Infrastructure and Fiscal Management

NARAYANA DELAMPADY, ALOK SHEEL

In India, fiscal consolidation is rule-based and focuses on deficits and debt. Macroeconomic concerns are not integrated with fiscal targets, which have been achieved at the cost of infrastructure investment. States have to use their revenues more effectively to spend on health and education, and borrow more to fund infrastructure. The centre must incentivise states to use their fiscal space effectively. A strategy for infrastructure investment by the central and state governments is discussed, especially in the context of the recommendations of the Fourteenth Finance Commission.

Narayana Delampady (*narayanadelampady@gmail.com*) is an economist and statistician. Alok Sheel (*aloksheel@aloksheel.com*) is a retired bureaucrat.

India's record in reducing absolute poverty is poor by the standards of developing countries and, indeed, of South Asia (Olinto et al 2013). Government investment in infrastructure has fallen over the past two decades, first following economic reforms and macroeconomic adjustment policies and later as part of fiscal consolidation. Infrastructure levels today are lower than in East Asia in the 1960s. A lesson learnt from the experience of the East Asian growth "miracle" is that for rapid growth and poverty reduction, large investments in physical and social infrastructure are necessary (World Bank 1993). In India, the infrastructure gaps are large. If India seeks to sustain high levels of growth over an extended period and make a rapid dent in poverty, the government at all levels needs to invest large amounts to fill these large infrastructure gaps. And public investment in infrastructure, in contradistinction to other kinds of public expenditure, tends to crowd in private investment rather than crowd it out, especially in a liberalised economic environment (Blejer and Khan 1984; Argimón et al 1997; Bahal et al 2015; Dash 2016).

In developing countries, there are also few alternatives to government investment, given especially the risks involved in infrastructure development and the length of gestation. A World Bank study in the 1990s (Briceño-Garmendia et al 2004) found that governments and public utilities financed about 70% of all infrastructure investment in developing countries and official development assistance another 5%; the share of private investment was only 20%–25%, of which over 80% was in telecom, electricity, and toll roads. In India, the hope that private investment would fill this gap has been belied by the experience of public-private-partnerships (PPPs) over the past 15 years. Experience suggests that the Twelfth Plan's target—about 50% of infrastructure investment would come from private sources—was too optimistic.

This paper explores possible strategies for infrastructure investment by the central and state governments, especially in the context of the recommendations of the Fourteenth Finance Commission. So far, in India, fiscal consolidation has been rule-based, and has focused largely on deficits and debt. While this basis and focus has advantages, broader macroeconomic objectives have not been integrated with fiscal targeting, and fiscal targets have been achieved at the cost of infrastructure investment. The large infrastructure gaps that inhibit growth have persisted, and public investment has not been forthcoming to fill the gaps.

The paper first presents a picture of the physical and social infrastructure in India, and compares it with that in East Asia and some developed countries. It then analyses the trends in

public sector gross capital formation in relation to the gross fiscal deficits at the central and state levels over the past 20 years, and finds hardly any relationship between the two. Fiscal deficits have been spent mostly to meet revenue deficits, leaving little room for investments. The paper then analyses fiscal consolidation in states and shows that states consider meeting fiscal targets an end in itself and disregard broader macroeconomic objectives. Most states have set fiscal targets well below those set by the finance commissions without in any way relating them to their investment needs. This is followed by a discussion of future investment strategies in the light of the recommendations of the Fourteenth Finance Commission on debt and interest payments taking account of infrastructure gaps, investment needs, and the borrowing required to meet these needs.

Infrastructure

The role of infrastructure in enhancing economic development has been well documented in the academic literature and policy debate. Broad-based investment in infrastructure is one of the pillars of the East Asian growth story. A sense of the infrastructure gap may be obtained by comparing India's electric power consumption, urban sanitation access, and internet penetration with those of East Asian and advanced economies (Table 1).

Table 1: Level of Electricity Consumption, Sanitation and Internet Usage in India, East Asia and Advanced Economies

Country	Electric Power Consumption (kWh per capita) 2014	Urban Population Using Basic Sanitation Services (% with access) 2015	Rural Population Using Basic Sanitation Services (% with access) 2015	Individuals Using Internet (% of Population) 2016
India	806	65.4	33.8	29.5
South Korea	10,497			92.7
Malaysia	4,596	99.8	98.8	78.8
Indonesia	812	77.3	57	25.4
Thailand	2,540	93.8	96.2	47.5
Vietnam	1,411	91	71.8	46.5
Germany	7,035	99.3	99	89.6
France	6,938	98.6	98.9	85.6
Finland	15,250	99.4	99.5	87.7
Denmark	5,859	99.6	99.6	97.0
Australia	10,059			88.2
UK	5,130	99	99.5	94.8
US	12,987	100	99.5	76.2
World	3,125	82	49.8	45.9

Source: World Development Indicators (Tables 3.12, 5.11, and WV.3), http://wdi.worldbank.org/tables.

Social infrastructure (education, health, and housing) is essential to promote better utilisation of physical infrastructure and human resources, and thereby improve economic growth and the quality of life (Hall and Jones 1999). In 1960, literacy levels in many East Asian countries (Table 2) were already well above that in India 40 years later.

Table 2: Education Level in East Asia, 1960 (%)

Economy	Literacy Rate	Primary School	Secondary School
Hong Kong	0.70	0.87	0.24
South Korea	0.71	0.94	0.27
Singapore	0.50	1.11	0.32
Taiwan	0.63	0.63	0.38
Indonesia	0.39	0.67	0.06
Malaysia	0.53	0.96	0.19
Thailand	0.68	0.83	0.12

Proportion of relevant population.
Source: Stiglitz and Yusuf (2001).

In 2001, the literacy level in India was only 65%, lower than the levels in 1960 in Korea, Hong Kong, and Thailand. By 2011, the literacy level in India reached 73%, which was the level in Korea in 1960. The distance to cover is still large, but progress in school enrolment in India has been considerable—primary enrolment was 100.8% in 2010–11, secondary enrolment was 78.51%, and higher secondary enrolment was 54.21% in 2014–15 (GoI nd).

