3. MACROECONOMIC GROWTH BACKDROP: TRANSPORT INVESTMENT REQUIREMENTS 2012-32

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3. MACROECONOMIC GROWTH BACKDROP: TRANSPORT INVESTMENT REQUIREMENTS 2012-32

India reached a per capita GDP of Rs 75,000 ($1,550) and overall GDP of Rs 90 trillion ($1.9 trillion) in 2011-12, the terminal year of the 12th Five Year Plan. It took 60 years (at constant 2004-05 prices) to move from a per capita GDP of about Rs 8,200 in 1950-51 to about Rs 47,000 in 2011-12, and during this period, GDP grew by a factor of almost 20 from less than Rs 3 trillion to Rs 56 trillion.

If we double per capita GDP in each of the next two decades at an average growth rate of 7 per cent per year, India will move from the current per capita GDP of $1,550 to about $6,000 by 2031-32 (at 2011-12 prices); and GDP will increase from $1.9 trillion to $8.7 trillion (at 2011-12 prices). Thus, even if India grows at a growth rate in excess of 8 per cent per year over the next 20 years, India's GDP will be just over a half of the current US GDP of $16 trillion and per capita GDP will be only about 12 per cent of current US per capita GDP of $50,000. Apart from the challenge of achieving such a sustained growth rate over a long period, the pace of change in actual level of GDP will be of an order of magnitude different from our historical experience, and even of our more recent experience over the last couple of decades. With such an increase expected in GDP, the demand for transport services, from both passengers and freight, will grow commensurately. Thus, the task of making investments in transport also poses challenges that are vastly greater than anything experienced in the past.

Whereas this report is largely devoted to a consideration of policies that will be needed to facilitate the transport investment necessary for achieving consistent economic growth of such an order, it is important to also derive the corresponding broad orders of magnitude of the required investments. The challenge is to arrive at estimates of such investments that are adequate to achieve the aspirations for high growth, but which are also consistent with the expected and feasible movement of overall mac-

roeconomic magnitudes. It is important to keep in mind the feasible and sustainable domestic resource balances along with developments in external balances that will be needed for the availability of adequate resources for transport.

In projecting transport investment requirements, we need to arrive at numbers consistent with India's evolving macroeconomic situation.

As can be seen from the exercises underlying the Five Year planning process, it is difficult enough to conduct such an exercise for a projected Five Year Plan perspective: doing such an exercise with a 20-year horizon is that much more complex and heroic. Moreover, with the pace of change having accelerated, along with the volatility experienced in the global economy in recent years, making 20-year projections is even more fraught with difficulty. Second, we are also aware that global changes in both technology, and in oil and commodity prices over time, can render such long-term estimates in fructuous. Third, since in previous times, most of infrastructure and transport investment was in the public sector, the task of projecting resource availability and application was simpler. Now, with the increased level of participation of the private sector, and increased commercialisation in the public sector as well, projection of both demand and supply is also likely to be more price-sensitive. Thus, estimation of likely investment is more market-related and complex, relative to need-based estimates.

Finally, our task has been rendered even more difficult with the recent slowdown in the Indian economy, along with that in the global economy. Whereas we have taken account of the current slowdown, we have continued to assume a reasonably rapid recovery in the years to come. This is based on the expectation that Government will continue to take appropriate measures in both macroeconomic and structural policies so that India can return to a high growth path. We are aware that this may seem unreal at the present time. But we make no apologies for making this assumption: if the current aspirations of people in India are not to be dashed by the current economic slowdown, there is no choice for policy makers but to respond positively to the new challenges.

We are, therefore, very cognizant of all these dangers inherent in making such long-term estimates and hence this exercise has been undertaken with a sense of humility, trepidation and realism. We have made a best practice attempt in making these projections according to the best information available at the current time. The aim is to provide information on the broad shape of things to come so that expectations of the different players, both private and public, are influenced in the desired direction. It is hoped that all the players in this exercise government, public sector entities, suppliers of funds in the capital market, private sector entities in the transport sector, foreign investors and the general public will find this exercise of interest.

This report focuses on transport. The task is to arrive at reasonable targets for transport investment, which are consistent with the expectation of increased demands for transport that have been documented in Chapter 2, Volume III. Having experienced very significant economic growth over the past couple of decades, and particularly in the last 10 years, the overall needs and aspirations of the Indian public are now very high. These aspirations are also reflected in people's expectations with respect to transport developments. We have witnessed a revolution in air travel in the country over the past decade, as also in the ownership of private vehicles. Similarly, the demand from industry for efficient transportation of goods across modes has also grown tremendously. Moreover, with constantly increasing competition in the global economy, the future competitiveness of the Indian economy will be heavily dependent on efficiency in the transport sector. Thus, any estimates that are made with respect to perceptions of increased demand for transport over the next two decades are consistently very high, and usually higher than what may be feasible from the point of view of availability of resources. In projecting transport investment requirements in this challenging environment, however, we need to arrive at investment levels that are consistent with the evolving macroeconomic situation of the country.

This is what this chapter attempts to do.

Very heavy investment will have to be made overall in infrastructure, which includes transport, if the country is to maintain a sustained and sustainable high-growth path over the next 20 years and beyond. We need to respond to the binding constraint that infrastructure has posed on growth in India. The fastest growing countries in Asia, particularly China, have consistently invested around 8-10 per cent of their GDP in infrastructure, during their high-growth period.

The experience of countries in East Asia such as Japan, South Korea, Malaysia and Taiwan also illustrates that large investments in infrastructure, along with other supportive policies, have been associated with economic growth that has outpaced other world regions. Between 1975 and 2005, East Asia's GDP increased tenfold; South Asia's GDP increased fivefold; and all other regions' economies grew by factors of between two and three[1]. To sustain high rates of economic growth, it is essential for India to strengthen its infrastructure and derived services,

