs and a gain of 1.74 million jobs. A McKinsey (2018) study based on extensive simulations has found that although AI adoption is likely to displace 18% of workers, it would also help to gain 17% more jobs on account of gains from augmentation (+5%), innovation and redeployment (+10%), reinvestment (+1%) and global flows (+1%), leaving the net effect on employment to be just -1%.

Therefore, the new technology may not lead to huge job losses in net terms, but it will create different types of jobs, and will therefore lead to a lot of restructuring of labour markets. The labour demand will rebalance from unskilled workers in favour of highly skilled workers. The impact is likely to unfold gradually, as the adoption of the new technology speeds up.

While job losses in net terms may not be substantial, it is clear that a large segment of workers are threatened to lose their jobs, especially those involved in semi-skilled and repetitive jobs. Policymakers will need to address the challenge of rehabilitating and redeploying these workers, with alternate work and reskilling. Social protection frameworks in the country will also need to be strengthened, to smoothen the transition from one job to another after reskilling.

Also, digital technologies are leading to new forms of work that are different from traditional employer-employee-based contracts, including the so-called gig economy or online platform workers. Gig economy workers work as partners of the platform and earn directly from its customers, for instance, as Uber drivers or Urban Company technicians.

The number of workers that are part of the gig economy is rising rapidly. According to ILO, India accounts for 8% of platforms globally, making it the second largest in the world after the US (Uma Rani 2021). Already 7.7 million people are working on these platforms in India, and their number is expected to rise to 24 million by 2029-30 (NITI Aayog 2022). As they are not employees, they do not have a social security cover usually provided by the employers. Hence, they are highly vulnerable to the shocks that may affect their business (as the Covid pandemic did). This creates new challenges for policymakers, to create new forms of social protection for this class of workers.

Widening inequalities within and between countries: As observed earlier, new technologies are becoming an important source of widening inequalities within and between countries. IR4.0 tends to accentuate the inequalities created by the digital and skill divides (UNESCAP 2018). Within the country, inequalities are rising due to the premium commanded by professionals trained in IR4.0 technologies, while semi-skilled workers face threats of job losses. Also, the rise of technology entrepreneurship tapping IR4.0 is creating a new breed of billionaires, with the country having over 100 unicorns, of which as many as 22 were minted just within the first half of 2022 (Invest India 2022). Meanwhile, gig economy workers not having a social security cover remain vulnerable to shocks, as during the Covid-19 lockdowns.

Inter-country inequalities are also likely to widen, with leaders and early adopters of technology racing ahead to exploit the potential, and other countries lagging further behind. The digital revolution benefits early movers in a very disproportionate manner. As a result, the pioneers of new technologies have deeply entrenched themselves in their respective markets, forming near-monopolies. The five big tech companies, namely Apple, Microsoft, (Google parent) Alphabet Inc., Amazon.com Inc., and (Facebook parent) Meta Platforms Inc., all headquartered in the US, collectively added more than $2.45 trillion in their market valuation in 2021 alone![9] The galloping valuations of these companies are reflective of the market power of their pioneering innovations in the digital economy.

Never in history have a handful of companies wielded so much market power and concentration of economic power. This market power becomes a formidable entry barrier for new entrants. This is leading to a trend of techno-nationalism. China, for instance, does not allow the American big tech

companies in its territory, to facilitate entry of Chinese companies. Other countries are also trying to restrict the operations of Chinese telecom equipment manufacturers, fearing security concerns.

Reshoring of Global Value-chains and new international division of labour

One of the big concerns arising from the evolution of IR4.0 relates to the possible restructuring of global value chains. In the past, global value chains (GVCs) were outsourced to developing countries, to leverage labour cost differences among other locational factors.[10] Robotization of production tends to neutralize the labour cost advantage enjoyed by developing countries. Furthermore, many products can be produced by 3-D printing anywhere.

On the other hand, with the digital revolution, services can be delivered from anywhere. Hence, Baldwin (2019) has argued that manufacturing may become non-tradeable, while services could become more tradeable due to IR4.0. The reshoring of global value chains is, therefore, a real possibility, and can affect the export prospects of developing countries.

Dachs and Seric (2019) observed stagnation in the growth of offshoring since 2010, but found that reshoring or back-shoring was not yet a common trend -- limited to only 4% of all manufacturing firms in Europe. Ferrantino and Koten (2019) observe that IR4.0 technologies have an uncertain effect on GVCs. They may reduce the length of supply chains by encouraging reshoring or nearshoring of manufacturing production. On the other hand, they may strengthen GVCs by reducing coordination and matching costs. Besides robotization, the trend of nearshoring has been accentuated by other factors, such as the US government's support for domestic manufacturing and sourcing, the EU's Carbon Border Tax (Knizek et al 2022).

Therefore, IR4.0 technologies may lead to the reorganization of global manufacturing, reshoring of outsourced production back to home countries, and thus diminishing the role of developing countries in the international division of labour. The COVID-19 pandemic has exacerbated this trend; though the overall impact is not yet apparent in a big measure, it is likely to shape up gradually (Panwar et al 2022).

In India's case, the impact of the reshoring may be limited, given the fact that the country has not yet been integrated too deeply with the GVCs (outside a few product categories, such as pharmaceuticals and textiles). But it may affect the prospects of future integration with GVCs and attracting outsourced production that India is eying with its current emphasis on strengthening the manufacturing sector. In the short run, a more important factor driving the reorganization of GVCs may be the strategies of MNEs to diversify their sourcing strategies on a China+1 basis, which India can well take advantage of.

6. National Innovation System for Tapping the Potential

Tapping the potential of the new digital revolution, covering an entire spectrum of economic and social activities, would require extensive preparations by all different stakeholders of the national innovation system, including the government, business enterprises, educational and research institutions, and society at large. While a number of initiatives have been taken by the Indian Government, a larger action agenda is needed for exploiting the potential. Such an agenda for action is outlined below.

Making skill-generation activities fit-for-purpose: The availability of skills is a critical ingredient for success in IR4.0. India needs to completely revamp the educational system to produce the type of skills that are needed. India's excellence in the ICT software and business process outsourcing industry owes its success to the creation of infrastructure for producing computer software professionals by the early 1980s, following recommendations of a series of government committees, including the Bhabha Committee of 1963, the Electronics Committee Chaired by Dr V.A. Sarabhai in 1966, and the National Conference on Electronics of March 1970 (see Kumar 2001).

A similar moment is upon us to reimagine the educational and training system of the country in tune with the needs of the digital revolution. This would include revamping secondary and higher education to design thinking and problem solving, and introducing coding in schools, besides improving the quality of education at all levels. The seats in secondary schools, colleges, and higher education institutions need to be rebalanced in favour of Science, Technology, Engineering and Mathematics (STEM) vis-à-vis traditional humanities and arts disciplines. Even within IITs and other engineering institutions, there is a need to rebalance the seats in favour of computer science, AI, data science, machine learning, and algorithm-related courses, against traditional engineering disciplines such as civil, mechanical or chemical engineering.

The National Education Policy 2020 does emphasize multidisciplinary education, vocationalization, STEM, and strengthening technical education with a focus on cutting-edge areas like AI, big data analysis, and machine learning, among others, that would be critical for harnessing IR40. It also envisages Digital Universities that would enable students to design a more personalized and flexible education. It also recognizes the need to avoid the commercialization of education, and the importance of providing affordable quality education. The need for enhancing R&D activity through a National Research Foundation is also emphasized.

These changes will help the Indian education system produce graduates that would be needed, rather than those who cannot find a job. Given the demographic advantage that will last for the next two decades, India has the opportunity to not only meet its own requirements for skills for IR4.0 deployment, but also fill the global skills gap owing to a rapidly declining working-age population in several countries of Europe and East Asia.