Along with gains in literacy, technical education too was emphasised by most countries in East Asia and in the Organisation for Economic Co-operation and Development (OECD):

> As is well known, the Asian NIEs [the Newly Industrialising Economies of Hong Kong, Singapore, South Korea, and Taiwan that underwent rapid growth and industrialisation between 1960 and 1990] were characterised by high levels of general education at the beginning of their rapid growth and spent considerable resources on technical education …. By the late 1970s the percentages of tertiary school graduates majoring in computer science, mathematics, and engineering were comparable to OECD levels, indeed above many of the latter [Table 3]. It seems plausible that growth in productivity and the efficient transition among sectors were greatly facilitated by the presence of a large group of technically educated members of the labor force. (Stiglitz and Yusuf 2001: 123)

In technical education, too, India is at the bottom, and the low proportion of science and mathematics students in the tertiary sector in India needs to be seen along with the low enrolment in tertiary education (Table 3).

Table 3: Share of Tertiary Graduates in Computer Science, Mathematics, Engineering (various years)

Economy (Year)		Share (%)
Hong Kong	1981	0.34
	1992	0.34
South Korea	1981	0.34
	1993	0.28
Singapore	1980	0.51
Indonesia	1992	0.12
Germany	1979	0.16
	1990	0.29
Malaysia	1981	0.27
	1990	0.25
India	1978	0.18
	1990	0.16
Israel	1979	0.33
	1992	0.28
France	1992	0.31

Source: Stiglitz and Yusuf (2001).

India reports one of the lowest enrolments in tertiary education in comparison with East Asian countries; at 26.9%, tertiary enrolment is on par with that in Malaysia, Indonesia and Vietnam but far lower than in Thailand and South Korea. These gaps stem from large differences in government spending on education, health, sanitation, electricity, and overall logistics (Table 1 and Table 4, p 46).

The circumstances are summed up well in a recent World Bank study (Andrés et al 2013: 1):

> If South Asia hopes to meet its development goals and not risk slowing down—or even halting—growth and poverty alleviation, it is essential to make closing its huge infrastructure gap a priority. But the challenges on this front are monumental. … This region requires significant infrastructure investment (roads, rails, power, water supply, sanitation, and telecommunications) not only to ensure basic service delivery and enhance the quality of life of its growing population, but also to avoid a possible binding constraint on economic growth owing to the substantial infrastructure gap.

Fiscal Deficits and Capital Expenditure

Generally, fiscal consolidation is aimed at ensuring macroeconomic stability and accelerating economic growth, and at keeping the stock of public debt at prudent levels, as high debt

Table 4: Level of Education and Public Social Infrastructure Spending in India, East Asia, and Advanced Economies

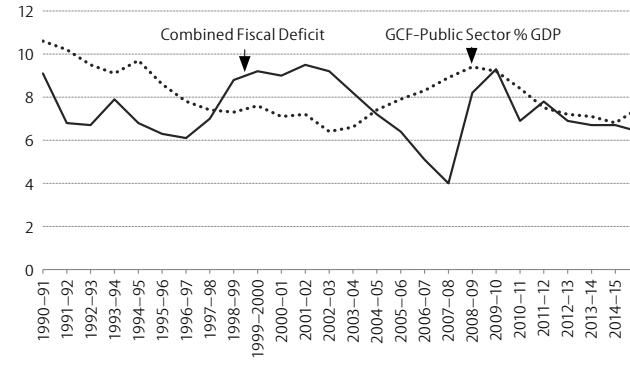
Country	Tertiary Enrolment (% 2016)	Government Expenditure on Education (% GDP, 2016)	Health Expenditure 2015	
			Public as % of Total	% GDP
India	26.9	3.8 (2012)	25.6	3.9
South Korea	93.2	5.1	56.8	7.4
Malaysia	26.1	5.0	52.5	4.0
Indonesia	24.3	3.6	39.4	3.3
Thailand	48.9	7.6 (2012)	76.3	3.8
Vietnam	28.8	6.3 (2012)	42.1	5.7
Germany	68.3	5.0	84.5	11.2
France	64.4	5.7 (2012)	78.4	11.1
Finland	87.3	7.2	77.7	9.4
Denmark	82.8	8.7 (2012)	80.6	10.3
Australia	90.3	5.2	64.9	9.4
United Kingdom	56.5	5.7	79.8	9.9
US	85.8	5.4	50.6	16.8
World	35.7		59.6	9.9

Source: World Bank, World Development Indicators, Tables 2.7 and 2.8.

has an impact on growth (Reinhart and Rogoff 2010). The channel of operation is through the interest rate. Excessive public borrowing pushes up interest rates, which can crowd out private investment. While these channels are operative in developing countries as well, another channel in developing countries that affects growth, and therefore cannot be ignored, is public investment in infrastructure, a necessary condition for stable growth. Lawrence Summers (2013) is instructive here: "Reducing prospective deficits should be a key priority, but should not take over economic policy." He goes on to argue that just as repressing inflation (through price controls and subsidies) is misguided, repressing budget deficits can also be a serious mistake if it is made at the expense of other real deficits, such as a nation's infrastructure, as this has a negative fallout on growth and overall well-being. The issue of repressed fiscal deficits is particularly relevant in the Indian context.

That infrastructural bottlenecks constitute a serious threat to sustaining high growth has been debated at great length during the past few years in India. In the absence of adequate government funding for infrastructure, the central and state governments have encouraged PPPs, but the experience of the past 15 years suggests that PPPs can suffer from severe limitations. One is that "only the richer states can hope to mobilise private funds for infrastructure projects as well as realise efficiency gains from private sector participation" (Anant and Singh nd, 25). Projects located in poorer states cannot draw on private investment, as the private sector is likely to invest only in projects close to a big city or if the state has a rich neighbouring state (Anant and Singh nd). Another reason is that successful project structuring cannot be used as a proxy for successful long-term project governance. The experience of the Tirupur water supply project is illustrative. What was once touted as a first-of-its-kind success story of how PPPs could be used for delivering urban services struggled to meet its debt service obligations once completed. The experience with urban metro networks is similar, as these are rarely self-sustaining. In other words, there is no alternative to significant levels

Figure 1: Gross Capital Formation vs Combined Fiscal Deficit



Source: Ministry of Finance, *Economic Survey* (various years).

of budgetary support for investment in infrastructure development in India.

The conventional view is that fiscal deficits should be for capital spending. If this were true, there should be a strong positive relationship between the two. This relationship is, however, conspicuous by its absence and, if anything, is negative.