1. Difference in GDP purchasing power parity (PPP) in constant 2000 dollars between 1975 and 2005.

Table 3.1
India: Gross Domestic Product, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Current Prices (Per cent of GDP Share)												
GDP at Factor Cost	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture & Allied Activities	23.1	23.0	20.7	20.8	19.0	18.8	18.3	18.3	17.8	17.7	18.0	17.5
Agriculture	19.5	19.4	17.3	17.5	16.0	15.8	15.3	15.6	15.2	15.2	15.6	15.2
Industry	26.1	25.2	26.2	26.0	27.9	28.1	28.8	29.0	28.3	27.8	27.6	26.7
Mining & Quarrying	2.3	2.2	2.7	2.4	2.9	2.8	2.7	2.7	2.6	2.6	2.7	2.4
Manufacturing	15.4	14.7	14.9	14.9	15.3	15.4	16.1	16.0	15.4	15.1	14.9	14.4
Electricity, Gas & Water Supply	2.4	2.3	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.9	1.8	1.7
Construction	6.0	6.0	6.2	6.4	7.7	7.9	8.2	8.5	8.5	8.2	8.2	8.2
Services	50.8	51.8	53.0	53.2	53.0	53.1	52.9	52.7	53.9	54.5	54.4	55.7
Trade, Hotel, Transport and Communications	22.2	22.6	23.2	23.8	24.5	25.0	25.3	25.1	24.7	24.3	24.4	25.2
Railways	1.1	1.0	1.0	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8	0.7
Transport by Other Means	5.0	5.0	5.3	5.5	5.7	5.7	5.7	5.6	5.5	5.3	5.3	5.4
Communications	1.5	1.7	1.5	1.6	1.7	1.6	1.5	1.4	1.4	1.4	1.1	0.9
Storage	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Trade and Hotels	14.6	14.9	15.4	15.6	16.1	16.7	17.1	17.1	16.9	16.5	17.2	18.0
Finance, Insurance, Real Estate & Business Services	13.8	14.6	15.2	15.3	14.7	14.5	14.8	15.1	15.9	15.8	16.0	16.6
Community, Social & Personal Services	14.8	14.6	14.6	14.2	13.8	13.5	12.8	12.5	13.3	14.5	14.0	14.0
(2004-05 Prices) (Annual Per cent Change)												
GDP at Market Prices	4.0	4.9	3.9	7.9	7.8	9.3	9.3	9.8	3.9	8.5	10.5	6.3
GDP at Factor Cost	4.3	5.5	4.0	8.1	7.0	9.5	9.6	9.3	6.7	8.6	9.3	6.2
Agriculture & Allied Activities	0.0	6.0	-6.6	9.0	0.2	5.1	4.2	5.8	0.1	0.8	7.9	3.6
Agriculture	-0.6	6.5	-8.1	10.8	0.1	5.5	4.1	6.3	-0.3	0.4	8.8	3.9
Industry	6.0	2.6	7.2	7.3	9.8	9.7	12.2	9.7	4.4	9.2	9.2	3.5
Mining & Quarrying	2.3	1.9	8.4	2.7	7.9	1.3	7.5	3.7	2.1	5.9	4.9	-0.6
Manufacturing	7.3	2.3	6.9	6.3	7.4	10.1	14.3	10.3	4.3	11.3	9.7	2.7
Electricity, Gas & Water Supply	2.2	1.8	4.7	4.6	7.9	7.1	9.3	8.3	4.6	6.2	5.2	6.5
Construction	6.1	4.0	8.3	12.4	16.3	12.8	10.3	10.8	5.3	6.7	10.2	5.6
Services	5.4	6.9	7.0	8.1	8.1	10.9	10.1	10.3	10.0	10.5	9.8	8.2
Trade, Hotel, Transport and Communications	6.4	8.6	8.5	11.1	9.7	12.0	11.6	10.9	7.5	10.4	12.3	7.0
Railways	4.1	7.0	5.6	5.9	7.3	7.5	11.1	9.8	7.7	8.8	5.9	7.5
Transport by Other Means	7.7	4.1	10.2	12.0	12.1	9.3	9.0	8.7	5.3	7.3	8.2	8.6
Communications	25.0	19.4	23.2	25.8	21.0	23.5	24.3	24.1	25.1	31.5	25.4	8.3
Storage	6.1	0.6	-6.7	5.1	13.6	4.7	10.9	3.4	14.1	19.3	2.2	9.4
Trade and Hotels	5.2	9.6	6.9	10.1	7.7	12.2	11.1	10.1	5.7	7.9	11.5	6.2
Finance, Insurance, Real Estate & Business Services	4.5	7.1	7.7	5.8	8.7	12.6	14.0	12.0	12.0	9.7	10.1	11.7
Community, Social & Personal Services	4.6	4.1	3.9	5.4	4.9	7.1	2.8	6.9	12.5	11.7	4.3	6.0

(Contd...)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Memo Items												
Population (Million)	1,019	1,040	1,056	1,072	1,089	1,106	1,122	1,138	1,154	1,170	1,186	1,202
Current Prices (Rs Billion)												
GDP at Market Prices	21,687	23,483	25,307	28,379	32,422	36,934	42,947	49,871	56,301	64,778	77,953	89,749
GDP at Factor Cost	19,920	21,677	23,382	26,222	29,715	40,168	39,533	45,821	53,036	61,089	72,670	83,535
Constant (2004-05) Prices (Rs Billion)												
GDP at Market Prices	25,540	26,803	27,850	30,063	32,422	35,432	38,715	42,509	44,164	47,908	52,961	56,314
GDP at Factor Cost	23,428	24,721	25,707	27,778	29,715	32,531	35,644	38,966	41,587	45,161	49,370	52,436
Current Prices (US$ Billion)												
GDP at Market Prices	475	492	523	618	722	834	948	1,239	1,226	1,366	1,711	1,873
GDP at Factor Cost	436	455	483	571	661	874	873	1,139	1,155	1,288	1,595	1,743
Per Capita GDPmp (Rupees in Current Prices)	21,282	22,580	23,965	26,473	29,772	33,394	38,277	43,823	48,787	55,366	65,728	74,667
Per Capita GDPmp (Ruees in 2004-05 Prices)	5,064	25,772	26,373	28,043	29,772	32,037	34,505	37,355	38,270	40,947	44,655	46,850
Exchange Rate (Rs/US$) (Per cent Change)	5.4	4.4	1.5	-5.0	-2.2	-1.5	2.3	-11.1	14.1	3.3	-3.9	5.2
Population (Per cent Change)	1.8	2.1	1.5	1.5	1.6	1.6	1.4	1.4	1.4	1.4	1.4	1.3
Per Capita GDPmp (Current Prices, Per cent Change)	5.9	6.1	6.1	10.5	12.5	12.2	14.6	14.5	11.3	13.5	18.7	13.6
Per Capita GDPmp (2004-05 Prices, Per cent Change)	2.1	2.8	2.3	6.3	6.2	7.6	7.7	8.3	2.5	7.0	9.1	4.9

Source: Government Of India, Central Statistical Office, National Account Statistics.

such as roads and highways, energy production, telecommunications, etc. The Indian government is already engaged in providing or facilitating investment in such infrastructure from both public and private sources. The 11th Five Year Plan (2007-2012) proposed an investment of about Rs 27,750 billion (at 2011-12 prices) ($500 billion) in infrastructure sectors including electric power, roads, railways, ports, airports, telecommunications, irrigation, drinking water, sanitation, storage and warehousing, and based on currently available data, 95 per cent of projected investments are likely to have been realised (High Level Committee on Financing Infrastructure (HLCFI[2]). Going forward, the HLCFI has projected investments of about Rs 51,500 billion, (at 2011-12 prices) ($1 trillion) for the 12th Five Year Plan period (2012-17) accounting for an average investment of 9.15 per cent of GDP at market prices compared with 7.2 per cent during the 11th Plan period[3]. The key sectors are electricity, roads and bridges, telecommunications and railways, respectively accounting for 34 per cent, 18 per cent, 17 per cent, and 11 per cent of total infrastructure investment.

Thus, there is broad consensus among policy makers that infrastructure investments are important ingredients for accelerating economic growth, poverty alleviation, and environmental sustainability but these benefits accrue only when the supply of infrastructure services responds to effective demand and does so efficiently. Policy makers in India, as in many other parts of the world, are facing a major challenge to develop mechanisms for efficient and responsive delivery of infrastructure services. However, the jury is out on how much infrastructure is needed to maximise growth and how long it takes before the benefits of these investments are realised. Implementing large infrastructure programmes requires considerable resources, and identifying ways to close the gap between infrastructure needs and realistic financing options is a recurrent challenge.

2. Interim Report of the High Level Committee on Financing Infrastructure, Planning Commission, August 2012.
3. These estimates are for gross investment in infrastructure and differ from the gross domestic capital formation (GDCF) concept in National Accounts. The difference in the two concepts may amount to between 1 and 1.5 per cent of GDP.

This chapter addresses this issue by identifying *how much* India should be spending on infrastructure, particularly transport infrastructure, given competing needs for public spending, and in the light of fiscal constraints and macro stability objectives. The chapter also addresses how these investments will be financed and how much of financing needs can be met domestically and what would be a sustainable level of financing from external savings.

The approach taken here is fairly straightforward: relying on first principles, the analytical framework allows policy makers to think through alternative financing options. It would have been ideal to develop a general equilibrium model that explicitly incorporates public investment costs, and identify an optimal (growth maximising) level of infrastructure spending[4]. However, such an approach would have needed estimation of detailed parameters of elasticity of growth with respect to infrastructure sectors and across regions, a time and data-intensive exercise beyond the scope of this Committee's mandate.

Our analytical framework makes it possible to develop broad magnitudes of infrastructure and transport investment that are compatible with the country's prospects for economic growth over the next 20 years. Although we base the estimations on a macro-consistency framework so that the sums are kept consistent, the approach taken here is subjective in fact aspirational with the assumption that growth can take place if both macro and sectoral policy constraints are relaxed. In essence, this is a top down approach. A similar approach was adopted in the work related to the *India Infrastructure Report, 1996*.