The government is also paying attention to skill development through Skill India mission. The National Skill Development Corporation is approaching the skill gaps by expanding public-private

collaboration, initiating pathways for international mobility, and increasing women's participation in the labour force. In parallel, leading India-based IT organizations have started focusing on skill-development programs to meet the demands of the digital era.[11]

The private sector could also come forward to establish new educational and training institutions, that would augment the capacity to produce graduates with the AI/ML capabilities to meet the growing requirements. WEF (2018) finds extensive evidence of rising demand for AI and ML specialists, big data specialists, process automation experts, information security analysts, user interface designers, robotics engineers, and blockchain specialists, among others.

A programme for reskilling and upskilling people displaced by the incipient technology revolution would also be needed, and should be run by the government and industry. Given the growing scarcity of skills that are fit-for-purpose, the industry is learning to reinvent strategies for recruitment, training, and retention of talent.[12] India should exploit its favourable demography for meeting the challenge of skills shortage by quickly expanding the supply.

To sum up, we recommend a big expansion in the public-funded education and training sector through raising the national education spending to 6% and above (from the current level of 4.4%), to provide affordable, quality education in the emerging AI/ML-related fields through a reformed education and skill development framework. This would pay rich dividends to the country, in terms of harnessing the potential of IR4.0 for its own inclusive development, besides becoming the skill capital of the world.

Closing the digital divide: Broadband internet access is the most critical infrastructure for digital transformation. Although internet users in India per 100 people have grown 2.4 times (from 25.3 to 61) between 2015-2021, access to fixed broadband subscriptions has lagged behind other developing countries (World Bank 2021). Therefore, the highest priority has to be accorded to expanding universal broadband coverage. Access to broadband internet should be treated as the basic infrastructure like electricity or drinking water. Recognizing the criticality of this, the Indian Government has adopted the National Broadband Mission that aims to provide 100% Broadband connectivity in all villages, 55% fiberization of mobile towers (up from 30%), an average broadband speed of 25 mbps, and laying 30 lakh kilometres of optic fibre by December 2022.[13]

Facilitation and Extension Services for MSMEs: Given the productivity-enhancing potential on IR4.0 technologies, it is important to ensure that MSMEs are not left behind in their adoption. For this, the Government, industry associations, and self-help groups could start some kind of extension services for MSMEs in key clusters, to demonstrate key applications of new technologies.

The Technology Facilitation Centres run by the MSME Ministry of the Indian Government could be retrofitted with IR4.0 technologies (Kant 2021). 30 centres of excellence have been established by the Ministry of Electronics and Information Technology (Meity) to support 4000 technology-focused Start-Ups (Rajendra Kumar 2021). These centres could also facilitate MSMEs in their adoption of digital technologies.

The industry associations and chambers should also come forward to raise awareness and provide facilitation services for IR4.0 adoption for their members, especially for raising competitiveness; adoption for its own sake should be discouraged, in view of potential labour displacement consequences. Some industry groups are coming forward in that direction. NASSCOM, for instance, has created AI for India mission to focus on drivers of change, and has begun to recognize the AI Gamechangers.[14]

Boosting innovative activity: Innovation is very critical for harnessing the potential of IR4.0. India needs to step up the proportion of national income spent on R&D, from 0.7% gradually to over 2%. Furthermore, an increasing proportion of this R&D activity should be undertaken by the industry. Only about 30% of the GERD is spent by business enterprises, despite the generous tax incentives offered by the government.

Indian enterprises could leverage their software development, chip design, and frugal engineering capability, and leverage the national innovation system (NIS) in the country, comprising the centres of excellence in advanced technology applications like the Indian Institute of Science (IISc), IIITs, and IITs -- as MNEs have been doing through their Global Capability Centres (GCC) located in the country.

Evidently, India is emerging as the key destination for AI innovation. India ranked 8th globally in terms of AI patents filing for 2020. (Although over 5000 AI patents have been filed over the past decade, 63% of granted patents belong to MNEs.[15]) India's rank in the *Global Innovation Index 2022* moved up to 40th rank globally, up from 81st in 2015 (WIPO 2022).

What can be done to boost the R&D activities of Indian enterprises? Given the strategic importance of innovative activity, governments in developed countries spend billions of dollars on R&D subsidies given to national enterprises to shore up their competitiveness. Subsidies up to 50% of project costs have been made non-actionable under the World Trade Organisation (WTO) rules. In India, R&D activities have been encouraged mainly through tax deductions. It is arguable that partial funding for specific R&D projects undertaken by business enterprises may be desirable to develop products or processes, thus strengthening competitiveness or meeting developmental goals.

Another policy to promote local innovation could be to protect minor innovations through the so-called utility models or petty patents. The experience of several East Asian countries such as Japan, South Korea, Taiwan, and China, suggests that petty patents could be effective means of encouraging domestic enterprises to undertake minor adaptive innovations and foster an innovation-based rivalry among them (Kumar and Joseph 2022).[16]

Fostering the Start-Up culture: Start-ups are at the vanguard of leveraging IR4.0 technologies in India. Recognizing this, the Indian Government launched in 2016 the Start-Up India mission, that provides facilities to recognized start-ups. The Indian start-up ecosystem is considered to be the third largest in the world, after the US and China, having produced over 74,000 registered start-ups and more than 100 unicorns (Invest India 2022). We need to constantly foster start-ups with a more enabling ecosystem, including by providing ready to use (plug-n-play) facilities and scaling them up

facilities, not only in big cities but also in tier-2 and -3 cities. The District Industries Centres, which had been created to foster MSMEs, could be revamped as District Incubation Centres.[17]

Strengthen social protection: As discussed above, IR4.0 could lead to the displacement of many workers, especially those involved in semi-skilled jobs, besides creating a new class of workers called gig-economy workers or platform workers. Therefore, there is a need for strengthening the social protection system in the country, to take care of those affected adversely including through reskilling.

The gig economy work is expanding rapidly, and needs a new framework for social protection that covers them for shocks, besides the usual needs of health and life insurance. This is an agenda which is yet to be addressed satisfactorily.[18] Furthermore, the new technology revolution is aggravating within-country inequalities, given the huge skill premium and emergence of technology billionaires, on the one hand, and workers displaced through automation on the other.

A mechanism needs to be developed for the redistribution of massive incomes / profits made by technology entrepreneurs with the bottom billions if socio-economic inequalities were to be contained (Roy 2021). One possibility could be a tax mechanism for super normal profits to support the vulnerable sections of the population on the receiving end of the digital revolution.

7. Concluding remarks

To sum up, it is critical for India to harness the potential of IR4.0 for its inclusive and sustainable development, although much of the discussion in the country has generally focused on its potentially disruptive consequences on the future of work and the possible reshoring of global value chains. India's attempt to catch up with manufacturing through Make-in-India would also critically depend on its ability to leverage IR4.0, given that the new technologies are becoming key drivers of productivity and global competitiveness.

Recognizing its potential for inclusive development and societal transformation, the Indian Government has developed a comprehensive vision to harness the digital revolution, through such measures as e-governance, direct benefit transfers, delivery of services, management of Covid-pandemic, financial inclusion, digital payments, and electronic platforms for government procurement and e-Commerce, that are empowering the MSMEs. Some of these interventions have proven to be successful globally.

The national innovation system of the country needs to be geared to tap the opportunities presented by the IR4.0. The skill-intensive nature of the new technologies lends an advantage to countries passing through a youth-bulge phase in their demographic transition, such as India, especially when major economies in Europe and East Asia are rapidly ageing, if not already aged. India needs to quickly transform the educational system to make it fit-for-purpose for the digital revolution, to produce skills that are in short supply to meet not only its own needs but position itself at the centre of the IR4.0 as the skill or the talent capital of the world.

India also needs to step up its innovative activity, particularly the enterprise-level R&D activity, through such measures as partial funding of R&D and adopting a second-tier patent system. MSMEs would need to be supported in harnessing the productivity-enhancing potential of IR4.0 through extension and facilitation services run through self-help groups and industry associations.