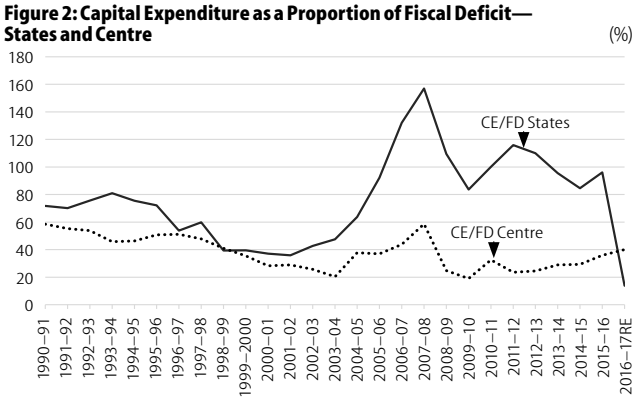
There was a secular decline in gross capital formation in the public sector from over 10% in 1991 to about 6% in 2002–03 (Figure 1).

The combined fiscal deficit of the centre and states and public sector gross capital formation moved idiosyncratically from 1990–91 to 1996–97, following which they moved in opposite directions right up to 2011–12. The latter period can itself be divided into two phases. Between 1996–97 and 2002–03, public sector gross capital formation fell as the fiscal deficit rose sharply. That capital expenditure should be constrained by the fiscal balance is understandable. During the latter phase, however, from 2003–04 to 2007–08, the deficit dropped sharply from 9% to 4%, and capital formation increased from 6% to over 9%. What might be the reason for this?

Since the Fiscal Responsibility and Budget Management (FRBM) Act came into force from 2004, it could be argued that the act had the virtuous impact of compressing revenue expenditure and expanding capital expenditure—a primary objective. During this period, however, the economy grew at an unprecedented rate of more than 8% over five successive years. That the fiscal adjustment was more the result of a positive revenue shock of above trend growth than of revenue expenditure compression became painfully clear in 2008–09 and 2009–10 in the wake of the global financial crisis. The deficit breached 9% once again on the back of the revenue shock, deriving from plummeting growth, and combined with the need for a growth stimulus. Since then, both gross capital formation and fiscal deficits have shown a declining trend.

Does the disconnect between the fiscal deficit and gross capital formation hold for both the centre and the states? Capital expenditure as a proportion of the fiscal deficit showed a declining trend in both the centre and the states right up to the passage of the FRBM Act, until the early 2000s. Gross capital formation declined, as the fiscal deficit rose, indicating that revenue expenditure increased at the expense

Figure 2: Capital Expenditure as a Proportion of Fiscal Deficit—States and Centre



Source: Ministry of Finance, *Economic Survey* (various years).

of capital. Thereafter, following the FRBM Act, gross capital formation began rising and the fiscal deficits began to fall (Figure 2).

Reducing the revenue deficit component of the fiscal deficit was one of the main objectives of the FRBM Act. In the states, the share of revenue deficits in fiscal deficits increased from about 20% in the early 1990s to almost 60% by the early 2000s. In the early 1990s, 80% of the fiscal deficit was spent on capital formation, but by the early 2000s less than 40% of the fiscal deficit was available for this purpose. The trend in the centre was similar, but more pronounced, with only about 20% of the fiscal deficit available for capital spending by 2003–04, down from 60% in 1990–91.

The FRBM Act quickly brought the revenue deficit under control. By 2005–06, state budgets were running a revenue surplus, with capital expenditure exceeding the fiscal deficit. Capital formation started rising from its low levels of the early 2000s. The trend in the centre was similar, but less pronounced, and capital expenditure climbed back to 60% of the fiscal deficit. The global financial crisis did not significantly affect these trends.

Even as there was a revenue surplus in most states—with the notable exception of Kerala, West Bengal, and Punjab—the central government's finances did not improve significantly. In the early 1990s, about 50% of the fiscal deficit was available for capital spending, but this percentage declined steadily over the next 10 years to less than 20% by 2003–04. Not only did the FRBM Act fail to curtail the centre's revenue deficit, but fiscal expansion in the wake of the global financial crisis increased the revenue deficit and crowded out capital expenditure. The falling capital expenditure of the central government is well recognised; the Medium Term Fiscal Policy Statement of 2015–16 observed that the central government's capital expenditure dropped from 23.2% of total expenditure in the 2003–04 financial year to around 12% in recent years (GoI 2016), rising marginally to 14.5% in 2016–17. This proportion is unlikely to increase significantly anytime soon as the scope for reducing revenue deficit is limited. Interest payments, salaries, and pensions account for about 62% of central government revenue receipts. If subsidies (mostly food, fertiliser, and petroleum) and grants to states and union territories are also included, the proportion rises to 86% (GoI 2017b).

The pressure on revenue expenditure is likely to grow because of factors such as goods and services tax (GST) compensation to states, rising interest payments on public debt, and higher outlays on salaries and pensions on account of the Seventh Pay Commission awards for civilian employees and the "One Rank One Pension" scheme for defence personnel. The number of pensioners is rising, as is their longevity. Boosting central government capital expenditure under these circumstances would be challenging. The centre may be constrained to leverage the limited capital outlay to incentivise states and private investors to borrow more and spend on capital formation. Following the FRBM Act, states reduced their revenue deficit dramatically and were almost running a surplus until the sudden, worrisome spike from 0.1% in 2015–16 to 2.5% in 2016–17.

State Finances and Development Spending

The FRBM legislation in the centre and states heralded an era of fiscal consolidation. Three states passed their FRBM Act even before the centre did in August 2003, and five states passed their FRBM Act before the Twelfth Finance Commission award. Incentivised by the Twelfth Finance Commission award in the form of debt and interest rate relief, 21 states enacted FRBM legislation. West Bengal and Sikkim enacted FRBM legislation in 2010 in response to incentives provided by the Thirteenth Finance Commission. In the aftermath of the global financial crisis, and the consequent deviations from the FRBM targets, the Thirteenth Finance Commission specified a road map for the return of states to fiscal consolidation, with annual targets for reduction in revenue deficits, fiscal deficits, and public debt.