The main objective of this approach is to place the required infrastructure investment, particularly in transport, within the broad macroeconomic context and trends. A simple macroeconomic model, RMSM-X, is used to capture the main variables such as savings, investments and sectoral outputs, giving particular attention to the balance of payments both current and capital accounts. An advantage of the RMSM-X model is that it allows the introduction of multiple economic agents in a consistent flow-of-funds framework to explore alternative policy options. The RMSM-X model relies on the fundamental accounting identity of standard national income accounts, and includes detailed information such as investment and consumption disaggregated into public and private components. In this framework, the economy can grow while ensuring adherence to the various standard macroeconomic identities.

Even though the projections provided here are point estimates, they should be interpreted as ranges in each case as the projections are mainly intended to give an idea of the broad magnitudes derived from the growth scenario modeled in this framework. A number of simulations could be analysed, but these would be difficult to discuss and present. Thus, only a preferred scenario is being discussed in this Report, which has been picked following consultations with a broad range of stakeholders in government and in the private sector.

The model is calibrated using data from the National Accounts spanning the 1980s through 2012. This makes it possible to suggest a plausible macroeconomic framework for the next two decades (spanning the 12th, 13th, 14th and 15th 5 Year Plans). By building projections on GDP growth, current account balance, and financing needs, among others, it is possible to assess the feasible magnitude of infrastructure and transport investments, which can help shape the expectations of different actors of infrastructure policy: the government, suppliers of funds in the capital market, local companies planning to invest in the infrastructure sector, foreign investors, and the general public. These estimates give an idea of the possible demand on the capital market in India in terms of equity and debt, providing pointers for capital market reforms and institutional development that would be necessary if such magnitudes of funds are to be mobilised.

> While infrastructure investments are vital for faster economic growth, poverty alleviation and environmental sustainability, these benefits accrue only when the supply responds to effective demand and does so efficiently

The broad magnitudes from this macro approach are complemented with a 'bottom up' approach aggregating the investment requirements from estimates in each sector. The focus of this approach, provided at the end of the chapter, is limited to the transport sectors. These sectoral estimates are also judgmental, based on what sectoral experts are projecting in terms of needs in each sector. They are somewhat normative since they reflect current perceptions of what should be invested to provide reasonable quality and quantity of services for satisfying the people's perceived needs.

In practice, the two approaches provide considerably different results and this chapter does not attempt to reconcile these approaches. On the other hand, the macro-model-based projections provide a sense of what is feasible in the aggregate. The bottom-up estimates are slightly in excess or comparable to the macro-consistent projections during the 12th and 13th Plans. Interestingly, however, the bottom-up estimates for the 14th and 15th Plans, from 2022 to 2032,

4. Examples of the general equilibrium approach include Rioja (2001) for Brazil, Peru and Mexico, and Cavalcanti Ferreira and Gonçalves do Nascimento (2005) and Estache and Munoz (2007) for Senegal and Uganda.

seem to underestimate both what the investment needs may be during that period, and what may be feasible from the macro point of view. This suggests that people might find it difficult to envision numbers that are of an order of magnitude higher beyond 10 years in the future. This exercise therefore provides a degree of optimism with regard to the feasibility of improving and expanding Indian transport infrastructure over the next couple of decades. For example, rural roads are still not of a quality that makes them passable in all weather conditions. The projections in this report suggesting higher levels of feasible investments in roads than projected by our Working Group indicate that it will be feasible to upgrade significantly the quality of our road infrastructure once the basics are done in the next decade or so.

PROJECTING ECONOMIC GROWTH: 2012-32

What are the prospects for India's economic growth over the next two decades? What growth targets are feasible? India has emerged as a dynamic economic power over the last three decades, recording GDP growth of about 6.3 per cent between 1980-81 and 2012-13[5]. This has been accompanied by dramatic progress in poverty reduction, with the national poverty head count ratio dropping from 45 per cent in 1993-94 to 22 per cent in 2011-12[6] . Exports of goods and services have surged from 5 per cent of GDP in 1990 to 24 per cent in 2012 and contrary to popular perceptions, ICT services accounted for just 18 per cent of total exports. Manufactured goods, constituting 87.6 per cent of merchandise exports, earned $240 billion in 2012, almost five times as much as ICT services' exports of around $52 billion[7]. The economy is also transforming structurally as the contribution of agriculture to GDP has dropped from 34 per cent to 15 per cent over the past 25 years; services have moved up from 41 per cent to 56 per cent of GDP (Tables 3. 1 and 3. 4). Much of this progress has been stimulated by the dismantling of the Licence Raj which included rescinding licensing requirements, overhauling public enterprises, scrapping quantitative import restrictions, reductions in trade tariffs and liberalisation of rules for foreign direct investment (FDI). However, growth of the manufacturing sector has, perhaps, not been as high as might have been expected.

Given the domestic slowdown and the expectation of sluggish global economic growth in the near term, we have projected a 7 per cent annual real GDP growth for 20012-17, following which the economy is expected to grow at an average of 8.5 per cent per year till 2032

Whereas expectations of double-digit growth rates had built up in the mid to late 2000s, these expectations have now been tempered since 2008 as the global economy slowed and so did India: The GDP growth rate dropped to 3.9 per cent in 2008-09; it picked up to 8.5 per cent and 10.5 per cent in 2009-10 and 2010-11 respectively but slipped again to 6.3 per cent in 2011-12 and 5 per cent in 2012-13 (Table 3. 1). It is quite likely that the current global economic slowdown and India's fiscal problems and other domestic factors are dragging down the economy and corrections are likely to take place in the medium term. Thus, taking into account the current domestic slowdown and the expectation that the global economy is likely to exhibit sluggish growth in the near-term, we have used a projection of 7 per cent annual real GDP growth for the 12th Plan period (2012-2017), following which the economy is expected to experience an average growth of 8.5 per centup to 2032. It is important to stress here that such growth is not possible without robust industrial growth and in fact, the government is planning to develop strategies aimed at increasing the share of manufacturing to 25 per cent of GDP[8]. We do need to note that this is not going to be easy, since manufacturing growth has fallen to less than 3 per cent during 2011-13.

These projections for GDP growth are used to project India's infrastructure requirements over the next 20 years. Such growth will not be feasible if corresponding infrastructure investments of the projected magnitude are not made. In the data given in this chapter, all economic variables are at current prices through 2011-2012 and external transactions are at the prevailing exchange rates for each year. Our projections for 2012-13 to 2031-32 are in real terms, made at constant 2012-13 prices and at a constant exchange rate of $1 = Rs 54.4 (average exchange rate in 2012-13).

ENHANCING INVESTMENT EFFICIENCY

With the economic reforms of 1991, the Indian government implemented a series of policy initiatives to deregulate and liberalise the economy to enhance competitiveness and productivity and achieve higher growth. Encouraging private and foreign participation in the economy led to higher competition, enhanced trade, provided free access to foreign investment and technology, and opened capital markets.

5. In terms of GDP/capita which bears more directly on potential welfare, GDP/capita growth rose steadily from a 10-year average of 3.2 per cent per year in the 1980s (1980-81 to 1989-90) to 3.7 per cent in the 1990s (1990-91 to 1999-2000) and 5.3 per cent in the 2000s (2000-01 to 2009-10), almost reaching the 'miracle rates' seen in East Asia before the Asian financial crisis.
6. Planning Commission (2013).
7. In 2012-13, India's exports consisted of engineering goods (22 per cent), petroleum products (14 per cent), gems and jewellery (14 per cent), chemicals (13 per cent), and textiles and other manufactures (22 per cent), making up a total of 85 per cent of all merchandise exports , establishing it as an exporter of mainly manufactures.
8. Government of India, National Manufacturing Policy, 2011.