Given the potentially disruptive consequences of new technologies, like previous technological revolutions, a new architecture for social protection designed to protect displaced workers, as well as gig economy workers, and to contain inequalities from aggravating would be needed. Finally, a whole-of-society approach involving all the stakeholders working in a coordinated manner would be needed to tap the full potential of IR4.0, rather than leaving it to the government alone.

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Notes

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Rule 3 of the Draft Code on Wages (Central) Rules, 2020: An important milestone

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Abstract

When Rule 3 of the Draft Code on Wages (Central) Rules, 2020 (hereafter referred to as 'Draft Rules') was notified, the shortcomings of Rule 3(1) in the Draft were highlighted by the discussion paper published by the International Labour Organisation and the recommendations made by Oxfam. This paper argues that despite its shortcomings, Rule 3(1) in the Draft Rules is still an important milestone for the progressive realisation of workers' welfare in India, because it is the first time that the Union Government has shown normative commitment towards ratifying the recommendations of the 15th Indian Labour Conference, 1957. The benefit of calculating the minimum wage as per Rule 3(1) of the Draft Rules, which is in tune with the 15th Indian Labour Conference recommendations, would be that it will ensure that the minimum wages will be set at a quantum higher than usually set by the Committees and Wage Boards appointed by the Union Governments throughout history. Therefore, while it is necessary that the civil society organisations eventually push for a better version of Rule 3(1) in the Draft Rules, it is equally important that they act as watchdogs to ensure full-fledged ratification and implementation of the 15th ILC norms in Rule 3(1) in the Draft Code Rules in the first place.

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Introduction

The wage, as a concept, straddles two distinct but interconnected realms. On one hand, it serves as a price for hiring labour, subject to market forces. On the other, it is a source of livelihood, determining the extent of well-being of people within a society. The former perspective situates us in the domain of positive economics — an observation and analysis of the wage as it is. The latter, however, takes us into the territory of normative economics — a consideration of what the wage ought to be to ensure a decent standard of living. Various wage concepts, such as minimum wage, need-based wage, and fair wage, stem from this normative viewpoint.

This paper delves into these two contrasting ways of determining the minimum wage in the context of the Draft Code on Wages (Central) Rules, 2020 (hereafter referred to as 'Draft Rules'), released by the Ministry of Labour & Employment on 10th July 2020. Particularly, it scrutinises Rule 3(1) of the Draft Rules, around which a significant discourse has been formed.

On 10th July 2020, the Ministry of Labour & Employment released its gazette notification for Draft Code on Wages (Central) Rules, 2020[1] (hereafter referred to as 'Draft Rules'). Rule 3(1) of the Draft Rules stated as follows (reproduced verbatim):

> 3. Manner of calculating the minimum rate of wages. – (1) for the purposes of sub-section (5) of section 6, the minimum rate of wages shall be fixed on the day basis keeping in view the following criteria*, namely: -
> (I) the standard working class family which includes a spouse and two children apart from the earning worker; an equivalent of three adult consumption units;
> (II) A net intake of 2700 calories per day per consumption unit;
> (III) 66 meters cloth per year per standard working class family;
> (IV) Housing rent expenditure to constitute 10% of food and clothing expenditure;
> (V) Fuel, electricity and other miscellaneous items of expenditure to constitute 20% of minimum wage; and
> (VI) Expenditure for children education, medical requirement, recreation and expenditure on contingencies.
>
> *The provisions of the rule 3 are based on the criteria declared in the judgment in Workmen Represented by Secretary vs. Management of Reptakos Brett. And Co. Ltd. and Anr.,1992 AIR 504, pronounced by the Hon'ble Supreme Court and on the recommendations of the 15th Indian Labour Conference (ILC).

Responding to it, the International Labour Organisation published a discussion paper titled 'Wage code and rules – Will they improve the welfare of low-paid workers in India?', wherein it was stated that the rule [Rule 3(1)] needs to recognise that the needs of the workers and their families, as defined in 1957 [15th ILC recommendations], lack relevance in the present context owing to changes in economic development, demography, family size, consumption patterns, nutritional intakes and work intensity. (Estupinan, et al.)

On a similar note, Oxfam made a series of recommendations to the Government, stating that under Rule 3(1) of the Draft Rules, the consumption units must be increased, calorific value must be reconsidered, calorific value of 2,700 should be in accordance with Dr. W.B. Aykroyd's formula for an adequate and balanced diet, woman in the household must be considered as one consumption unit, miscellaneous expenses must be increased from 25%, clothing requirement must be increased to 100 centimetres, method of prescribing the housing rent allowance must be reconsidered, etc. (Oxfam 2020)

While the Union Government certainly needs to consider these recommendations to overcome the shortcomings, this paper asserts that Rule 3(1) of the Draft Rules, even in its present form, can still be construed as a significant milestone for the progressive realisation of workers' welfare in India. To further this line of thought, this paper would first track the seminal policy developments surrounding the 15th ILC resolution, and then study the calculation of minimum wage by the Committees appointed by the Union Government (since there also exists a gap in academic literature dealing with this subject-matter), to explain how Rule 3(1) of the Draft Rules marks a significant milestone in the history of minimum wage fixation.

Methodology

This paper adopts a historical and comparative analysis approach to explore the application of minimum wage norms in India. Historical analysis is used to trace the progress made by successive pay commissions, central wage boards, and exercises to determine poverty criteria.

Further, a comparative analysis was conducted on the three wage determination mechanisms — the Pay Commissions, the Central Wage Boards, and poverty criteria. This comparison aims to illustrate how each mechanism, in its own way, has fallen short of the ideals set by the 15th ILC.

The data for this research was primarily sourced from official government reports, including those of various pay commissions and wage boards. It was further supplemented with academic literature and case laws. The selection of these sources was guided by their relevance to the topic, authority, and accessibility.

Through this methodology, the paper endeavours to provide a comprehensive understanding of the fixation minimum wage in India, and how Rule 3(1) of the Draft Code on Wages (Central) Rules, 2020, signifies a potential turning point in this historical journey.

A brief on the 15th ILC resolution

According to the Seventh Pay Commission, the 15th ILC norms are "the best approach to estimating the minimum pay as it is a need-based wage calculation that directly costs the requirements, normatively prescribed to ensure a healthy and a dignified standard of living" (GOI 2019).

The 15th ILC resolution is grounded on the foundation that in a welfare State, the fixation of minimum wages by the Government should be guided by the aim of securing a minimum level of living for the worker. The minimum wage should be need-based, and must ensure that the minimum human needs of the industrial worker are being met, notwithstanding any other considerations. (GOI 1957)

The five norms enshrined in the 15th ILC resolution are as follows:

a) the standard working class family included a wife and two children apart from the earning worker; an equivalent of three adult consumption units; the husband assigned 1 unit, wife assigned 0.8 unit and two children assigned 0.6 units each. (GOI 2015)

b) a net intake of 2,700 calories per day per consumption unit, as recommended in 1948 by Dr Wallace Aykroyd (first director of the Department of Nutrition at the United Nations Food and Agricultural Organization) for an Indian adult of moderate activity; (GOI 2019)

Composition of a Balanced Diet
(Adequate for the maintenance of good health)

	Oz.
Cereals	14
Pulses	3
Green leafy vegetables	4
Root vegetables	3
Other vegetables	3
Fruits	3
Milk	10
Sugar and jaggery	2
Vegetable oil, ghee, etc.	2
Fish and meat	3
Eggs	1 egg

c) clothing requirements of 72 yards (65.8 metres) per year per family; or 5.5 meters per month for the average worker's family. (GOI 2019)

d) the rent corresponding to the minimum area provided under the government's industrial housing schemes (GOI 2015); and

e) fuel, lighting, and other miscellaneous items of expenditure to constitute 20% of the total minimum wage" (GOI 2019)

Note: The balanced diet requirement amounts are on a per day basis. The table is reproduced verbatim

The resolution also recognised the existence of instances wherein the implementation of the norms would be difficult. It, therefore, provided an escape clause with some conditions, i.e. if minimum wages were to be set below the norms prescribed by the 15th ILC, then the concerned authorities must

justify the circumstances that prevented them from complying with the norms proposed by the 15th ILC. However, it also added that the escape clause can only be invoked for reasons that are specific to the particular industry, and vague reasons like 'national economy' cannot be used to invoke the escape clause.