The performance of states in reducing revenue and fiscal deficits, and the impact of such reductions on capital and development spending, are analysed in this section. The methodology adopted is computation and comparison of pre-FRBM and post-FRBM averages. The periods are those contained in the RBI Study of State Finances (2015). The states are grouped in the RBI study by average per capita income—high-income (Group A), middle-income (Group B), low-income (Group C), and special category states. This is supplemented by computations done in Pinaki Chakraborty and Yan Zhang (2009). Per capita expenditures on health and education are taken from *Budget in Brief*, Part B (Kerala), for various years.

Strictly speaking, treating the FRBM Act as the watershed between periods of fiscal laxity and fiscal rectitude is not proper, because the States' Fiscal Reforms Facility was introduced for the period 2000–01 to 2004–05. It was based on the recommendations of the Eleventh Finance Commission and backed by an incentive fund to eliminate revenue deficits. Some states had begun responding to these incentives by reducing revenue deficits. The pre-FRBM averages capture part of this fiscal consolidation effort. To that extent, the difference between the pre-FRBM and post-FRBM averages understates the effort to reduce deficits in the states prior to the introduction of FRBM legislation. Nevertheless, most

Table 5: Revenue Deficit (% GSDP) in Indian States, Pre-FRBM and Post-FRBM

Group of States	Pre-FRBM			Post-FRBM		
	Average	Maximum (State)	Minimum (State)	Average	Maximum (State)	Minimum (State)
Group A	2.08	3.2 (Gujarat)	1.4 (Haryana)	−0.1	0.5 (Haryana)	−0.5 (Goa)
Group B	2.68	4.9 (West Bengal)	0.9 (Karnataka)	1.16	2.5 (West Bengal)	−0.8 (Karnataka)
Group C	3.22	3.7 (Odisha)	0.4 (Chhattisgarh)	−2.26	−2.6 (Bihar)	−0.1 (Rajasthan)
Special category states	−1.02	5.9 (Himachal Pradesh)	−10.1 (Sikkim)	−5.255	−13.5 (Arunachal Pradesh)	−0.1 (Andhra Pradesh)

Negative sign indicates revenue surplus.
Source: RBI (2015).

Table 6: Gross Fiscal Deficit (% GSDP) in Indian States, Pre-FRBM and Post-FRBM

Group of States	Pre-FRBM			Post-FRBM		
	Average	Maximum (State)	Minimum (State)	Average	Maximum (State)	Minimum (State)
Group A	3.98	5.1 (Gujarat)	2.8 (Tamil Nadu)	2.22	2.8 (Goa)	1.6 (Maharashtra)
Group B	4.26	5.1 (West Bengal)	3.1 (Karnataka)	2.98	3.4 (Kerala)	2.4 (Andhra Pradesh)
Group C	5.143	6.1 (Jharkhand)	2.7 (Chhattisgarh)	1.90	3.4 (Bihar)	0 (Odisha)
Special category states	6.445	14.5 (Mizoram)	3.2 (Assam)	3.082	6.4 (Mizoram)	−0.1 (Tripura)

Source: RBI (2015).

states—excepting special category states—were running large revenue deficits before the FRBM Act were initiated (Table 5).

These deficits ranged from 0.4% of gross state domestic product (GSDP) (Chhattisgarh) to 4.9% of GSDP (West Bengal). The FRBM Act compelled the states to bring down their revenue deficits, which declined sharply, except for three states in Group B. Revenue budgets came to be largely balanced. Interestingly, the revenue surplus was the highest in the low-income states that earlier had the highest deficits. Gross fiscal deficits too came down rather sharply in the post-FRBM period in all states (Table 6).

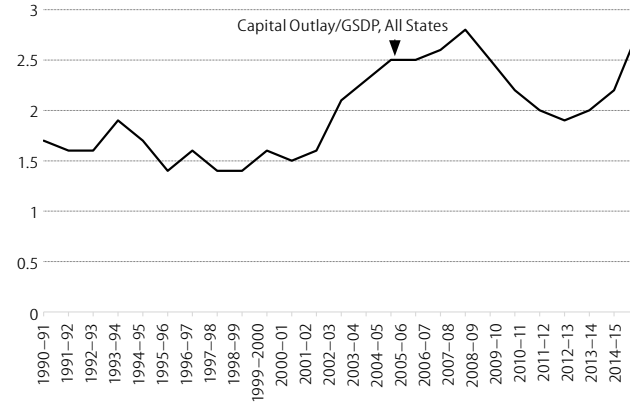
Again, the biggest drop was in low-income states, and the next-biggest in high-income states. For states in Groups A and C, the gross fiscal deficit in the post-FRBM period was on average well below the 3% target. Group B states, which had the highest deficits, averaged 2.98% largely because of the 3.3%–3.4% gross fiscal deficits of Punjab, West Bengal, and Kerala. The large reduction in the gross fiscal deficit, to well below the 3% target, suggests that following the FRBM Act, reducing the gross fiscal deficit seems to have become an end in itself for states rather than a means to increasing capital expenditure.

The states took the Thirteenth Finance Commission targets of revenue deficit and fiscal deficit as the gospel truth. This is understandable, since they were incentivised to do so. But what is difficult to understand is why they exceeded targets at the cost of forgoing higher capital expenditure in the face of deep-seated physical and social infrastructural bottlenecks and deficits. Almost all states set higher revenue and fiscal deficit targets than the Thirteenth Finance Commission. The revenue deficit targets for nine non-special category states were set at zero for 2013–14 (Kerala was an exception; its target was 0.5%) but only two, Kerala and Maharashtra, leveraged their targets. In 2013–14 Karnataka, Tamil Nadu, and Andhra Pradesh targeted a revenue surplus of −0.1%, Gujarat −0.6%, Odisha −0.7%, Madhya Pradesh −1.3%, and Bihar −2.2% (RBI 2014). For 2014–15 and 2015–16, the Finance Commission set the target at zero for all states, but the states aimed to improve on their 2013–14 performance. For instance, Karnataka set a target of −0.8% for 2014–15 and −1.3% for 2015–16. Tamil Nadu set the targets at −0.2% and −0.3%.

The Thirteenth Finance Commission set the gross fiscal deficit target at 3.0% of the GSDP for all 13 states for 2013–14. With the exception of Madhya Pradesh and Punjab, all the states set their targets at 2.8% or lower. Maharashtra set the lowest target at 1.6%. In 2014–15, only six of 13 states set the target at 3.0% of GSDP. The other seven states set substantially lower targets, ranging from 1.6% to 2.8%. The situation in 2015–16 was similar.