Table 3. 2
India: Gross Domestic Expenditure, 2000-01 to 2012-13

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Current Prices (Per cent of GDP)												
GDP at Market Prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gross Domestic Capital Formation	23.5	25.1	24.5	25.3	32.5	34.3	35.9	38.0	35.5	36.3	37.0	35.4
Gross Fixed Capital Formation	22.8	25.1	23.8	24.6	28.7	30.3	31.3	32.9	32.3	31.7	31.7	30.6
Public	6.3	6.3	6.1	6.3	6.9	7.3	7.9	8.0	8.5	8.4	7.8	7.4
Private	16.6	18.8	17.7	18.3	21.8	23.0	23.4	24.9	23.8	23.3	24.0	23.2
Change in Stocks	0.7	-0.1	0.7	0.7	2.5	2.8	3.4	4.0	1.9	2.8	3.1	2.1
Public	0.4	0.4	-0.2	-0.1	0.5	0.6	0.4	0.8	0.9	0.8	0.6	0.5
Private	0.3	-0.4	1.0	1.0	2.0	2.2	3.0	3.2	1.0	2.0	2.5	1.6
Valuables	..	..	..	..	1.3	1.1	1.2	1.1	1.3	1.8	2.1	2.7
Exports of Goods & Services	12.8	12.4	14.0	14.7	17.6	19.3	21.1	20.4	23.6	20.0	21.9	23.9
Imports of Goods & Services	13.7	13.2	15.0	15.4	19.3	22.0	24.2	24.4	28.7	25.4	26.3	30.3
Total Consumption	77.5	77.6	75.9	73.9	70.1	69.2	68.0	67.2	68.6	69.1	67.2	68.0
Private Consumption	64.9	65.2	64.0	62.4	59.1	58.3	57.7	57.0	57.7	57.2	55.8	56.3
Government Consumption	12.6	12.4	11.9	11.4	10.9	10.9	10.3	10.3	10.9	11.9	11.4	11.6
(2004-05 Prices) (Annual Per cent Change)												
GDP at Market Prices	4.0	4.9	3.9	7.9	7.8	9.3	9.3	9.8	3.9	8.5	10.5	6.3
Gross Domestic Capital Formation	-6.7	11.5	3.0	10.5	36.2	16.3	15.3	17.2	-1.6	12.7	16.2	1.5
Gross Fixed Capital Formation	-1.4	15.3	-0.4	10.6	24.0	16.2	13.8	16.2	3.5	7.7	14.0	4.4
Public	1.9	3.6	1.3	10.8	5.1	16.4	18.3	12.5	12.0	5.6	4.9	2.5
Private	-0.8	8.9	8.7	14.7	23.5	16.1	12.4	17.4	0.8	8.4	17.2	5.0
Exports of Goods & Services	18.2	4.3	21.1	9.6	27.2	26.1	20.4	5.9	14.6	-4.7	19.7	15.3
Imports of Goods & Services	4.6	2.9	12.0	13.9	22.2	32.6	21.5	10.2	22.7	-2.1	15.8	21.5
Total Consumption	3.1	5.3	2.4	5.4	5.0	8.7	7.7	9.4	7.7	8.4	8.1	8.1
Private Consumption	3.4	6.0	2.9	5.9	5.2	8.6	8.5	9.4	7.2	7.4	8.6	8.0
Government Consumption	1.4	2.4	-0.2	2.8	4.0	8.9	3.8	9.6	10.4	13.9	5.9	8.6
ICOR	7.0	5.0	6.7	3.2	3.4	3.5	3.7	3.7	10.0	4.5	4.0	5.2
Memo Items (Deflators, 2004-05=100)												
Gross Domestic Product at Market Prices	84.9	87.6	90.9	94.4	100.0	104.2	110.9	117.3	127.5	135.2	147.2	159.4
Gross Domestic Capital Formation	83.8	86.7	88.6	93.0	100.0	103.5	109.2	114.7	123.0	128.3	135.4	147.3
Exports of Goods & Services	86.0	86.2	87.1	93.3	100.0	99.3	104.8	111.4	126.8	130.0	143.0	155.4
Imports of Goods & Services	76.3	77.4	84.5	85.3	100.0	98.0	103.2	109.7	118.4	123.5	132.7	145.0
Total Consumption	88.2	90.9	93.6	96.9	100.0	103.4	109.8	115.2	123.3	131.8	142.7	153.6

Source: Government of India, Central Statistical Office, National Account Statistics.

Table 3. 3
Key Economic Ratios (2000-11)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
INDIA												
Gross Capital Formation (Per cent of GDP)	24.2	25.7	25.0	26.2	32.5	34.3	35.9	38.0	35.5	36.1	35.8	36.6
Gross Domestic Savings (Per cent of GDP)	22.6	24.2	23.5	24.6	30.7	31.5	32.7	34.0	30.5	30.8	31.7	31.1
GDP Growth (Annual Per cent)	4.0	4.9	3.9	7.9	7.8	9.3	9.3	9.8	3.9	8.2	9.6	6.9
Exports of Goods and Services (Per cent of GDP)	12.8	12.4	14.1	14.7	17.6	19.3	21.1	20.4	23.6	20.1	22.8	24.6
Imports of Goods and Services (Per cent of GDP)	13.7	13.3	15.0	15.4	19.3	22.0	24.2	24.5	28.7	25.5	26.9	29.9
Current Account Balance (Per cent of GDP)	-1.0	0.3	1.4	1.4	0.1	-1.2	-1.0	-0.7	-2.5	-1.9	-3.1	..
Central Government Debt, Total (Per cent of GDP)	54.3	58.2	61.6	61.2	61.5	61.2	59.1	56.5	56.1	54.5	47.3	..
External Debt Stocks (Per cent of Exports of Goods, Services and Income)	161.9	151.6	143.3	134.7	102.3	75.6	79.2	80.7	70.8	93.3	80.8	74.8
Total Debt Service (Per cent of Exports of Goods, Services and Income)	17.6	17.9	20.9	29.2	14.5	14.9	8.6	15.6	9.7	6.0	6.8	6.5
ICOR	6.8	4.9	6.6	3.2	3.3	3.5	3.7	3.7	9.9	4.4	3.9	5.5
CHINA												
Gross Capital Formation (Per cent of GDP)	35.1	36.3	37.9	41.2	43.3	42.1	43.0	41.7	44.1	48.2	48.2	48.5
Gross Domestic Savings (Per cent of GDP)	37.5	38.4	40.4	43.4	45.8	47.6	50.7	50.5	51.8	52.7	52.1	52.5
GDP Growth (Annual Per cent)	8.4	8.3	9.1	10.0	10.1	11.3	12.7	14.2	9.6	9.2	10.4	9.3
Exports of Goods and Services (Per cent of GDP)	23.3	22.6	25.1	29.6	34.0	37.1	39.1	38.4	35.0	26.7	30.6	31.4
Imports of Goods and Services (Per cent of GDP)	20.9	20.5	22.6	27.4	31.4	31.6	31.4	29.6	27.3	22.3	26.7	27.3
Current Account Balance (Per cent of GDP)	1.7	1.3	2.4	2.6	3.6	5.9	8.6	10.1	9.3	4.9	4.0	2.8
Central Government Debt, Total (Per cent of GDP)	..	..	..	..	..	..	..	..	..	..	..	..
External Debt Stocks (Per cent of Exports of Goods, Services and Income)	49.9	59.6	49.6	41.2	36.2	35.0	31.4	27.9	23.7	32.4	31.2	32.0
Total Debt Service (Per cent of Exports of Goods, Services and Income)	9.1	8.1	8.3	7.5	3.4	3.4	2.7	2.4	2.1	2.9	3.6	3.6
ICOR	4.3	4.2	4.0	3.7	3.9	3.6	3.2	2.9	4.3	4.5	4.4	5.0
KOREA, REP.												
Gross Capital Formation (Per cent of GDP)	30.6	29.2	29.2	29.9	29.9	29.7	29.6	29.4	31.2	26.3	29.5	29.5
Gross Domestic Savings (Per cent of GDP)	33.4	31.4	30.7	32.2	34.1	32.4	31.0	30.9	30.0	30.0	32.1	31.5
GDP Growth (Annual Per cent)	8.5	4.0	7.2	2.8	4.6	4.0	5.2	5.1	2.3	0.3	0.3	3.6
Exports of Goods and Services (Per cent of GDP)	38.6	35.7	33.1	35.4	40.9	39.3	39.7	41.9	53.0	49.7	52.3	56.2
Imports of Goods and Services (Per cent of GDP)	35.7	33.5	31.7	33.1	36.7	36.6	38.3	40.4	54.2	46.0	49.7	54.1
Current Account Balance (Per cent of GDP)	2.8	1.7	1.3	2.4	4.5	2.2	1.5	2.1	0.3	3.9	2.9	2.4
Central Government Debt, Total (Per cent of GDP)	..	..	..	..	..	..	..	..	..	..	..	..
External Debt Stocks (Per cent of Exports of Goods, Services and Income)	..	..	..	..	..	..	..	..	..	..	..	..
Total Debt Service (Per cent of Exports of Goods, Services and Income)	..	..	..	..	..	..	..	..	..	..	..	..
ICOR	3.5	7.7	4.1	10.5	6.4	7.4	5.5	5.6	12.2	85.5	3.8	7.0

