1. What is vertical fiscal imbalance?

Introduction

The financial relationship between the Union government and the States in India is asymmetrical, as in many other countries with a federal constitutional framework. As the 15th Finance Commission noted, States incur 61% of the revenue expenditure but collect only 38% of the revenue receipts. In short, the ability of the States to incur expenditures is dependent on transfers from the Union government. Consequently, there is the problem of Vertical Fiscal Imbalance (VFI) in Indian fiscal federalism where expenditure decentralisation overwhelms the revenue raising powers of the States.

Estimation of VFI after devolution of taxes

The 15th Finance Commission had noted that India has had a larger, and rising, vertical fiscal imbalance (VFI) than most other federations

Year	VFI after tax devolution (as a ratio)	The desired share of tax devolution to eliminate VFI (%)
2015-16	0.12	47.82
2016-17	0.13	48.24
2017-18	0.12	47.59
2018-19	0.11	47.38
2019-20	0.18	51.17
2020-21	0.28	56.87
2021-22	0.14	47.90
2022-23 (RE)	0.20	51.42
Average (excluding 2020-21 and 2021-22)		48.94

SOURCE: COMPUTED FROM UNION BUDGET DOCUMENTS, AND STATE FINANCES: A STUDY OF THE BUDGETS, RBI.

Why should VFI be reduced?

Constitutionally, the financial duties of the Union government and the States are divided. On the revenue front, to maximise the efficiency of tax collection, the Personal Income Tax, the Corporation Tax and a part of indirect taxes are best collected by the Union government. But on the expenditure front, to maximise the efficiency of spending, publicly provided goods and

services are best supplied by the tier of the government closest to its users. It is in this context that the extent of VFI merits attention.

The 15th Finance Commission had noted that India has had a larger, and rising, vertical imbalance than most other federations. These imbalances were further magnified during periods of crises, such as the COVID-19 pandemic, which drove a large wedge between one's own revenues and expenditure responsibilities at the sub-national level.

The problem of VFI falls under the purview of the Finance Commission, and it deals with broadly two questions. The first question is how to distribute the taxes collected by the Union government to the States as a whole. These transfers are made as a prescribed share of the "Net Proceeds" (Gross Tax Revenue of the Union less surcharges, cesses and costs of collection). The second question is how to distribute taxes across States. The matter of VFI arises as part of the first question.

Apart from devolving taxes, the Finance Commissions also recommend grants to States in need of assistance under Article 275 of the Constitution. But these are generally for short periods and for specific purposes. There are also transfers to the States that fall outside the Finance Commission's ambit. For example, the Union government spends substantial amounts — under Article 282 of the Constitution — on subjects falling in the State and Concurrent lists through centrally sponsored schemes and central sector schemes. But such grants are tied transfers that include conditionalities. In sum, the devolution of taxes from the net proceeds is the only transfer to the States that is untied or unconditional.

Calculating VFI in India

Here we try to estimate the VFI in India after the devolution of taxes to the States. We measure VFI at the level of "all States", and not separately for each State. For this, we use a globally accepted method. We first estimate a ratio where the numerator is the sum of the Own Revenue Receipts (ORR) and the tax devolution from the Union government for all States. The denominator is the Own Revenue Expenditure (ORE) for all States. If this ratio is less than 1, it implies that the sum of own revenue receipts and tax devolution of the States is inadequate to meet the ORE of the States. If we subtract this ratio from 1, we get the deficit in receipts. It is this deficit that we use as a proxy for VFI after devolution.

We can then ask the simple question: how much should tax devolution rise over and above that recommended by the past Finance Commissions to equalise the ratio to 1? Equating the ratio to 1 would eliminate VFI. In the attached table, we show that the average share of net proceeds devolved to the States between 2015-16 and 2022-23 should have been 48.94% to eliminate the VFI. But the shares of tax devolution recommended by the 14th and 15th Finance Commissions were only 42% and 41%, respectively, of the net proceeds.

Raising tax devolution

Many States have raised the demand that the share of tax devolution from the net proceeds must be fixed at 50% by the 16th Finance Commission. They add force to this demand by pointing to the exclusion from the net proceeds of the substantial amounts of cesses and surcharges, which truncates the net proceeds within the gross tax revenue.

Our analysis in this article lends empirical support to this demand. Here, we have assumed the present levels of expenditures of the States as a given. At the aggregate level, these actually incurred expenditures have not only conformed to but also underutilised the borrowing limits specified in the fiscal responsibility legalisations. Even then, we find that the share of net proceeds devolved to the States must rise to about 49% to eliminate VFI. Such an increase in devolution would place more untied resources in the hands of the States to spend on their citizens. It would also ensure that States' expenditures better respond to jurisdictional needs and priorities, and that the efficiency of expenditures is enhanced. Overall, it will be a move towards a healthy system of cooperative fiscal federalism.