It is not clear what compelled the states to significantly exceed the targets set by the Thirteenth Finance Commission. Such virtuous targeting adversely impacted their capital and developmental expenditures. The sharpest increase in capital spending, from 1.6% to 2.5% of the gross domestic product (GDP), took place between 2002–03 and 2006–07 (Figure 3).

Figure 3: Capital Outlay (% GDP), All States, 1990–91 to 2014–15



Source: Reserve Bank of India, State Finances: A Study of Budgets (various years).

There was a marginal increase for two years after 2006–07, until 2008–09, before a dramatic fall until 2012–13. Only five states had implemented the FRBM Act before 2006–07. If 2006–07 is taken as the effective year of implementation, then it may be said that the FRBM targets were maintained at the cost of capital spending. Capital expenditure picked up from 2013–14, but it still needs to be seen whether this can be sustained in the wake of disruptions deriving from GST and of states' implementation of the Seventh Pay Commission recommendations, which can put the revenue deficit under pressure. The sudden jump in the states' revenue deficit from 0.1% in 2015–16 to 2.5% in 2016–17 (revised estimate), with the overall

fiscal deficit remaining within the targeted 3%, is an indication that states might expand revenue expenditure at the cost of capital.

Health and education spending is mostly part of revenue expenditure. The trends in expenditure on education and health as a share of GDP in the states show that the average expenditure on education, which was 2.5% from 2000–01 to 2004–05, fell to 2.371% from 2006–07 to 2012–13. The expenditure on health was 0.66% from 2000–01 to 2004–05 and 0.63% from 2006–07 to 2012–13. Thus, the FRBM period saw a drop in capital expenditure and in expenditure on education and health. However, states have increased education and health expenditure from 2013–14. Expenditure on education rose to 2.5% of GDP in 2013–14, 2.6% in 2014–15, and 2.9% in 2015–16 (revised estimate) and on health in the same years to 0.7%, 0.8%, and 0.9% (RBI 2017). But this increase was fully countervailed by a decline in central government expenditure—on education from 3.1% of GDP in 2013–14 to 2.4% in 2015–16 and on health from 1.3% to 1.1% (GoI 2018). This adjustment of social sector expenditure between the centre and the states appears to be simply a fallout of the Fourteenth Finance Commission award that transferred an additional 10% of tax resources from the divisible pool from the centre to the states.

An analysis of the expenditure on education and health by states in the pre-FRBM and post-FRBM periods shows that the aggregate expenditure of all states hovered around 14.2% of aggregate expenditure during the 10-year period since 2002–03. There were two small humps in 2008–09 and 2009–10 (probably to meet the larger salary and pension expenditure because of the Sixth Pay Commission report). Only Chhattisgarh showed a steady increase, while Andhra Pradesh and Karnataka showed a mild fall (Table 7).

The share of education expenditure in aggregate expenditure fell sharply in almost all the states in the three groups, except in Goa and Haryana in Group A and in Chhattisgarh in Group C, the states that had the lowest expenditures in their groups in the pre-FRBM period. Thus, all the states reported a falling share in expenditure on education in the post-FRBM period. The falling expenditure shares show up as falling or stagnant per capita expenditure in Group C states, except in Chhattisgarh and Odisha, relative to the average for all states. These states were spending 25%–40% less than the all-state average.

Health expenditure fared even worse in both high-income and low-income states. Only three states—Tamil Nadu, Kerala, and Karnataka—spent over 5% of their aggregate expenditure on health in the pre-FRBM period. In the post-FRBM period, health expenditure fell everywhere except in Gujarat and Goa. But Gujarat had one of the lowest expenditure shares among all states in the pre-FRBM period to begin with, and the increase did not translate into any significant increase in real terms. In per capita terms, the only states that improved their positions relative to the all-India expenditure were Haryana, Tamil Nadu, and Kerala (Table 8).

Overall, the states have balanced their revenue accounts and kept to their fiscal deficit targets at the cost of the physical and social infrastructure sectors in what is a classic illustration of the "repressed fiscal deficit" (Summers 2013). This is all the more worrisome because the post-economic reforms period had already seen a squeeze on such spending (Chakraborty and Zhang 2009: 7). Fiscal responsibility and budget management rules accentuated this declining trend. Infrastructure expenditure has been especially low in low-income states that showed the sharpest improvement in public finances. Compared to the all-India average per capita expenditure of ₹1,677

Table 7: Expenditure on Education and Health (% of Aggregate Expenditure) by States, Pre-FRBM and Post-FRBM

State	Expenditure on Education (%)		Expenditure on Health (%)	
	Pre-FRBM	Post-FRBM	Pre-FRBM	Post-FRBM
Group A				
Goa	12.12	14.22	4.38	5.42
Maharashtra	19.10	18.77	3.80	3.50
Haryana	13.86	14.97	3.27	3.01
Gujarat	14.21	13.94	3.63	3.73
Tamil Nadu	18.28	13.58	5.54	3.97
Group B				
Kerala	20.49	16.80	5.85	4.88
Punjab	14.79	11.77	4.65	3.33
Karnataka	17.27	12.01	5.33	3.61
Andhra Pradesh	13.26	11.03	4.73	3.83
West Bengal	18.70	18.60	4.20	4.50
Group C				
Rajasthan	17.34	17.16	4.41	4.63
Jharkhand	15.98	13.42	4.78	4.10
Chhattisgarh	11.92	15.57	3.80	3.57
Madhya Pradesh	13.81	12.01	4.50	3.54
Odisha	16.50	16.07	4.37	3.44
Uttar Pradesh	17.95	14.89	5.00	4.81
Bihar	19.52	18.07	4.40	3.62

Source: RBI (2015).