(Contd...)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
INDONESIA												
Gross Capital Formation (Per cent of GDP)	22.3	22.5	21.4	25.6	24.1	25.1	25.4	24.9	27.8	31.0	32.6	32.8
Gross Domestic Savings (Per cent of GDP)	32.8	30.8	27.7	32.9	28.7	29.2	30.8	29.0	28.9	33.8	34.3	34.2
GDP Growth (Annual Per cent)	4.9	3.6	4.5	4.8	5.0	5.7	5.5	6.4	6.0	4.6	6.2	6.5
Exports of Goods and Services (Per cent of GDP)	41.0	39.0	32.7	30.5	32.2	34.1	31.0	29.4	29.8	24.2	24.6	26.3
Imports of Goods and Services (Per cent of GDP)	30.5	30.8	26.4	23.1	27.5	29.9	25.6	25.4	28.8	21.4	22.9	24.9
Current Account Balance (Per cent of GDP)	4.8	4.3	4.0	3.5	0.6	0.1	3.0	2.4	0.0	2.0	0.7	0.2
Central Government Debt, Total (Per cent of GDP)	..	..	32.2	29.7	56.6	47.3	39.0	35.2	33.1	28.4	26.1	..
External Debt Stocks (Per cent of Exports of Goods, Services and Income)	196.6	204.0	190.8	189.9	162.1	146.2	120.9	116.1	104.4	139.7	115.7	99.1
Total Debt Service (Per cent of Exports of Goods, Services and Income)	22.8	23.9	25.1	26.2	24.2	20.9	25.2	18.8	14.1	19.4	17.4	14.5
ICOR	4.0	6.1	5.2	4.5	4.5	4.0	4.4	3.7	3.7	5.1	3.8	3.8
MALAYSIA												
Gross Capital Formation (Per cent of GDP)	26.9	24.4	24.8	22.8	23.1	22.4	22.7	23.4	21.5	17.8	23.2	23.6
Gross Domestic Savings (Per cent of GDP)	46.1	41.8	42.0	42.5	43.4	44.3	44.5	43.3	43.8	38.1	40.3	39.5
GDP Growth (Annual Per cent)	8.9	0.5	5.4	5.8	6.8	5.3	5.6	6.3	4.8	-1.5	7.2	5.1
Exports of Goods and Services (Per cent of GDP)	119.8	110.4	108.3	106.9	115.4	112.9	112.2	106.2	99.5	91.4	93.8	91.6
Imports of Goods and Services (Per cent of GDP)	100.6	93.0	91.1	87.3	95.0	91.0	90.4	86.3	77.2	71.1	76.6	75.7
Current Account Balance (Per cent of GDP)	9.1	7.9	7.1	12.1	12.1	13.9	16.1	15.4	16.9	15.7	11.1	11.0
Central Government Debt, Total (Per cent of GDP)	..	..	43.1	45.1	45.7	42.1	40.6	40.1	39.8	50.8	51.2	..
External Debt Stocks (Per cent of Exports of Goods, Services and Income)	36.7	43.3	43.8	39.9	35.2	31.2	29.1	29.1	28.0	35.3	34.9	33.8
Total Debt Service (Per cent of Exports of Goods, Services and Income)	5.6	6.0	7.2	7.9	6.2	5.6	4.0	4.8	3.7	6.1	5.5	3.9
ICOR	2.5	51.9	4.5	4.3	3.4	4.3	3.8	3.5	4.7	-14.2	2.6	4.6
THAILAND												
Gross Capital Formation (Per cent of GDP)	22.8	24.1	23.8	25.0	26.8	31.4	28.3	26.4	29.1	21.2	25.9	26.6
Gross Domestic Savings (Per cent of GDP)	31.5	30.6	30.5	31.8	31.7	30.3	31.8	34.8	31.7	31.8	33.4	31.2
GDP Growth (Annual Per cent)	4.8	2.2	5.3	7.1	6.3	4.6	5.1	5.0	2.5	-2.3	7.8	0.1
Exports of Goods and Services (Per cent of GDP)	66.8	65.9	64.2	65.7	70.7	73.6	73.7	73.4	76.4	68.4	71.3	76.9
Imports of Goods and Services (Per cent of GDP)	58.1	59.4	57.5	58.9	65.8	74.7	70.2	65.0	73.9	57.8	63.9	72.4
Current Account Balance (Per cent of GDP)	7.6	4.4	3.7	3.4	1.7	-4.3	1.1	6.4	0.8	8.3	4.1	..
Central Government Debt, Total (Per cent of GDP)	..	..	..	28.9	26.1	27.3	26.1	24.5	24.0	28.6	28.8	30.2
External Debt Stocks (Per cent of Exports of Goods, Services and Income)	92.8	84.1	70.1	52.7	42.3	35.3	29.5	24.3	23.4	32.9	34.4	29.1
Total Debt Service (Per cent of Exports of Goods, Services and Income)	16.3	25.4	23.2	15.7	11.1	13.8	9.5	11.9	7.8	6.5	4.7	3.8
ICOR	4.5	10.5	4.3	3.2	3.9	5.6	5.5	5.1	9.9	-11.2	2.6	..

Source: The World Bank, World Development Indicators.

While the ensuing capital accumulation expanded the magnitude of resources available to the Indian economy, these reforms, if effective, should also have enhanced the efficiency of resource utilisation. Has this taken place?

Consider here the incremental capital output ratio (ICOR) as a measure of resource utilisation reflecting the extent to which additional investments translate into output. In the 1980s, the average level of domestic investment (or gross capital formation) was in the region of 23 to 24 per cent of GDP. This was accompanied by an average rate of GDP growth of 5 to 5.5 per cent, resulting in an ICOR of around 4.2. Gross capital formation picked up in the 1990s and beyond, increasing from 23 per cent of GDP in 1994-95 to 35.5 per cent in 2011-12, with a peak of 38 per cent in 2007-08 (Table 3.2). Such levels of gross capital formation (gross domestic investment) of more than 30 per cent of GDP were also observed during the high growth years of other Asian countries, and as such, these numbers for India portend well for its medium and long-run growth prospects. The overall ICOR for the economy dropped to around 3.6 between 2003 and 2007, albeit preceded by some rather high ICORs (around 6) in the early part of the previous decade. Reflecting the current growth slowdown, the ICOR has slipped again. International experience suggests that ICORs around 3.5 reflect 'good practice' efficiency levels, as seen in China and South Korea (Republic of Korea) during periods of rapid industrial expansion and urbanisation. In China, the ICOR fell from 5.0 in the 1970s to 4.3 through the 1990s and down to 3.5 between 2005 and 2008 (Table 3.3). These are periods when China industrialised and urbanised rapidly. In the Republic of Korea, ICORs were between 3 and 3.5 in the 1970s and 1980s periods of 'big push' industrialisation and rapid economic development. If India is able to restore the kind of investment levels that prevailed in the latter part of the last decade, levels of around 35 per cent plus, and ICORs remain between 3.5 and 4.5, it would be feasible for the country to achieve a sustained annual growth rate of 8-9 per cent, which would mean a 7-8 per cent annual growth in per capita incomes, a doubling in each of the coming two decades (Table 3.4a and 3.4b).