Seminal policy developments after the 15th ILC resolution

While the Supreme Court, in several judgements, welcomed the 15th ILC norms, the Union Government remained unclear with its stance on the ratification of the 15th ILC norms. There was a sharp divergence of opinion between the Supreme Court and the Union Government on two key issues: firstly, the juristic identity of the 15th ILC norms; and secondly, the immateriality of the capacity of the employer to pay the minimum wages.

On one hand, the Supreme Court has in its several landmark judgements cited the 15th ILC's resolution and approved the calculation of the minimum wages by the wage committees based on the norms set by the 15th ILC resolution. The Division Bench of the Supreme Court in *Workmen Represented by Secretary vs. Management of Reptakos Brett. And Co. Ltd. and Anr.,*[2] has not only endorsed the criteria provided by the 15th ILC resolution, but also added an additional component to it. Further, the Constitutional Bench of the Supreme Court in *Standard Vacuum Refining Co. of India v. Its Workmen and Ors.*[3] referred to the 15th ILC norms with approval.[4] These judgements have remained unturned by larger benches of the Supreme Court.

On the other hand, the Union Government had an inconsistent stance on the 15th ILC's resolution. The 17th Session of the Indian Labour Conference, chaired by Sh. Gulzari Lal Nanda (then Union Minister for Labour, Employment and Planning), came to a consensus that the *"legislative and administrative policies of the Central and State Governments and employers; and employees' organisations should not run counter to the broad lines of policy that may be adopted by the Indian Labour Conference".* (GOI 1959) Yet the Union Government declined any commitment to be bound by the recommendations of the Indian Labour Conference.

The Second Central Pay Commission (set up in 1957), headed by Justice Jagannadha Das of the Supreme Court, wrote to the Union Government stating that: *"the Commission wishes to know whether the Central Government now stand committed to the adoption, during the current Five Year-Plan, of a policy of need-based minimum wage or pay, determined by the norms laid down by the Labour Conference resolution..."* (GOI 1959)

The Union Government responded by stating that *"The Government desires to make it clear that the recommendations of the Labour Conference should not be regarded as decisions of Government and have not been formally ratified by the Central Government. They should be regarded as what they are, namely, the recommendations of the Indian Labour Conference, which is tripartite in character. Government has, at no time, committed themselves to taking executive action to enforce the recommendations."* (GOI 1959)

In 1964, D. Sanjivayya, then Union Minister for Labour and Employment, during the Rajya Sabha debates, reversed the Government's official stance by stating that "*we have got to accept the unanimous recommendations of all the tripartite bodies... Therefore, there is no question of disregarding any recommendation of any tripartite body*" (RS 1964).

However, this stance was once again reversed in 1968 by Jai Sukh Lal Hathi, then Union Minister for Home Affairs. While commenting on the Need-Based Minimum Wage, he stated that "*accepting a principle or an ideal in the Indian Labour Conference does not make any commitment as such*" (RS 1968).

Therefore, the stance of the Union Government, when it came to ratifying the 15th ILC norms for the calculation of Minimum Wages, was unclear. This was the first key difference between the Supreme Court and the Union Government when it came to their commitment to the norms proposed by the 15th ILC.

The second key difference between the Supreme Court and the Union Government was with respect to the 'capacity of the employer to pay' the minimum wage. At the 15th ILC, it was agreed that the minimum wage must be "*need-based and should ensure the minimum human needs of the industrial worker, irrespective of any other consideration*". [Emphasis added.]

In the past, when the respective Committees, constituted under the Minimum Wages Act, had fixed a minimum wage and the Government notified it, the employers challenged the notified minimum wage on grounds, *inter alia*, their incapacity to pay. The judgements by the constitutional benches of the Supreme Court in these cases have furthered the objective of the 15th ILC, that sought payment of the minimum wage "irrespective of any other consideration", by holding that the employers' capacity to pay the Minimum Wage under the Minimum Wage Act, 1948 is immaterial.

In Bijay Cotton Mills v. State of Ajmer,[5] the five judge bench of the Supreme Court rejected the argument of H.M Seervai that "*the provisions of the Act are bound to affect harshly and even oppressively a particular class of employers who for purely economic reasons are unable to pay the minimum wages fixed by the authorities but have absolutely no dishonest intention of exploiting their labourers*" and held that the "*intentions of the employers whether good or bad are really irrelevant*".

In Crown Aluminium Works v. Their Workmen,[6] the three judge bench of the Supreme Court observed that there is "one principle which admits of no exceptions. No industry has a right to exist unless it is able to pay its workmen at least a bare minimum wage." In Unichoyi v. State of Kerala,[7] the five judge bench of the Supreme Court referred to the industry's 'capacity to pay' being irrelevant as if it were an axiom. However, Justice P.B. Gajendragadkar opined that "*no addition should be made to the components of the minimum wage which would take the minimum wage near the lower level of the fair wage*". In other words, the industry's capacity to pay will have to be taken into consideration if the upper limit of the Need Based Minimum Wage ends up coinciding with the lower limit of the Fair Wage.

Despite these judgements of the Supreme Court, the first National Commission on Labour (1969) headed by Justice P.B. Gajendragadkar concluded that the industry's capacity to pay ought to

be taken into consideration while fixing the need-based minimum wage. The commission opined that:

> "Since most of the Wage Boards have taken into consideration the capacity to pay in fixing the minimum for the respective industries, the wages fixed by them fall in the realm of fair wages, though at its lower level. The need based minimum wage is also a level of fair wage and represents a wage higher than the minimum obtaining at present in many industries, though it is only in the lower reaches of the fair wage. Therefore, the Commission concluded that in fixing the need based minimum wage, the capacity to pay will have to be taken into account. Experience with wage determination since the formula was adopted in 1957, supports this conclusion. The need-based minimum, which is in the range of the lower level of the fair wage, attracts, in its determination, the employer's capacity to pay... This has to be a pragmatic process, which the wage-fixing authorities will have to keep in mind." (GOI 1959)

The Commission, in its reasoning, laid emphasis on pragmatism and took the prevailing practice into account instead of setting a benchmark for the fixation of the minimum wage.

Arguably, the stand by the Supreme Court was aimed at achieving an ideal end, wherein the welfare state does not consider the industry's capacity to pay but fixes the minimum wage in order to meet the minimum human needs of the workers. However, such commitment seemed to be lacking in the Government-appointed Commission's report, because it formed conclusions based on "what is" rather than "what ought to be" while deciding that the capacity to pay has to be taken into consideration while fixing the minimum wages.

These divergent opinions between the Supreme Court and the Union Government on the 15th ILC resolution provided an unclear policy framework on the relevance or the bindingness of the 15th ILC resolution to the committees calculating the need based minimum wage. The next part of this paper will examine how the committees appointed by the Union Government have dealt with the 15th ILC norms while calculating the Minimum Wages under this policy framework.

Policy in Practice

Second Pay Commission
The Second Pay Commission, headed by Justice Jagannath Das, submitted its report in 1959. The perusal of the report of the Second Pay Commission shows that it did take the 15th ILC recommendations into consideration while calculating the Minimum Wage. However, it invoked the escape clause to dilute the 2,700 calories requirement under the 15th ILC resolution.