Table 8: Differentials in per Capita Expenditure on Education and Health by States

(% All States Average)

State	Expenditure on Education			Expenditure on Health		
	2000–01 to 2002–03	2005–06 to 2007–08	2009–10 to 2011–12	2000–01 to 2002–03	2005–06 to 2007–08	2009–10 to 2011–12
Group A						
Goa	301.35	327.95	388.00	447.83	471.00	na
Maharashtra	163.51	139.27	144.52	118.12	99.69	103.10
Haryana	115.03	121.34	142.66	96.38	91.82	109.28
Gujarat	118.07	107.67	107.73	104.35	90.25	109.46
Tamil Nadu	116.22	112.15	116.80	115.94	103.46	132.36
Group B						
Kerala	139.19	142.57	134.11	147.10	144.34	158.18
Punjab	134.46	110.26	103.50	174.64	118.08	117.42
Karnataka	111.99	123.11	109.28	115.91	106.92	109.82
Andhra Pradesh	86.15	88.92	89.57	104.35	94.81	114.85
West Bengal	95.95	87.26	95.47	113.77	83.65	93.19
Group C						
Rajasthan	95.44	95.87	92.86	98.55	87.74	87.71
Jharkhand	92.91	98.11	74.36	81.88	124.37	73.39
Chhattisgarh	63.68	84.55	111.39	80.44	73.59	94.44
Madhya Pradesh	60.14	62.85	50.65	72.46	71.38	69.32
Odisha	83.11	81.49	96.62	78.26	62.26	74.62
Uttar Pradesh	60.64	69.69	66.87	51.44	87.26	71.97
Bihar	64.87	66.51	55.28	48.55	54.72	43.24
All states average in ₹	592 (100%)	848 (100%)	1677 (100%)	138 (100%)	212 (100%)	377 (100%)

Per capita expenditure of the state is taken as a percentage of all states average.
Source: RBI (2015).

in education and ₹377 in health, low-income states spend 25%–40% less on education and 25%–50% less on health. Compared to a high spender like Kerala, Bihar spends 60% less on education and 70% less on health.

Investment Strategy

The recommendations of the Fourteenth Finance Commission that came into effect from 2015–16 marked major changes in centre–state fiscal relations. First, the share of taxes from the common divisible pool devolving on states jumped from 32% to 42% at one go; in the past, increases were modest and incremental. Second, the recommendations dispensed with most sector-specific grants-in-aid and confined these to three categories—local bodies, disaster management, and revenue deficits. Third, while calculating post-devolution revenue deficit grants, these recommendations did not distinguish between plan and non-plan expenditure and considered the entire revenue expenditure of states. (The plan/non-plan distinction was done away with entirely from the union budget of 2017–18.) Fourth, the formula for horizontal distribution was changed: weights were assigned to population, income distance, and area as usual, but two new criteria—demographic change (based on 2011 Census) and forest cover—were introduced. Fifth, the distinction between special category and non-special category states was removed.

The ceiling on the gross fiscal deficit of states was retained at 3% of GSDP. However, in what appears to be an implicit acceptance of the concept of cyclical and structural budget balances, an additional borrowing limit of 0.25% each for states with debt-to-GSDP ratios below 25% (*sufficient condition 1*) and/or interest payments below 10% of revenue receipts (*sufficient condition 2*) has been allowed. This additional limit, 0.5% of GSDP in the aggregate, can be availed separately or simultaneously. The additional borrowing is conditional on the state having no revenue deficit in the borrowing year and in the year immediately preceding it (*necessary condition*). States have also been given the option to carry forward the unutilised borrowing limit to the following year.

It is not yet possible to make a full assessment of the Fourteenth Finance Commission award on capital and development spending in the states. The larger tax devolution has undoubtedly strengthened the revenue account of states and given them the fiscal space to boost development expenditure and capital spending. However, in the aftermath of the FRBM Act, when the states had the option of running a balanced revenue account, they chose to run a surplus instead and keep their gross fiscal deficit below the 3% target. Low-income states that needed higher infrastructure spending the most were the most conservative in this regard. In Group C, Odisha kept its gross fiscal deficit at zero for long. Chhattisgarh kept it below 1%. In Group A, too, four out of the five states kept their gross fiscal deficit below 2.5%; only Goa had a gross fiscal deficit close to 3%. In Group B, three out of the five states crossed 3% in the post-FRBM period.

Will this happen again? Will states run revenue surpluses in future, and exceed their fiscal deficit targets, instead of leveraging the additional resources and flexibility given to expand outlays on health and education and also borrow more for capital spending? In March 2016, the average debt-to-GSDP ratios of states stood at 23.2%, down from around 32% in 2002–03, and the average interest payments to revenue receipts at slightly over 10%. In 2016–17, 17 states met the necessary condition and at least one sufficient condition for higher borrowing, including seven that met both sufficient conditions (RBI 2017). However, Bihar, Rajasthan, and Uttar Pradesh — big, poor states that have some of the worst education and health indicators—do not meet any of the sufficient conditions. Although capital outlays and social sector expenditure as a proportion of GSDP is currently higher in these three states compared to the average for non-special category states, they have a lot of catching up to do. The norms of the Fourteenth Finance Commission do not adequately incentivise these low-income states to increase outlay on development and capital expenditures. A different incentive system is called for in the Fifteenth Finance Commission. Increasing capital expenditure is one of its terms of reference (paragraph 7.iv), but there is no explicit reference to incentivising expenditure on health and education (GoI 2017a). This is particularly worrisome, as the amended central FRBM has done away with targeting revenue deficits.

The infrastructure gap in India is large, as are the resources required to bridge the gap. The World Bank (Andrés et al 2013) estimated this resource gap at between $1,133 billion and $1,726 billion over 2011–20 at 2010 prices; this estimate excludes social infrastructure (health and education). The annual investment requirement was 6.55%–9.98% of the GDP (Table 9). Deloitte and Assocham India (2013) also arrived at an infrastructure spend of 10% of GDP to sustain a GDP growth rate of 9%. But the GDP grew at just 6.11% during the Twelfth Plan period of 2013–17, much less than the target of 8.18%, and less than also the 7.22% growth achieved over the Eleventh Plan period of 2007–12, and only slightly higher than the 5.02% achieved during the Tenth Plan period of 2002–07 (NITI Aayog 2017).

Table 9: India's Investment Requirement 2011–20

Sector	Requirement ($ bn)		Requirement (% of GDP)	
	Low	High	Low	High
Transport	340.0	595.0	1.97	3.44
Electricity	375.0	498.8	2.17	2.71
Water supply and sanitation	95.0	162.0	0.55	0.94
Solid waste	32.5	65.0	0.19	0.38
Telecom	150.0	225.0	0.87	1.30
Irrigation	140.0	210.0	0.81	1.21
Total	1,133	1,726	6.55	9.98

Source: Andrés et al (2013).