INDICATORS FOR OPTIMISM

The current slowdown is such that many observers would be critical of our optimism on the restoration of a robust economic growth rate. When the National Transport Development Policy Committee (NTDPC) began work in mid-2010, a sustained growth rate of over 9 per cent was thought to be feasible and likely. The subsequent developments in the global economy and difficulties encountered domestically have tempered this optimism. Consequently, the targets for the 12th Five Year Plan were also revised downward, and we have made further downward revision in our own projection to about 7 per cent average annual real growth in the 12th Plan period. In view of only 5 per cent real growth (factor cost) in the first year of the 12th Plan, even achieving this lower projection of 7 per cent will not be easy. The issue then is whether the country can go back to rates in excess of 8 per cent in subsequent Plan periods?

We need to recognise that it is only a handful of countries that have been able to escape the 'middle income' trap. Given our high levels of poverty, it is essential that we do so. A key source of optimism is that whereas overall savings have fallen from a level of 35 per cent plus in 2007-08 to around 30 per cent now, household savings have remained resilient at around 22 per cent. It is both the overall public sector (mainly government) and the corporate private sector whose savings have fallen. The key issue is restoration of the fiscal health of the central government. If, as is now planned, the overall fiscal deficit of the central government be brought back down to less than 3 per cent and state governments can maintain theirs at around 2 per cent, within the next two to three years, public savings can be restored to the levels achieved previously in 2007-08. If that is achieved, the current draft on private savings will fall and greater resources will then become available to the private sector for investment. The second imperative is restoration of inflation to the 4-5 per cent level achieved in the last decade. Fiscal correction will help in this regard. Nominal interest rates can then come down and corporate profitability can also be restored, so that private corporate sector savings also increase to the levels achieved in 2005-10.

These objectives are clearly in the realm of feasibility. Gross domestic savings and investment can then be restored to the 35-40 per cent levels necessary to achieve sustained growth of 8-9 per cent over the next two decades.

In addition to these changes in the realm of macroeconomic policy, it is also necessary to considerably enhance the efficiency of government functioning with respect to infrastructure, for investment by both the public and by the private sectors, including through public-private partnerships (PPP). The recent administrative actions taken by the central government to streamline regulatory and permitting processes through, for example, the formation of the Cabinet Committee on Investment (CCI), are encouraging. But these have to be followed up down the line to ensure that infrastructure investment does take place in a timely fashion. Much work has been done in making the bidding and allocation process for PPP projects efficient and transparent. This needs to be continued as expertise is built up.

Similar actions are necessary at the state level. In addition to lagging regions catching up, rapid urbanisation can further increase investment efficiency as higher

Table 3. 4a

India: Gross Domestic Product, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
(Rs Billion 2012-13 Prices)									
GDP at Market Prices	100,262	107,221	114,951	123,774	133,481	115,938	169,153	252,143	384,748
GDP at Factor Cost	94,631	100,822	107,956	116,094	124,509	108,803	157,302	233,297	354,921
Agriculture and Allied	16,135	16,724	17,351	18,020	18,722	17,391	21,082	25,650	31,207
Industry	24,917	26,491	28,265	30,421	32,894	28,597	42,368	65,245	103,171
Construction	7,845	8,434	9,066	9,837	10,722	9,181	14,194	22,345	35,176
Electricity, Gas and Water	1,643	1,758	1,898	2,060	2,245	1,921	2,972	4,816	7,934
Mining and Quarrying	2,184	2,326	2,489	2,675	2,889	2,513	3,770	5,800	8,924
Manufacturing	13,245	13,974	14,812	15,849	17,037	14,983	21,432	32,284	51,137
Services	53,579	57,607	62,339	67,654	72,893	62,814	93,852	142,402	220,543
Trade, Hotel, Transport and Communications	23,911	25,901	28,139	30,671	33,432	28,411	43,936	68,878	110,015
Finance, Insurance, Real Estate & Business Services	16,275	17,618	19,115	20,836	22,711	19,311	29,846	46,790	74,735
Community, Social & Personal Services	13,393	14,089	15,085	16,147	16,750	15,093	20,070	26,735	35,792
(US$ Billion 2012-13 Prices)									
GDP at Market Prices	1,843	1,971	2,113	2,275	2,453	2,131	3,109	4,634	7,071
GDP at Factor Cost	1,739	1,853	1,984	2,134	2,288	2,000	2,891	4,288	6,523
Agriculture and Allied	297	307	319	331	344	320	387	471	574
Industry	458	487	519	559	605	526	779	1,199	1,896
Construction	144	155	167	181	197	169	261	411	647
Electricity, Gas and Water	30	32	35	38	41	35	55	89	146
Mining and Quarrying	40	43	46	49	53	46	69	107	164
Manufacturing	243	257	272	291	313	275	394	593	940
Services	985	1,059	1,146	1,243	1,340	1,154	1,725	2,617	4,053
Trade, Hotel, Transport and Communications	439	476	517	564	614	522	808	1,266	2,022
Finance, Insurance, Real Estate & Business Services	299	324	351	383	417	355	549	860	1,374
Community, Social & Personal Services	246	259	277	297	308	277	369	491	658
Memo Items									
Population (Million)	1,217	1,233	1,248	1,262	1,276	1,247	1,317	1,378	1,429
Per Capita GDPmp (Rs 2012-13 Prices)	82,370	86,987	92,093	98,088	104,637	92,965	128,469	183,011	269,330
Per Capita GDPmp (US $ 2012-13 Prices)	1,514	1,599	1,693	1,803	1,923	1,709	2,361	3,364	4,950
Per Capita GDPmp (Rs 2012-13 Prices), Eop	82,370	86,987	92,093	98,088	104,637	104,637	146,276	210,769	314,080
PerCapita GDPmp (US $ 2012-13 Prices), Eop	1,514	1,599	1,693	1,803	1,923	1,923	2,688	3,874	5,773
Exchange Rate	54.4	54.4	54.4	54.4	54.4	54.4	54.4	54.4	54.4

Sources: Government of India, Central Statistical Office, National Account Statistics and NTDPC Projections.

For manufacturing to grow rapidly, transport investment is critical. And higher investment in transport will require higher manufacturing growth. The relationship is symbiotic.

densities of people and economic activities generate economies of scale and agglomeration. In fact, there was an increase of 90 million people living in urban areas between the census periods of 2001 and 2011.

However, lack of systematic land valuation and rules for land use transformation, lack of coordination between land use and infrastructure planning, rising transport costs, and inability of utilities to expand basic infrastructure services are reducing the net benefits and efficiency gains from urbanisation[9]. Unless the policy distortions that currently bind cities and the urbanisation process are resolved, it will be challenging to enhance efficiency gains from India's once-in-a-lifetime spatial transformation. In addition to spatial transformation and convergence that can enhance efficiency, overall growth rates and efficiency also depend on sectoral performance and transformation.

SECTORAL TRANSFORMATION

Consider Tables 3.1, 3.4a and 3.4b, which provide an overview of sectoral growth rates, Table 3. 1 for the past decade or so and Table 3. 4 for the next two. The core issue here is whether India can realise 8-9 per cent GDP growth by enhancing specialisation and performance of sectors that are both labour intensive and which generate positive externalities. In this framework, the important issue is a turnaround of industry and manufacturing in particular, whose performance hinges on the availability and quality of core infrastructure such as transport and electricity. Thus, as infrastructure needs are endogenous to industrial performance, keeping up transport and overall infrastructure investment will help in stimulating industrial growth, which in turn will generate demand for additional infrastructure.

For overall GDP growth to achieve sustained high levels, Indian manufacturing growth has to be accelerated. Whereas this had indeed happened in the period 2005-08, manufacturing growth has since tapered off. The government has exhibited its concern on this issue through the appointment of the National Manufacturing Competitiveness Council (NMCC), with the stated objective of increasing the share of manufacturing to 25 per cent of GDP. We have therefore projected higher growth in manufacturing over the next 20 years than has been achieved over a similar period in the past. We have still been somewhat conservative in stepping up the rate of manufacturing growth. What is desirable is that it actually increases to double digit growth rates. However, for this to be achieved, manufacturing will need greater focused policy attention and action. For manufacturing to be competitive and to grow rapidly, transport investment is critical, both domestic and international, through more efficient railways, roads, ports and airports. Conversely, higher investment in transport will require higher manufacturing growth. Thus, the relationship between manufacturing and transport is symbiotic.