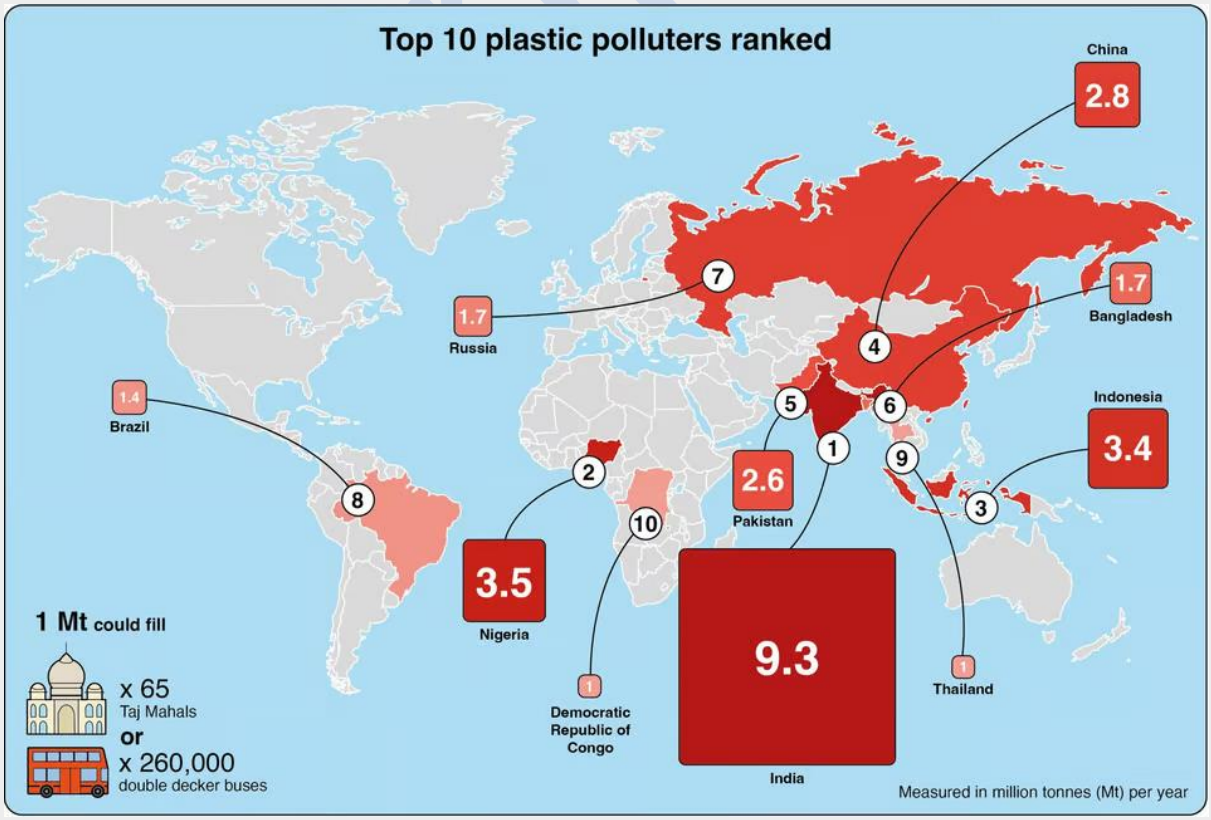
Relevance: GS Prelims & Mains Paper III; Economics
Source: The Hindu

2. India generates highest plastic pollution in world: what a new study found

Introduction

India contributes to a fifth of global plastic pollution, a study published in the journal Nature last week found.

India burns roughly 5.8 million tonnes (mt) of plastic each year, and releases another 3.5 mt of plastics into the environment (land, air, water) as debris. Cumulatively, India contributes to 9.3 mt of plastic pollution in the world annually, significantly more than the countries next in this list — Nigeria (3.5 mt), Indonesia (3.4 mt) and China (2.8 mt) — and exceeding previous estimates.



Problem of 'unmanaged' waste

The study, carried out by University of Leeds researchers Joshua W Cottom, Ed Cook, and Costas A Velis, estimated that around 251 mt of plastic waste is produced every year, enough to fill up roughly 200,000 Olympic sized swimming pools. Roughly a fifth of this waste — 52.1 mt — is "emitted" into the environment, unmanaged.