The World Bank investment estimates represent an increase of up to 3 percentage points over the 6.9% of GDP invested in infrastructure by South Asian region countries in 2009. The gap was estimated for each sector separately at 2010 prices, but prices changed, and the investment estimated in 2009 did not fructify in the wake of the global financial crisis and the consequent deviation from the fiscal consolidation path. The gap widened as a result. As a first approximation, we estimate the resource requirement without incorporating these changes.

Table 10: Consolidated Implicit Capital and Development Outlay of Union and States (% GDP)

	2004–05	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14RE	2015–16	2016–17
Union										
Revenue deficit	2.5	1.1	4.5	5.2	3.2	4.4	3.6	3.3	2.56	2.25
Fiscal deficit	4.0	2.5	6.0	6.5	4.8	5.7	4.8	4.6	3.6	3.0
Non-debt capital receipt	2.05	0.88	0.12	0.51	0.45	0.41	0.40	0.32	0.61	0.65
Implicit capital and development outlay	3.55	2.28	1.62	1.81	2.05	1.71	1.60	1.02	1.64	1.40
States										
Revenue deficit	1.2	-0.9	-0.2	0.6	0	-0.3	-0.2	0	-1.07	-1.32
Fiscal deficit	3.3	1.4	2.4	3.0	2.1	1.9	1.9	2.5	2.76	2.77
Implicit capital and development outlay	2.1	2.3	2.6	2.4	2.1	2.2	2.1	2.5	3.83	4.09
Consolidated implicit capital and development outlay	5.65	4.58	4.22	4.21	4.15	3.91	3.7	3.5	5.47	5.5

Source: Fourteenth Finance Commission report.

Despite the rising gross fiscal deficit, the consolidated capital and development outlay have steadily come down since 2008–09 (Table 10; the 2015–16 and 2016–17 figures are budget estimates).

Public investment fell mostly because the central government's revenue deficit rose sharply. The central government's revenue deficit is expected to decline in coming years, but the implicit capital and development outlay is not expected to rise on account of the overall cap on the fiscal deficit. As a result, the share of the states' outlay in the consolidated capital and development outlay has been increasing, and the onus has fallen on states to raise overall development expenditure.

A comparison of the infrastructure gap and the consolidated implicit capital and development outlay suggests that developmental outlays will have to be raised significantly to bridge the infrastructure gap. The hope that private investment would flow to meet a substantial proportion of the requirement was over-optimistic and has, unsurprisingly, not materialised. Given the fiscal situation of the centre and states, the scope for raising resources rests with the states. But they have not until very recently attempted to bridge the infrastructure gap by aggressively raising their developmental revenue expenditure or fiscal deficit; instead, they set their own FRBM targets for revenue deficit and gross fiscal deficit well below the Thirteenth Finance Commission caps and generated a revenue account surplus by curtailing health and educational spending. They need to focus their revenue expenditure more towards health and education, and borrow more to fund spending on physical infrastructure, if the infrastructure gap is to be bridged.

That some states are at least aware of this need is evident from the memorandum they submitted to the Fourteenth Finance Commission:

> To overcome large deficits in social and physical infrastructure, States urged that the fiscal consolidation path be linked with the capital investment roadmap for each state separately and the current one-size-fits-all approach adopted while determining fiscal targets for states be discarded. (GoI 2014: 183)

The Fourteenth Finance Commission did infuse some flexibility by allowing states to move above the 3% mark for the gross fiscal deficit, but there is no investment road map, and the margins allowed are too modest to bridge the large and growing investment gaps. Incentivising the states to take up infrastructure investment is the need of the hour. The central government is best positioned to take up this challenge. Cooperative federalism could be the name of the game.

Conclusions

India is now a high-growth economy, and it aspires to sit at the high table of global governance. To become a major global player, India needs to sustain high growth rates and maintain macroeconomic stability over an extended period. But, it is terribly short on many infrastructure indicators and languishes at levels East Asia achieved a few decades ago. It still has a long way to go.

Both physical and social infrastructure are crucial for sustaining high growth with macroeconomic stability and attaining levels of well-being consistent with that of medium- and high-income economies. Cross-country and India's own experience indicates that the bulk of this investment would have to come directly or indirectly from budgetary sources, with private investment playing a supportive role. But, public investment by the central and state governments has over the past decade-and-a-half been caught up in narrow fiscal consolidation policy numbers, and numerical, rule-bound fiscal policy has become a serious constraint on public investment. Fiscal deficits need not, of course, lead to higher public capital formation, especially where the revenue deficit eats up a large part; therefore, some rule-setting for revenue spend cannot be avoided. But, in India rule-setting suffers from three major weaknesses.

First, the deficit ratios do not make a distinction between structural and cyclical deficits, and the success in meeting targets in many cases may be credited to the cycles and no more (Sheel 2013). Second, part of the large revenue spend could be a classification problem, as the expenditure on social infrastructure such as health and education is counted as revenue expenditure, in the process boosting the revenue deficit. Third, fiscal rules have not been calibrated to an infrastructure investment road map even though some states have demanded it. India's repressed fiscal deficit is thus much larger than its nominal fiscal deficit. Overall, there has not been any serious attempt at relating fiscal rules to macroeconomic goals and calculations of fiscal space and debt sustainability. The 60% debt-to-GDP ceiling set in the amended central FRBM Act seems to be calibrated more to the Maastricht Treaty of low-trend-growth European countries with few infrastructural gaps than to fast-growing emerging markets with major infrastructural gaps. More work is required in this direction.

The numerical rule-setting of the past decade has curtailed the burgeoning revenue deficits of the states, although not of the central government. Capital spending in the states, therefore, shows a closer relationship with the fiscal deficit than in the past. However, the states have not leveraged their fiscal space effectively to bridge the infrastructure gap, and set FRBM targets well below prescribed levels, and actuals have often been even below these targets. Infrastructure investment may not happen unless this situation changes.