Keeping in mind an aspiration to enhance industrial (and manufacturing) growth but realising the various constraints that are likely to remain in the medium term, industry's share in GDP is projected to be 24.7 per cent during the 12th Plan between 2012-17, increasing to 26.8 per cent between 2027-32. Accompanying industrial expansion, manufacturing is projected to increase from 12.9 per cent of GDP in 2012-17 to 13.3 per cent in 2027-32. Growth rates of industry are projected at 6.4 per cent annually during 2012-17, increasing to 9.8 per cent during 2027-32. Similarly manufacturing growth rates are projected at 5.6 per cent (2012-17), increasing to 10 per cent by 2027-32. While India has not experienced 10 per cent growth in industry and manufacturing, on a sustained basis, as of now, if such a growth rate is achieved at any time, it will imply doubling of industry value added output in seven years. The growth of other industrial sectors such as construction, utilities, and mining are also projected to grow around 9.5 per cent annually from 2018 onwards, albeit rather slower growth during 2012-17 (Construction 7.7 per cent; electricity, gas and water (utilities) 7.5 per cent; mining 5.8 per cent). Correspondingly, the services sector is projected to grow at its current rapid pace of around 8.5-9.5 per cent over the next 20 years (Table 3.4).

Growth in agriculture is being projected to be between 3.4 and 4 per cent per year over the next two decades. This would be seen by some as being excessively optimistic since the past record over 50 years suggests that it is difficult for agriculture to grow at much more than 3 per cent on a sustained basis. The basis of our optimism is that the demand for food other than cereals vegetables, fruit, milk, other dairy products, fish poultry, meat has higher elasticity with respect to income. This has already been manifested in the relatively higher inflation rates experienced by these commodities over the past few years. Thus, demand for these commodities can be expected to be buoyant in the coming years, and there will have to be supply response. For this to be achieved too, major policy changes are required. Transport investment in rural connectivity and in logistics will also be essential if such growth in agriculture is to be achieved.

9. Urbanization beyond Municipal Boundaries: Nurturing Metropolitan Economies and Connecting Peri-Urban Areas in India, World Bank (2013).

Table 3. 4b

India: Gross Domestic Product, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
(Per cent Share)									
GDP at Factor Cost	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture and Allied	17.1	16.6	16.1	15.5	15.0	16.0	13.4	11.0	8.8
Industry	26.3	26.3	26.2	26.2	26.4	26.3	26.9	28.0	29.1
Construction	8.3	8.4	8.4	8.5	8.6	8.4	9.0	9.6	9.9
Electricity, Gas and Water	1.7	1.7	1.8	1.8	1.8	1.8	1.9	2.1	2.2
Mining and Quarrying	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.5	2.5
Manufacturing	14.0	13.9	13.7	13.7	13.7	13.8	13.6	13.8	14.4
Services	56.6	57.1	57.7	58.3	58.5	57.7	59.7	61.0	62.1
Trade, Hotel, Transport and Communications	25.3	25.7	26.1	26.4	26.9	26.1	27.9	29.5	31.0
Finance, Insurance, Real Estate & Business Services	17.2	17.5	17.7	17.9	18.2	17.7	19.0	20.1	21.1
Community, Social & Personal Services	14.2	14.0	14.0	13.9	13.5	13.9	12.8	11.5	10.1
(2012-13 Prices) (Average Annual Per cent Change)									
GDP at Market Prices	3.3	6.9	7.2	7.7	7.8	6.6	8.0	8.5	9.0
GDP at Factor Cost	5.0	6.9	7.2	7.7	7.8	6.9	8.0	8.5	9.0
Agriculture and Allied	1.8	3.7	3.8	3.9	3.9	3.4	4.0	4.0	4.0
Industry	3.2	6.3	6.7	7.6	8.1	6.4	8.6	9.3	9.8
Construction	5.9	7.5	7.5	8.5	9.0	7.7	9.5	9.5	9.5
Electricity, Gas and Water	4.9	7.0	8.0	8.5	9.0	7.5	9.5	10.5	10.5
Mining and Quarrying	0.4	6.5	7.0	7.5	8.0	5.8	9.0	9.0	9.0
Manufacturing	1.9	5.5	6.0	7.0	7.5	5.6	7.7	9.0	10.0
Services	6.8	8.2	8.4	8.7	8.8	8.2	8.7	8.9	9.4
Trade, Hotel, Transport and Communications	5.4	8.3	8.6	9.0	9.0	8.1	9.3	9.5	10.0
Finance, Insurance, Real Estate & Business Services	8.7	8.3	8.5	9.0	9.0	8.7	9.3	9.5	10.0
Community, Social & Personal Services	7.5	8.0	8.0	8.0	8.0	7.9	7.0	7.0	7.0
Memo Items (Annual Per cent Change)									
Population	1.3	1.3	1.3	1.1	1.1	1.2	1.0	0.8	0.7
Per Capita GDPmp (2012-13 Prices)	2.0	5.6	5.9	6.5	6.7	5.3	6.9	7.6	8.3

Sources: Government of India, Central Statistical Office, National Account Statistics and NTDPC Projections.

Tapping domestic savings is going to be an important part of a financing strategy, but not enough in itself. External savings, reflected in the current account, would be necessary to supplement domestic savings.

FINANCING GROWTH

In the modeling framework employed in this chapter, GDP is expected to grow between 7 and 9 per cent over the next 20 years resulting in the economy more than doubling twice over this period. We are also projecting gross capital formation to increase gradually from its current 36.4 per cent of GDP (2007-12) to around 42 per cent in the next 20 years (Tables 3.2, 3.5a and 3.5b).

What are the implications of such a growth scenario? Can such investment levels be financed? And how? The acceleration of industrial growth implies higher investment needs for the following sectors: power, telecommunications, transportation, urban infrastructure, ports and airports. Tapping domestic savings is going to be an important part of a financing strategy but it is unlikely to be enough in itself. External savings, mirrored in current account deficits, would be necessary to supplement domestic savings. What would be the overall level of infrastructure investment required? How much external capital inflows can be expected? How much can domestic savings be expected to increase? These questions are answered next.

MOBILISING DOMESTIC SAVINGS

Understanding the way savings are constituted can help in projecting the increase in infrastructure investment that India requires. While tapping both domestic and foreign savings is going to be important, more clarity is needed on the potential contribution of these sources. Recent international research shows that strong investment periods in the power sector have been accompanied by an increase in domestic savings, and foreign sources, on the other hand, tend to prevail during periods of rapid investment in roads[10]. We first consider the performance and outlook for domestic savings.

The gross domestic saving rate has risen significantly since the late 1990s, but has fallen since 2008, though it is still above 30 per cent of GDP (Table 3.6). In fact, India's gross domestic savings rate in the recent past is comparable to Indonesia, Thailand and Korea, albeit much lower than that of China, Malaysia and Singapore (Table 3.3). In our projections, we assume that domestic savings will be restored and then rise over the over the next two decades, to be around 40 per cent of GDP by 2027-32 (Table 3.7). There has been a tendency to over-emphasise the importance of foreign savings in stimulating infrastructure investments in India, but the reality is that it is domestic savings that have largely financed Indian investment, including that in infrastructure and transport[11]. To get a better understanding of how domestic savings can be tapped, we consider each of its three components in turn: household savings, private corporate savings, and public sector savings.