The authors define "managed" waste as what is collected by municipal bodies, and either recycled or sent to a landfill. Most plastic waste meets the latter fate. "Unmanaged" waste is what ends up in the environment either as debris — polluting every conceivable place on Earth from the heights of Mount Everest to the bottom of the Mariana Trench in the Pacific Ocean — as a result of plastic burning in open, uncontrolled fires. The latter generates fine particulates and toxic gases like carbon monoxide which have been linked to heart disease, respiratory disorders, cancer, and neurological problems.

Of the unmanaged waste, roughly 43% or 22.2 mt is the form of unburned debris and the rest, some 29.9 mt, is burnt either in dumpsites or locally.

North-South divide

A trend that the study identified was that there is a notable Global North and Global South divide when it comes to plastic pollution. "On an absolute basis, we find that plastic waste emissions are highest across countries in Southern Asia, Sub-Saharan Africa and South-eastern Asia," the study said. In fact, approximately 69% (or 35.7 mt per year) of the world's plastic pollution comes from 20 nations, none of which are High Income Countries (those with a gross national income per capita of $13,846 or more, according to the World Bank). This is despite these HICs — which are all in the so-called Global North — having higher plastic waste generation rates than countries in the South. Not a single HIC is "ranked in the top 90 polluters, because most have 100% collection coverage and controlled disposal," the study said.

Open burning is the predominant form of plastic pollution in the Global South (with the exception of Sub-Saharan Africa, where uncontrolled debris comprised a larger share of the pollution pie) unlike in the Global North, where plastic pollution predominantly comprised uncontrolled debris. This, the researchers say, is simply a symptom of inadequate or completely absent waste management systems, and a lack of public infrastructure for the same.

However, "we shouldn't put the blame, any blame, on the Global South… [or] praise ourselves about what we do in the Global North in any way," researcher Costas Velis told The Associated Press, adding that people's ability to dispose of waste depends largely on their government's power to provide the necessary services.

Criticism of the research

The study comes as treaty negotiations for the very first legally binding international treaty on plastics pollution are ongoing. In 2022, the UN Environmental Assembly agreed to develop such a treaty — which experts say might be the most important environmental accord since the Paris Agreement on climate change in 2015 — by the end of 2024. However, consensus on what it should entail has been hard to come by.

On one hand are fossil-fuel producing countries and industry groups, who view plastics pollution as a "waste management problem", and want to focus on that instead of curbing production. On the other hand are countries in the European Union and Africa, who want to phase out single-use plastics and introduce production curbs.

This "High Ambition Coalition" says that simply "managing" plastic waste to the point where there is no pollution at all is impossible, given the scale of plastic waste generation, and the economics and complexity of recycling. A study published in April in the journal Science Advances found a linear, direct relationship between increasing plastic production and plastic pollution — meaning a 1% increase in production resulted in a 1% release in pollution. (Win Cowger et al, "Global producer responsibility for plastic pollution", 2024).

Critics of the recent research say that the recent research plays into the plastic being a "waste management problem" narrative. "It risks us losing our focus on the upstream and saying, hey now all we need to do is manage the waste better," Neil Tangri, senior director of science and policy at GAIA, a global network of advocacy organisations working on zero waste and environmental justice initiatives, told The AP. "It's necessary but it's not the whole story."

Notably, plastics industry groups have praised the study. "This study underscores that uncollected and unmanaged plastic waste is the largest contributor to plastic pollution," Chris Jahn, the council secretary of the International Council of Chemical Associations said in a statement.

Relevance: GS Prelims & Mains Paper III; Environment
Source: Indian Express

3. What is the responsible use of Artificial Intelligence in war; where India, US and China stand

Introduction

As the use of artificial intelligence (AI) by the world's militaries grows, the political effort to regulate the way the revolutionary technology is used in warfare is growing too. If the ongoing wars in Ukraine and Gaza are emerging as "AI labs" for warfare, there is also a diplomatic push to establish at least some general norms on how to limit the dangers of its military use.

India, which has been actively engaged with the issues of development and safe use of AI in the civilian domain, has stood apart from the emerging global debate on limiting the technology for military uses. But as new global frameworks for 'AI arms control' begin to emerge, Delhi must shape the process rather than stay away from it.

What is the REAIM?

The summit on Responsible Use of Artificial Intelligence in the Military Domain (REAIM) beginning in Seoul, South Korea, on Monday (September 9) is part of the new global diplomacy to shape global norms on the military applications of AI. The summit is being co-hosted by Kenya, the Netherlands, Singapore, and the United Kingdom. A wide range of

governments, international organisations, technology companies, academia, and civil society from around the world are expected to participate.

This is the second iteration of the summit; the first took place in February 2023 in The Hague, and was hosted by the government of Netherlands. Although there were no dramatic outcomes at The Hague summit, it broadened the global debate on the military dimensions of AI and brought a wider range of stakeholders into the debate.