Recent data indicates that this could indeed be changing, although challenges lie ahead in the form of disruptions caused by GST and the Seventh Pay Commission. The Fourteenth Finance Commission has brought about some flexibility in numerical rules, and this needs to be leveraged for capital and development spending. The larger Finance Commission devolution to states has made available larger untied resources that could be used for such purposes. Whether this alone would enthuse states to take up larger infrastructure spending is unclear. An architecture for filling the infrastructure deficit needs to be built; the centre must take the lead and incentivise states to participate in a spirit of cooperative federalism and use the fiscal space available effectively. Unless this is done expeditiously, India's dream of high economic growth and rapid poverty elimination may not be realised.

REFERENCES

Anant, T C A and Ram Singh (nd): "Distribution of Highways Public Private Partnerships in India: Key Legal and Economic Determinants," http://www.isid.ac.in/~pu/conference/dec_09_conf/Papers/RamSingh.pdf.

Andres, Luis, Dan Biller and Matías Herrera Dappe (2013): "Reducing Poverty by Closing South Asia's Infrastructure Gap," World Bank and Australian Aid, http://www.worldbank.org/content/dam/Worldbank/document/SAR/Reducing%20Poverty%20by%20Closing%20South%20Asia's%20Infrastructure%20Gap_Web.pdf.

— (2014): "Infrastructure Gap in South Asia: Infrastructure Needs, Prioritization, and Financing," World Bank Policy Research working paper 7032, https://openknowledge.worldbank.org/handle/10986/20327.

Argimon, Isabel, Jose M Gonzalez-Paramo and Jose M Roldan (1997): "Evidence of Public Spending Crowding-Out from a Panel of OECD Countries," *Applied Economics*, Vol 29, No 8, pp 1001–10, https://www.tandfonline.com/doi/abs/10.1080/000368497326390.

Bahal, Girish, Mehdi Raissi and Volodymyr Tulin (2015): "Crowding-Out or Crowding-In? Public and Private Investment in India," IMF working paper 15/264, https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Crowding-Out-or-Crowding-In-Public-and-Private-Investment-in-India-43470.

Blejer, Mario I and Mohsin S Khan (1984): "Government Policy and Private Investment in Developing Countries," IMF staff papers, Vol 31, No 2, pp 379–403.

Briceño-Garmendia, Cecilia, Antonio Estache and Nemat Shafik (2004): "Infrastructure Services in Developing Countries: Access, Quality, Costs and Policy Reform," World Bank Policy Research working paper 3468, December, http://documents.worldbank.org/curated/en/476891468782346365/Infrastructure-services-in-developing-countries-access-quality-costs-and-policy-reform.

Chakraborty, Pinaki and Yan Zhang (2009): "Economic Reforms and Infrastructure Spending: Evidence from China and India," UNU-WIDER research paper no 2009/43, https://www.econstor.eu/bitstream/10419/45055/1/616083394.pdf.

Dash, Pradyumna (2016): "The Impact of Public Investment on Private Investment: Evidence from India," *VIKALPA: The Journal for Decision Makers*, Vol 41, No 4, pp 288–307, http://journals.sagepub.com/doi/pdf/10.1177/0256090916676439.

Deloitte Touche Tohmatsu and Assocham India (2013): "Funding the Infrastructure Investment Gap," https://www2.deloitte.com/content/dam/Deloitte/in/Documents/IMO/in-imo-funding_the_infrastructure-investment-gap-noexp.pdf.

GOI (nd): "Open Government Data Platform India," Government of India, https://data.gov.in/major-indicator/gross-enrolment-ratio-schools.

— (2014): "Fourteenth Finance Commission Report," December, Government of India, http://fincomindia.nic.in/ShowPDFContent.aspx.

— (2016): "Medium Term Fiscal Policy Statement 2015–16," Government of India, http://indiabudget.nic.in/ub2015–16/frbm/frbm2.pdf.

— (2017a): "Ministry of Finance," The Gazette of India Extraordinary, Part II, Section 3 (ii), Government of India, 27 November, http://fincomindia.nic.in/writereaddata/html_en_files/fincom15/others/15FCnotification2017.pdf.

— (2017b): "Account at a Glance 2016–17," Controller General of Accounts, Government of India, http://cga.nic.in/writereaddata/AccountAtAGlance20162017English.pdf.

— (2018): "Economic Survey 2017–18 (January) and Earlier Years," Government of India, https://www.indiabudget.gov.in.

Hall, Robert E and Charles I Jones (1999): "Why Do Some Countries Produce So Much More Output per Worker than Others?" NBER working paper no 6564, June (also reprint no r2231), http://www.nber.org/papers/w6564.pdf.

NITI Aayog (2017): "Appraisal Document of the 12th Five Year Plan 2012–17," Government of India, http://niti.gov.in/writereaddata/files/document_publication/Appraisal%20Document%20Five%20Year%20Plan%202012%20-%2017-Final%20%281%29.pdf.

Olinto, Pedro, Kathleen Beegle, Carlos Sobrado and Hiroki Uematsu (2013): "The State of the Poor: Where Are the Poor, Where Is Extreme Poverty Harder to End, and What Is the Current Profile of the World's Poor?" World Bank, Poverty Reduction and Economic Management (PREM) Network, No 125, October, http://siteresources.worldbank.org/EXTPREMNET/Resources/EP125.pdf.

Reinhart, C M and K Rogoff (2010): "Growth in a Time of Debt," NBER working paper no 15639, http://www.nber.org/papers/w15639.pdf.

Reserve Bank of India (2014): State Finances: A Study of Budgets of 2013–14, May.

— (2015): "State Finances: A Study of Budgets of 2014–15," 12 May.

— (2017): "State Finances: A Study of Budgets of 2016–17," May.

Sheel, Alok (2013): "Macroeconomic Policies for India's Growth Crisis," *Economic & Political Weekly*, Vol 48, No 19, 11 May.

Stiglitz, Joseph E and Shahid Yusuf (eds) (2001): *Rethinking the East Asian Miracle*, New York: Oxford University Press and the World Bank, http://documents.worldbank.org/curated/en/346311468746792208/pdf/multiopage.pdf.

Summers, Lawrence (2013): "America's Many Deficits," *Washington Post*, 21 January, https://www.washingtonpost.com/opinions/larry-summers-americas-many-deficits/2013/01/21/195c1a4a-6334–11e2–9e1b-07db1d2ccd5b_story.html?utm_term=.33d318cd0777.

World Bank (1993): *The East Asian Miracle, Economic Growth and Public Policy*, Oxford University Press.