Despite the escape clause under the 15ᵗʰ ILC resolution not allowing for its invocation on the grounds of national economy, the Second Pay Commission still went ahead to invoke the escape clause in the name of national economy. According to the Commission's rationale:

"The recommendations of the fifteenth Labour Conference…while they envisage (para. 2 of the recommendations) circumstances, apparently, must be peculiar to particular industry or undertaking. It is not intended that departure from the norms could be made on the ground that the country's economy could not afford a minimum wage determined by those norms. The recommendations, moreover, are expressly meant to be followed during the current Plan period [--] they do not lay down an objective to be achieved progressively as the economy develops and the fruits of development are more equitably distributed…a minimum defined in some external objective term could only be treated as a standard in theory – as a goal to strive for rather than something that could be immediately put into effect.

"An examination of the content and its monetary value shows:
a) That the minimum remuneration worked out according to the recommended formula may be of the order of Rs 125 as compared with Rs 52.50 which, with some exceptions, is the upper limit of minimum wages fixed under the law;
b) That it would be 70 to 80 per cent higher than the rates generally prevailing in the organised sectors of industry where wages are fixed either by collective bargaining or through conciliation and adjudication proceedings; and
c) That it would be well above the highest wages i.e., Rs. 112 (in cotton textiles industry in Bombay – average for 1958) which any considerable number of unskilled workers are at present getting in the country." (GOI 1959)

Further, the Committee noted that:
"It is not that the entire national income is available for current distribution; a good percentage of it must go towards building up of capital assets, without undergoing distribution. A minimum wage pitched above the level of per capita income, and intended for very wide application is obviously one beyond the country's capacity; in ignoring the vital need for savings and investment, such a wage gives no though[t] to the future; and a wage that exceeds the highest level, and far exceeds the general level in the organised industries is obviously not one needed for protecting those whose living standards are sub-average." (GOI 1959)

The Second Pay Commission then went on to dilute the requirement of 2,700 calories as mentioned in the 15th ILC resolution. The Commission, in its defence, reasoned that:

> "It appears that the Conference had in mind a net intake of 2,700 calories, which in fact, was the figure which Dr Aykroyd himself had considered adequate in view of the somewhat lower metabolism of India. Apart from providing the required calories, a diet has to be balanced and to supply other elements essential for health. such a diet was recommended...There can be little meaning in drawing up a budget satisfying nutritional and other standards, and decreeing that the minimum wage should correspond to the total cost of that budget, without considering whether the economy would be in a position to supply the goods and services postulated. And we have found, in examination, that while the standards set in the particular balanced diet formula may be feasible in respect of cereals and to a large extent in respect of pulses, they are clearly impracticable in the case of other foodstuffs such as fruits, milk, meat, fish and eggs." (GOI 1959)

Therefore, the committee worked out a balanced diet which took the limits of India's output of foodstuffs. The committee came up with a diet suitable for an adult man engaged in moderate activity and sent it to Dr V.N. Patwardhan, Director, Nutrition Research Laboratories, Hyderabad, for obtaining his opinion. As revised in the light of Dr Patwardhan's comment, the suggested diet was as follows:

Dr. Aykroyd's "adequate diet" and the diet level established by the Second Pay Commission		
Sl. No / Food Items	Aykroyd's "adequate diet" (15th ILC) Oz.	Dr. Patwardhan's diet Oz.
1 Cereals	14	15
2 Pulses	3	3
3 Vegetables	1	6
4 Milk	10	4
5 Sugar and gur	2	1.5
6 Oil and ghee	2	1.25
7 Fruits	2	-
8 Fish and meat	3	-
9 Eggs	1	-
10 Groundnut	-	1
Number of calories	2,700 (net)	Over 2,600 (net)

Source: (GOI 2019).

Note: The balanced diet requirement amounts are on a per day basis. The table is reproduced verbatim.

After making the calculations and adjusting it with the consumer price index, the Second Pay Commission came up with the following amount for the minimum wage:

Split-up of Need based Minimum Wage According to the Dietaries at 1958 prices		
Item of Expenditure	Conference dietary	Commission's dietary
Food	Rs 86.00	Rs 52.00
Clothing & Housing	14.00	14.00
Miscellaneous	25.00	16.50
Total	125.00	82.50

Source: Report of the II Central Pay Commission

Likewise, when compared to the 15th ILC norms, the following observations could be made:

Comparison between the 15th ILC's norms and the Second Pay Commission's parameters on need based minimum wage calculation

Item	15th ILC recommendations	Second Pay Commission
Family composition	Three consumption units	Three consumption units
Food	2,700 calories per 3 adult consumption units (on the basis of calorie requirement for moderate activity)	Little above 2,600 calories per 3 adult consumption units (on the basis of calorie requirement for moderate activity)
Clothing	72 yards (65.8 metres) per year per family	72 yards (65.8 metres) per year per family
House rent	A minimum housing rent charged by the government for low-income groups	A minimum housing rent charged by the government for low-income groups
Miscellaneous	20% of the total amount	20% of the total amount

Herein, it can be observed that the Second Pay Commission did take the 15th ILC recommendations into consideration while fixing the minimum wage, but only in a skeletal way, especially while calculating the calorie requirement. The Commission was able to dilute the 15th ILC resolution because of two reasons: first, the invocation of escape clause; and second, the lack of Union Government's commitment towards the ratification of the 15th ILC resolution.

Third Pay Commission

The Third Pay Commission, headed by Justice Raghubar Dayal, submitted its report in 1973. In 1970, unlike the Second Pay Commission, wherein the Government had written to the Commission that the 15th ILC resolution were merely recommendations, the Third Pay Commission's terms of reference specifically stated that they "*may examine the Central Government employees' demand for a need based minimum wage, which is based on the recommendations of the 15th Indian Labour Conference*". (GOI 1973)

The Commission, therefore, went on to calculate the need-based minimum wage in light of the 15th ILC norms in the following manner:

14. Computing the cost of food on this basis, and adopting the other norms recommended by the 15th ILC, the estimate of the need based minimum wage at the index average of 200 (1960-100) would be as follows: -

Need-based minimum wage according to the 15th ILC norms

Particulars	Dr. Aykroyd's diet Balanced 3000 calories	Dr. Aykroyd's diet 2700 calories (net) recommended by the 15th ILC
1. Cost of food	Rs.	Rs.
Bombay	243.00	218.70
Calcutta	252.90	227.61
Delhi	232.20	208.98
Madras	227.70	204.93
Average of four cities	238.95	215.05
2. Clothing	10.50	10.50
3. House-rent (Avg. of Integrated Subsidised Housing Scheme rates for the four cities)	25.50	25.50
4. Miscellaneous expenditure at 20% of the total	68.24	62.15
Total Expenditure (Need-based minimum wage)	343.69	313.80

- The housing scheme is formerly known as the Subsidised Industrial Housing Scheme.
- Figures in column 2 have been reduced on a pro-rata basis.
- The cost of food was estimated at the average prices for the twelve months ending 31st October, 1972. Price data collected by the Labour Bureau for the Consumer Price Index for industrial workers was used in estimating the cost of food.