Until recently, the debate on military AI had been focused on autonomous weapons, the so-called 'killer robots'. The fear that the conduct of warfare would be taken up by computers and algorithms had generated calls for controlling these weapons. Keeping humans in the decision-making loop on the use of force has been a major objective of this discourse. The issues relating to lethal autonomous weapon systems (LAWS) have been discussed within a group of governmental experts since 2019 at the United Nations in Geneva.

Last December, the United Nations General Assembly took up for the first time the question of LAWS, and called on the Secretary General to gather the views of member states and report on the possible ways to address the ethical, legal, and operational challenges presented by autonomous weapons. The Secretary General's report is expected to be presented at this year's session of the UNGA beginning later this month.

From The Hague to Seoul

The REAIM process widened the debate beyond 'killer robots' to a broader range of issues by recognising that AI systems are finding ever greater applications in warfare. While AI has long been used by leading militaries for inventory management and logistical planning, in the past few years, the use of AI in intelligence, surveillance, and reconnaissance of the battlefield has significantly expanded.

Major militaries see the capacity of AI to transform the collection, synthesis, and analysis of vast amounts of data from the battlefield as useful in raising situational awareness, increasing the time available for decision-making on the use of force, enhancing precision in targeting, limiting civilian casualties, and increasing the tempo of warfare. Many critics have warned that these presumed attractions of AI in warfare might be illusory and dangerous.

The proliferation of the so-called AI decision-making support systems (AI-DSS) and their implications are among the issues that are now being debated under the REAIM process. The Hague summit called for continuing dialogue, and the second summit hopes to codify a measure of consensus on these issues. The three-fold objective of the Korea summit is to understand the implications of military AI on global peace and security, implement new norms on using AI systems in military affairs, and develop ideas on long-term global governance of AI in the military domain.

Focus on responsible use of AI in military affairs

In an important shift, the REAIM process has moved away from the idea that the AI revolution in military affairs can be reversed and abolished. Instead, it is calling for the "responsible use" of AI. The REAIM process is one of the many initiatives to promote responsible AI — national, bilateral, plurilateral, and multilateral.

On the last day of The Hague summit, the United States had issued a unilateral draft political declaration on the responsible use of AI, and formalised it in November 2023. Earlier in 2020, Washington had issued national guidelines for responsible military use of AI by the US armed forces.

The US has also encouraged its NATO allies to adopt similar norms. NATO's 2021 strategy identified six principles for the responsible military use of AI and unveiled a set of guidelines for its forces in July this year. The objective is to "accelerate" the use of AI systems that could generate military gains for NATO, but in a "safe and responsible" manner.

Simply put, we are going to see more AI in warfare than less; that comports with the historic trend that all new technologies will eventually find military applications. AI is no exception. The REAIM process recognises this — and given the potentially catastrophic outcomes from such use, the idea is to develop an agreed set of norms. The US is also conducting a bilateral dialogue with China on the responsible use of AI, especially on limiting its potential implications for nuclear deterrence.

Where the world, India, and China stand on AI use in weapons

In a parallel effort to the REAIM summits, the US introduced a resolution on the responsible use of AI at the UNGA earlier this year, which was co-sponsored by 123 countries and adopted by consensus. While the UN effort is focused on broad objectives, the REAIM process is aimed at a more granular discussion of the issues and building a wide international coalition in developing a new set of global norms on military AI.

More than 50 countries have endorsed the US political declaration on the responsible use of AI in the military domain. The US is reaching out to a wide range of countries in the Global South to inform them and win their support for the new AI initiative. On its part, Delhi has been in a 'watch-and-wait' mode in this unfolding debate. It is examining issues of substance and their long-term significance as it observes but holds back from full involvement with the new AI initiatives.

India had not endorsed the "call to action" issued by The Hague summit, and it remains to be seen if it supports a blueprint for global AI action that is expected to be unveiled by the Korea summit. Delhi, however, can't afford to remain a passive bystander in this profoundly consequential global debate on promoting norms for military use of AI.

Beijing, in contrast, has been at the forefront of the strategic as well as regulatory discourse on the military uses of AI. Its military analysts talk about the role of AI in "intelligised warfare". In 2021, China issued a White Paper outlining its approach to the regulation of military uses of AI. It also supported The Hague summit's "call to action" on the responsible military use of AI.

India's bitter experience with nuclear arms control, where political indecisiveness and ideological hesitations cost the nation dearly, is a reminder that it is easier to shape the global normative architecture in the design phase than change it after the new rules are established.

Relevance: GS Prelims & Mains Paper II; International Organisations
Source: Indian Express