Source: (GOI 1973)

However, after calculating the need based minimum wage based on 15th ILC norms, the committee invoked the escape clause on the grounds of national economy and noted that:

> "If it (minimum wage) is to be raised to Rs 314, the overall financial implication would be about Rs 600 crores per annum...one has to avoid the danger of setting premature and unwise minimum standards which the country and the economy can ill-afford.... It would lead to drastic curtailment of developmental expenditure, and a slowing down of projects which. would further aggravate the present unemployment situation in the country, to the solution of which the Government attaches paramount importance... we feel that the adoption of the minimum remuneration based on the

15th ILC norms at this stage would be tantamount to a misdirection of resources."
(GOI 1973)

The Commission then went on to modify the 15th ILC norms and came up with its own parameters for what they termed as "need-based minimum remuneration". When compared to the 15th ILC resolution, the third pay commission's parameters were as follows:

Comparison between the 15th ILC's norms and the Third Pay Commission's parameters on need based minimum wage calculation

Item	15th ILC recommendations	Third Pay Commission
Family composition	Three consumption units	Three consumption units
Food	2,700 calories per 3 adult consumption units (on the basis of calorie requirement for moderate activity)	2,800 calories for the worker (on the basis of calorie requirement for moderate activity) and 2,400 calories for the remaining 2 consumption units
Clothing	72 yards (65.8 metres) per year per family	72 yards (65.8 metres) per year per family
House rent	A minimum housing rent charged by the government for low-income groups	7.5% of the total amount
Miscellaneous	20% of the total amount	20% of the total amount

With respect to the dilution of calorie requirement for the 2 consumption units apart from the worker, the third pay commission reasoned that: "*there did not appear to be any valid reason for treating the activity status of the other members of an employee's family as anything but sedentary.*" (GOI 1973)

Further, the reason provided by the Commission for deviating from the 15th ILC resolution for the calculation of the housing expenditure was that:

> A class IV Central Government employee at the lowest level of salary has to pay rent for Government accommodation allotted to him at the rate of 7½ per cent of his pay, and we think that this constitutes a reasonable basis for determining the quantum of the expenditure on housing." (GOI 1973)

Lastly, the Commission stated that the capacity to pay has to be taken into consideration. The Commission argued that the Supreme Court in *Standard Vacuum Refining Company of India Limited v. Their Workmen*[8] while holding that

> "'no employer can engage industrial labour unless he pays what may be regarded as a minimum basic wage'... did not consider that basic minimum wage and the need-

based minimum as conceived by the 15th ILC to be synonymous". This position was further made clear in the Express Newspapers Private Limited v. Union of India,[9] where the Supreme Court stated that "whereas the basic minimum or subsistence wage would have to be fixed irrespective of the capacity of the industry to pay, the minimum wage thus contemplated postulated the capacity of the industry to pay and no fixation of wages which ignored this essential factor of the capacity of the industry to pay, could be supported."

When compared to the Second Pay Commission, which had only deviated in the case of the calculation of food, the Third Pay Commission deviated in the case of both food and house rent calculations. Both the national economy and the capacity of the industry to pay were taken into consideration and used as a justification for their departure from the 15th ILC norms. It was possible to do so because of the lack of commitment of the Union Government towards the ratification of the 15th ILC resolution, and the presence of the escape clause in the 15th ILC resolution.

Fourth and Fifith Pay Commission

Unlike the Third Pay Commission, the Fourth and Fifth Pay Commission were not specifically required by the terms of reference to examine the feasibility of the need-based minimum wage based on the recommendations of the 15th ILC. Therefore, these commissions did not deal with the 15th ILC norms. The Fourth Pay Commission estimated the minimum pay by applying the growth of the total emoluments index to the minimum pay estimated by the Third Pay Commission (GOI 1986). And, the Fifth Pay Commission estimated the minimum pay through the 'Constant Relative Income Approach'. (GOI 1994)

This development also underlines the importance of the Union Government's commitment towards the ratification of the 15th ILC resolution.

Sixth Pay Commission

The Sixth Pay Commission, headed by Justice B.N. Srikrishna, released its report in the year 2008.

Like the Second, Fourth, and Fifth Pay Commission, the Sixth Pay Commission too had not received any explicit mention regarding the 15th ILC norms in its terms of reference. However, the 15th ILC norms still found a place in the Sixth Pay Commission's report, because the Commission accepted the memorandum submitted by the staff side in Joint Consultative Machinery (JCM), that had calculated and demanded the minimum wage based on the 15th ILC norms. The calculation was as follows:

Fixation of Minimum wage as on 1.1.2006 as per 15 ILC norms

Items	PCU* (In grams)	Per month 3CU* (In kg)	Price per kg. taken by Staff Side (In Rs)	Total cost as per Staff Side (In Rs)	Price per kg. as per prevailing rates (In Rs)	Total cost as per prevailing rates (In Rs)
Rice/wheat	475	42.75	22.00	941	18	769.5
Dal (Toor/Urad/moong)	80	7.2	65.00	468	40	288
Raw Veg.	100	9.00	28.00	252	10	90
Greenleaf Veg.	125	11.25	24.00	370	10	112.5
Other Veg.	75	6.75	26.00	176	10	67.5
Fruits	120	10.80	50.00	540	30	324
Milk	200 Ml	18 Lt.	24.00	432	24	432
Sugar and Jaggery	56	5.00	24.00	120	24	120
Edible Oil	40	3.6	90.00	324	50	180
Fish		2.5	180.00	450	120	300
Meat		5.00	180.00	900	120	600
Egg		90 (no)	2.50	225	2	180
Detergents etc		-	300 P/m	300	200	200
Clothing		5.5 Mt.	80/Mt.	440	80/Mt.	440
Total	-	-	-	5838	-	4103.5
Misc. @ 20%**	-	-	-	1167.60	-	827
Total	-	-	-	7005.60	-	4930.5
Addl. Exp @ 25%***	-	-	-	1751.40	400#	400#
Total	-	-	-	8757.00	-	5330.5
Housing @ 10% ****				973.00		^148
Grand Total				9730.00		5478.5

Source: Average market rates in Kolkata, Chennai, Delhi and Mumbai as indicated in the Economic Times & other major dailies (element of 20% has been added to cover the increase in cost in retail sale).

Notes: *PCU = Per day Consumption Unit 3CU = Three Consumption Units. ** 20% Miscellaneous charges towards fuel, electricity, water etc. *** Additional Expense at the rate of 25% includes expenditure towards education, medical treatment, housing, recreation, festivals etc.

Has been taken as Rs.400 because separate allowances for education, medical treatment and housing exist in the Government. Consequently, only the expenditure towards recreation & festivals need to be taken in account.

**** / ^ Being the license fee chargeable for government accommodation at an average rate of 3% of the basic pay.

It is pertinent to note that the additional expenditure, as added by the *Reptakos Brett.* judgement in 1992, also found place in the Sixth Pay Commission's calculation of the minimum wage.

When the minimum wage fixed by the Sixth Pay Commission is contrasted with the 15th ILC resolution, the following observations could be made:

Comparison between 15th ILC norm and Sixth Pay Commission on Family composition

Family composition	3 consumption units	3 consumption units

Comparison between Aykroyd's Adequate Diet and Sixth Pay Commission Diet

Item	15th ILC (As per Dr Aykroyd's moderate diet) (Aykroyd 1937)		Sixth Pay Commission	
	Oz.	Grams	Oz.	Grams
Cereals[10]	14	396.89	16.75	475
Pulses[11]	3	85	2.82	80
Green leafy vegetables	4	113.39	4.4	125
Root vegetables	3	85	3.52	100[12]
Other vegetables	3	85	2.64	75
Fruits	3	85	4.23	120
Milk	10	295.73 ml	6.76	200 ml
Sugar and jaggery	2	56.69	1.97	56
Vegetable oil, ghee, etc.	2	56.69	1.97	56
Fish and Meat	3	85.04	88.18	2500[13]
Eggs	1 Egg	1 Egg	1 Egg	1 Egg

Comparison between 15th ILC norm and Sixth Pay Commission on Clothing and Housing

Item	ILC norm	Sixth Pay Commission
Clothing	72 yards or 66 meters per year	5.5 meters per month (i.e., 66 meters per year)
Housing	The rent corresponding to the minimum area provided under the government's industrial housing schemes	10% of the Total Amount

Comparison between the *Reptakos Brett Co.* judgement and Sixth Pay Commission on Additional Expenditure

Item	*Reptakos Brett Co.* judgement	Sixth Pay Commission
Additional Expenditure	25% of the total minimum wage.	25% of the total minimum wage.
	It contributes towards the children's education, medical requirement, minimum recreation including festivals / ceremonies and provision for old age, marriages etc.	It includes expenditure towards education, medical treatment, housing, recreation, festivals etc.
	The housing expense was included in the above mentioned total minimum wage while calculating the 25% additional expense.	The housing expense was NOT included in the above mentioned total minimum wage while calculating the 25% additional expense.

The Sixth Pay Commission, when compared to the previous pay commissions, made a substantive effort at compliance with the 15th ILC norms. However, the housing expense was calculated as 10% of the total amount, notwithstanding the 15th ILC norm that required the housing expense to be calculated based on "*the rent corresponding to the minimum area provided under the government's industrial housing schemes*" (GOI 2008).

Despite the Commission *per se* not fixing the need-based minimum wage based on the 15th ILC norms, it still remains the closest that a Central Pay Commission was able to come in fixing minimum salary as per the 15th ILC norms, when the Union Government lacked commitment towards the ratification of the 15th ILC resolution.

Lastly, it is also pertinent to note that the Commission took the capacity of the Government to pay, among other factors, into consideration. However, it did not lead to a dilution of the 15th ILC resolution or the invocation of the escape clause.

Seventh Pay Commission

The Seventh Pay Commission, headed by Justice A.K. Mathur, submitted its report in 2015.

The Seventh Pay Commission first analysed the approach of the previous six Pay Commissions and remarked that "*directly or indirectly, the ILC norms have always been at the core of the minimum pay calculations made by the previous Pay Commissions. The Commission is also of the view that the ILC norms, along with other supplements (the entire set of seven components), are the best approach*

to estimating the minimum pay as it is a need-based wage calculation that directly costs the requirements, normatively prescribed to ensure a healthy and a dignified standard of living." (GOI 2015)

However, when compared to the 15th ILC resolution, the following observations could be made:

Comparison between 15th ILC norm and Sixth Pay Commission on Clothing and Housing

Family composition	3 consumption units	3 consumption units

Comparison between Aykroyd's Adequate Diet and Seventh Pay Commission Diet

Item	15th ILC (As per Dr Aykroyd's moderate diet) (Aykroyd 1937)		Seventh Pay Commission	
	Oz.	Grams	Oz.	Grams
Cereals[14]	14	396.89	16.75	475
Pulses[15]	3	85	2.82	80
Green leafy vegetables	4	113.39	4.4	125
Root vegetables[16]	3	85	3.52	100
Other vegetables	3	85	2.64	75
Fruits	3	85	4.23	120
Milk	10	295.73 ml	6.76	200 ml
Sugar and jaggery	2	56.69	1.97	56
Vegetable oil, ghee, etc.	2	56.69	1.97	56
Fish and Meat	3	85.04	88.18	2500[17]
Eggs	1 Egg	1 Egg	1 Egg	1 Egg

Comparison between 15th ILC norm and Seventh Pay Commission on Clothing

Item	ILC norm	Seventh Pay Commission
Clothing	72 yards or 66 meters per year	5.5 meters per month (i.e., 66 meters per year)

Comparison between 15th ILC norm and Seventh Pay Commission on miscellaneous, additional and housing expenses

Item	15th ILC norms	Seventh Pay Commission
Miscellaneous	Constituted 20% of the total amount (including housing expense)	Constituted 20% of the 80% of total amount (excluding housing expense)
Additional expenses	Constituted 25% of the total amount (including housing expense)	Constituted 15% of 85% of total amount (excluding housing expense)
Housing	The rent corresponding to the minimum area provided under the government's industrial housing schemes	3% of the 97% total amount. (Total amount = food, clothing, misc., additional expense, and skill factor)

Herein, it can be observed that despite praising the 15th ILC recommendations initially, the Commission went on to heavily dilute the 15th ILC norms while calculating the miscellaneous, additional, and housing expense components of the minimum wage. This also explains why the minimum pay fixed by the Seventh Pay Commission resulted in a meagre 14.3% increase, as opposed to a whopping 54% in the case of the minimum pay fixed by the Sixth Pay Commission. Once again, this dilution occurred because the Union Government was not committed to the ratification of the 15th ILC resolution.

Minimum Wage fixation by the Central Wage Boards

The Central Wage Boards were an outcome of the 15th ILC resolution, which recommended the setting up of the wage boards as machinery for calculating the minimum wage as per the 15th ILC norms. (Tulpule 1968) However, the National Commission on Labour headed by Justice P.B. Gajendragadkar, after examining the functioning of the system of wage boards, reported that: *The fixing authorities have generally accepted the formula (15th ILC norms) in principle and departed from it in actual practice when the question of its implementation came.* (GOI 1968)

The Commission also remarked that the "escape clause" under the 15th ILC resolution may now be renamed as a "permissive clause", because the Wage Boards had invoked the escape clause in all instances of minimum wage calculation by it. The Central Wage Boards reasoned that the need-based minimum wage fixed as per the 15th ILC resolution would be beyond the capacity of the industry to pay.

Thus, like the majority of the Central Pay Commissions, the Central Wage Boards also did not pay heed to the 15th ILC resolution. The underlying cause for this symptom was the Union Government's lack of commitment towards the ratification of the 15th ILC resolution, and the invocation of the escape clause on the grounds of the incapacity of the industry to pay.

Poverty line criteria and minimum wage fixation

In the past, there have been instances wherein the poverty lines have influenced the fixation of minimum wage.

In 1977, The Task Force on Projections of Minimum Needs and Effective Consumption Demand, set up by the Planning Commission, defined the poverty line in terms of the per capita expenditure required for a per capita per day calorie intake of 2,400 in the case of the rural population and 2,100 for the urban population. Further, using the 28th Round (1973-74) of the National Sample Survey (NSS data) relating to the food consumption levels of households, as well as to conversion factors derived from the calorie content of food items, the estimated poverty lines were set for both rural and urban areas at ₹ 49.09 and ₹ 56.64 per capita per month, respectively, at 1973-74 price. (GOI 2019)

In 1981, the Committee of Labour Secretaries of States, under the Chairmanship of the Additional Secretary of the Ministry of Labour, had recommended that in establishing the minimum wage, the consumption basket should consist of 2,400 calories and 2,100 calories per capita per day, in the rural and urban areas, respectively. This recommendation was to a great extent influenced by the poverty line definition used by the Planning Commission, as per the recommendation of the Task Force on Projections of Minimum Needs and Effective Consumption. (GOI 2019)

In 1991, the National Commission on Rural Labour (NCRL) also relied on the work conducted by the Planning Commission Task Force on Projections of Minimum Needs and Effective Consumption Demand to determine the basic minimum floor level wage. (GOI 2019)

The main issue with the poverty lines influencing the fixation of minimum wage was that the qualitative and quantitative structure of the components that went into the determination of the poverty lines substantially differed from the 15th ILC norms. For example, the Task Force on Projections of Minimum Needs and Effective Consumption Demand (1977) defined the poverty line in terms of the per capita expenditure required for a per capita per day calorie intake of 2,400 in the case of the rural population and 2,100 for the urban population. However, the 15th ILC norms require that the calorie requirement should be at 2,700 calories as per Dr Aykroyd's recommendations.

The poverty line criterion was able to influence the fixation of minimum wage because the Union Government lacked commitment towards the 15th ILC resolution. It caused the denial of a higher quantum of the minimum wage that the workers would be entitled to if the minimum wage was calculated as per the 15th ILC resolution.

Significance of Rule 3(1) of the Draft Rules

A common thread that ran in the calculation of the minimum wages by the Central Pay Commission, Central Wage Boards, and by the Poverty Line Method was that either the 15th ILC resolution was ignored, or the 15th ILC resolution was complied with only in a skeletal way. The

reason for this was both the lack of commitment from the Union Government's end as well as the misuse of the escape clause in the name of the national economy.

In this context, the 15th ILC resolution, despite being half a century old, is still relevant because minimum wages have never been calculated based on the norms mentioned therein. Throughout history, since 1957, the Union Government has been reluctant to pay the higher quantum of the amount that would be the outcome of the enumeration of the minimum wage as per the 15th ILC norms. It had led to the compromise on the quantum of the workers' wages.

In this context, Rule 3(1) of the Draft Rules makes a radical departure from the past because the footnote to Rule states that:

"The provisions of the rule 3 are based on the criteria declared in the judgment in Workmen Represented by Secretary vs. Management of Reptakos Brett. And Co. Ltd. and Anr., 1992 AIR 504 pronounced by the Hon'ble Supreme Court, and on the recommendations of the 15th Indian Labour Conference (ILC)."

It not only portrays the normative commitment of the Union Government towards fixing the minimum wage as per the 15th ILC norms, but also holds the potential to grant legal sanction to the 15th ILC norms as well as the guideline added in the *Reptakos Brett* judgement. Further, it is also pertinent that, unlike the 15th ILC resolution, Rule 3(1) of the Draft Rules does not come with an escape clause.

Therefore, when Rule 3(1) of the Draft Rules is made into a legally binding provision, it would lead to a fixation of the minimum wage without either ignoring or diluting the 15th ILC norms, for the first time in the history of minimum wage fixation in India. This would in turn ensure that the workers would receive a higher minimum wage.

Thus, while Rule 3(1) of the Draft Rules is far from being ideal (taking the recommendations of ILO and Oxfam into consideration), it is still an important milestone when it comes to the progressive realisation of the workers' welfare in India.

In a broader socio-political context, while it is very much necessary that the civil society organisations moot for an updated version of Rule 3(1) in the Draft Rules, it is also important for them to remain cognisant of the fact that this is for the first time in history that the Union Government has shown some form of normative commitment towards the 15th ILC resolution.

Therefore, even as they focus upon seeking a better version of Rule 3(1) in the Draft Rules, they must also see to it that the Union Government makes a full-fledged ratification of and implements the 15th ILC resolution in Rule 3(1) of the Draft Rules, because the successful execution of this rule will largely depend on the Union Government's ability and willingness to penalise offenders. It remains to be seen how the Government plans to ensure adherence, and what penalties will be instituted for non-compliance.

So, have we truly reached our goal because we have 'arrived'? Perhaps not. The introduction of Rule 3(1) of the Draft Rules is indeed a significant step forward, but it is just that — a step. Thus,

while the Draft Rules symbolise progress, they should also serve as a reminder of the continuous journey towards better labour welfare in India.

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Notes

[1] Draft Code on Wages (Central) Rules, 2020.

https://labour.gov.in/sites/default/files/gazette%20notification.pdf

[2] 1992 AIR 504.

[3] AIR 1961 SC 895.

[4] Workmen Represented by Secretary vs. Management of Reptakos Brett. And Co. Ltd. and Anr.,1992 AIR 504.

[5] 1955 I LLJ 129 SC.

[6] AIR 1958 SC 30.

[7] 1961 I LLJ 631 SC.

[8] 1961 I LLJ (S.C) 232.

[9] 1961 I LLJ 365 SC.

[10] Sixth Central Pay Commission considered Rice/wheat for cereals.

[11] Sixth Central Pay Commission considered dal (toor/urad/moong).

[12] Sixth Central Pay Commission considered raw vegetables.

[13] Total 7.5 kg.

[14] Same as Sixth Pay Commission's calculation.

[15] Same as Sixth Pay Commission's calculation.

[16] Same as Sixth Pay Commission's calculation.

[17] Same as Sixth Pay Commission's calculation.

[17] Rule 3(1), Draft Code on Wages (Central) Rule

A Reservoir for 'Intellectual Extractivism'

A Book Review of *"Collected Scientific Papers for the Pioneering Economist and Planner P J Thomas"* by E M Thomas

Jos Chathukulam *

31 May 2023

Through the book titled *Collected Scientific Papers for the Pioneering Economist and Planner,* Prof. E. M. Thomas has opened a treasure trove on the life and contributions of Dr. P. J. Thomas - a versatile genius and a celebrated economist in British India and Independent India. This book offers a compilation of the academic as well as scientific writings and articles by Dr. P. J. Thomas. An economic colossus of his times, Dr. P. J. Thomas wrote these articles and papers with depth and authority on a large and diverse range of issues, right from mercantilism to agrarian distress in colonial India to macro-level economic problems.

It is evident from his writings that Dr. P. J. Thomas was not an armchair economist but a "People's Economist", who had deep understanding about the grassroots-level problems of illiteracy, poverty, unemployment, inequality, socio-economic backwardness, low-standard of living, and other problems of rural population and the downtrodden and marginalized sections of the society. From students and researchers to policy makers and economic pundits, this book provides a golden opportunity for all who are interested in studying the original papers written by this celebrated economist, whose theories and concepts matter even today.

The writings in the book offers prophetic views of Dr. P. J. Thomas on population growth, rural employment guarantee scheme (*not many are aware of the fact that the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) was originally the brainchild of Dr. P. J. Thomas, and that he introduced this concept way back in 1930s*), local self-government, land reforms, general sales tax, and cooperatives. This book will serve as a source of "intellectual extractivism" for the present and future generations.

It is interesting to note that the intellectual extractivism on the works of Dr. P. J Thomas has already started; the biggest examples would be the articles titled *The Intellectual Legacy of an Early Development Economist* by Amiya Kumar Bagchi and J Krishnamurty's *P J Thomas: A Forgotten Pioneering Economist.* The inspiring thoughts and writings of Dr. P. J. Thomas are interesting and captivating enough to engage not only the academic and the intellectual community, but also to the

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politicians and policy makers in the country, as Dr. P. J. Thomas commanded respect from all sections of the society.

As a pioneering economic historian of the first half of the 20th century, Dr. P. J. Thomas's vision of federal finance in India is a must-read, as it offers a chance to independently assess his contribution to the literature on Indian economics. Dr. P. J. Thomas's writings reflect that the standard of living of the masses in the country can be improved by changing the regressive and burdensome land tax policy, and by increasing public expenditure on productive sectors.

As a pioneering development economist, his writings convey the importance of economic nationalism rooted in self-sufficiency and highlight his vision for a more balanced economy with industry playing a much bigger part in the economy. Dr. P. J. Thomas's paper titled *India's Economic Malady (*it is one of the interesting papers in this compilation), he argues that no stable economic progress is possible without curing the economic system of its inherent defects. He points out that unemployment and under-employment are only symptoms of the failure of the economic system, and these fundamental problems should be solved to make any substantial economic advance in India. The arguments made by Dr. P. J. Thomas are relevant in India even today.

Dr. P. J. Thomas also opened up various discussions on estimating the national income of India through his writings (*The National Income of India*, 1937); he favoured the method of aggregating the values of goods and services and individual incomes and supplementing this method with family budget surveys. When it comes to planning, Dr. P. J. Thomas upheld the significance of Census, and treated data relating to agriculture, industries, services and occupational sectors as useful inputs for planning purposes (*Census as an Agency for Planning*, 1940).

This edited compilation titled *Collected Scientific Papers for the Pioneering Economist and Planner* consist of all the major works[1] of Dr. P. J. Thomas, and they have the potential to ignite the minds of students and researchers in the field of development economics, agriculture economics, public finance, money and banking, international trade, and even local development issues in India. All in all, this book is a fitting tribute to Dr. P. J. Thomas, and a treasure trove of knowledge to the present and future generations of economists.

While we are grateful to Prof. E. M. Thomas for providing us with a book filled with immense knowledge and literature on Dr. P. J. Thomas, to take the seminal contributions of Dr. P. J Thomas to the present and future generations, the universities in India (particularly Kerala) should establish a chair in the name of this pioneering economist.

Collected Scientific Papers for the Pioneering Economist and Planner P J Thomas by E M Thomas, Academic Foundation, New Delhi, India, 2021, Pages 489. ISBN 9789332705722

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[1] Including: *National Income of India, Census as an Agency for Planning, The Problems of Over Population (1940), India's Economic Malady (1941), Reforms of Land Revenue Assessment: A Punjab Experiment (1935), An Early Proposal for a Federal System of Finance in India (1927), Economic Development of India (1930), The Central Problem of Indian Banking (1930) and The Agrarian Situation in India (1943)*

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