HOUSEHOLD SAVINGS

For the household sector, we observe that savings increased from 19.7 per cent in 1998-2002 to about 23.4 per cent of GDP in 2008-2012. We project household savings to be the bedrock of domestic savings, reaching around 28 per cent over the next 20 years (Table 3.7). As already noted, despite an overall fall in gross domestic saving, household savings have remained relatively stable. Household net financial savings increased from about 6 to 7 per cent in the early 1980s to 10 per cent in the late 1990s, stabilising at this level thereafter (Table 3.6). In the future, we do not expect to see dramatic increases in net financial savings even though households will continue to increase gross savings, deeper financial markets and intermediation will translate into higher level of borrowings. Taking this perspective, we are projecting net financial savings to increase, albeit at a slower pace, reaching 13 per cent of GDP by 2028-2032 (Table 3.7). Bank deposits continue to account for the predominant share of gross financial assets, with their share increasing sharply in the second half of 2000s in contrast to the declining trend in the previous years; A trend that augurs well for infrastructure investments is the increasing share of contractual savings in life insurance funds, and provident and pension funds. Although these have not been very buoyant in the recent past, we can expect greater mobilisation of household financial savings in insurance, pension and provident funds, as incomes continue to increase. Life insurance funds accounted for over 3 per cent of GDP during 2007-12, up from about 1 per cent during the early 1990s[12]. Provident and pension funds were another 1.6 per cent of GDP during this period. This provides clear signals of the financial deepening of the economy and the formalisation of household sector savings in financial instruments. Going forward, however, the increasing penetration of insurance activity could increase the share of life insurance in total financial savings of households. We can expect much deeper penetration of insurance and pension products in the years to come: we have projected their share to go up from the current around 4 per cent of GDP to 5 per cent. With

10. Walsh et al. (2011).
11. Chapter 1 in Mohan (2011).
12. Database on Indian Economy, Reserve Bank of India, http://dbie.rbi.org.in/DBIE/dbie.rbi?site=home , accessed 1 November, 2013.

Table 3. 5a

India: Gross Domestic Expenditure, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
(Rs Billion 2012-13 Prices)									
Gross Domestic Product	100,262	107,221	114,951	123,774	133,481	115,938	169,153	252,143	384,748
Gross Domestic Capital Formation	35,373	38,600	42,172	46,401	50,738	42,657	65,725	103,700	166,526
Public	9,525	10,186	10,920	11,759	12,681	11,014	16,915	25,214	38,475
Private	25,848	28,414	31,251	34,642	38,057	31,643	48,810	78,486	128,051
Total Consumption	72,039	75,210	79,401	84,120	89,560	80,066	111,251	159,542	234,734
Public	13,052	13,410	13,796	14,850	16,008	14,223	18,724	27,666	42,168
Private	58,987	61,800	65,605	69,270	73,551	65,843	92,527	131,876	192,566
Exports of Goods & Services	24,877	27,455	30,333	33,561	37,160	30,677	51,173	86,519	148,044
Imports of Goods & Services	32,026	34,043	36,954	40,308	43,977	37,462	58,996	97,618	164,556
Memo Items									
Gross Fixed Investment	29,359	32,038	35,002	38,513	42,113	35,405	54,552	86,071	138,216
Change in Stocks	3,184	3,474	3,795	4,176	4,566	3,839	5,915	9,333	14,987
Valuables	2,830	3,088	3,374	3,712	4,059	3,413	5,258	8,296	13,322
(US$ Billion 2012-13 Prices)									
Gross Domestic Product	1,843	1,971	2,113	2,275	2,453	2,131	3,109	4,634	7,071
Gross Domestic Capital Formation	650	709	775	853	933	784	1,208	1,906	3,061
Public	175	187	201	216	233	202	311	463	707
Private	475	522	574	637	699	582	897	1,443	2,353
Total Consumption	1,324	1,382	1,459	1,546	1,646	1,472	2,045	2,932	4,314
Public	240	246	254	273	294	261	344	508	775
Private	1,084	1,136	1,206	1,273	1,352	1,210	1,701	2,424	3,539
Exports of Goods & Services	457	505	557	617	683	564	941	1,590	2,721
Imports of Goods & Services	589	626	679	741	808	689	1,084	1,794	3,024
Memo Items	-	-	-	-	-	-	-	-	-
Gross Fixed Investment	540	589	643	708	774	651	1,003	1,582	2,540
Change in Stocks	59	64	70	77	84	71	109	172	275
Valuables	52	57	62	68	75	63	97	152	245

Sources: Government of India, Central Statistical Office, National Account Statistics and NTDPC Projections.

We expect much deeper penetration of insurance and pension products in the coming years, and projected their share to go up from the current 4 per cent to 5 per cent of GDP. With rising incomes, it is quite possible that this projection is on the lower side

rising incomes and greater penetration of financial institutions, it is quite possible that this projection is on the lower side. (Box 3.1)

While one would think that an increase in financial savings would be accompanied by a move away from savings in physical assets the trends indicate that savings in both financial and physical assets will grow hand in hand. Savings in physical assets have increased from 9.7 per cent of GDP in the period 1998-2002 to 12.3 per cent of GDP during 2008-2012. The household sector's preference for savings in the form of physical assets since 2000-01 could be attributed partly to the robust economic growth as well as rising availability of credit to meet financing needs of the household sector. An important reason for this increase is that households are borrowing more for investments in durable assets such as housing which is among the few inflation-resilient long-term investment options and part of a diversified savings portfolio for households. On the back of rapid economic growth in the early 2000s, there has also been considerable expansion in consumer finance and developer finance for housing (and other assets) in recent years and we expect savings in physical assets to continue growing. Our projections suggest that this asset class will account for 12.5 per cent of GDP during the 12th Plan period and then increase to more than 14 per cent through 2032.

One striking feature is that the percentage of shares and debentures in gross financial assets of households has remained quite small (less than 10 per cent on an average), even though it increased sharply during the (early) 1990s, spurred by the reforms in the capital market[13]. Subsequently, the share of shares and debentures started declining largely reflecting stockmarket conditions impacted by irregularities and the downturn in industrial activity and was at less than 3 per cent in the first half of 2000s. 'Shares & debentures' did pick up again during 2005-06 to 2007-08, largely coinciding with a high-growth phase and buoyant stockmarket trends, but then dropped in 2008-09 in the face of knock-on effects of the global financial crisis. Household investment in the stockmarket has remained subdued, with net investment in recent years being zero or even negative.

PRIVATE CORPORATE SECTOR SAVINGS

The private corporate sector has remained vibrant and has benefitted from increasing consumption and investment demand arising out of consistently high economic growth. With robust sales growth, improved productivity, and lower interest rates during 2000-2010, corporates recorded good growth in profits which translated into higher private corporate sector saving. The savings of the private corporate sector thus increased rapidly from 3.9 per cent of GDP during the 9th Five Year Plan period (1997-2002) to 7.8 per cent of GDP during the 11th Plan period (2007-12). In view of the broader global economic slowdown and the current sluggishness of the Indian economy, we project that corporate savings will be around their current levels around 7.5 per cent of GDP during the 12th Plan period and then increase gradually to 9.5 per cent by 2027-2032, although they have dipped in the last couple of years (Tables 3.6 and 3.7).

What is important to consider is that corporate savings had grown significantly from the low levels of 3.8 per cent in 1994-95, driven by marketisation of the economy and the entry of the private sector into areas that were historically reserved for the public sector. The corporate sector also benefitted from softening of the interest rate structure during 2003-08 accompanied by low inflation. We can expect the corporate sector to keep growing as a proportion of GDP: this would also help in increasing private corporate sector savings as a proportion of GDP.

The emphasis being placed by Government on the contribution of the private sector in infrastructure through public-private partnerships and otherwise will be difficult to realise if corporate profitability and hence corporate savings are not restored to what they were during most of the 11th Plan period. This needs the practice of both better macroeconomic and microeconomic policies. Fiscal correction is essential to redirect private household savings to the corporate sector and to reduce inflation. For nominal interest rates to come down, so that corporate profitability is restored, it is essential that inflation rates come down to the 4-5 per cent level that had been achieved during 1998-2008. This will also enable banks to give positive real deposit rates to depositors in order to increase bank deposits and hence restore financial savings. Furthermore, the World Bank's index of 'Ease of Doing Business' indicates high barriers to entry in India. Thus, regulatory policies, permitting processes, environmental clearances and the like, all have to be improved to restore corporate profitability. Finally, the role of efficient transport

13. Report of the Sub Group on Household Sector Saving: 12th Five Year Plan (2012-13 to 2016-17), Planning Commission, 2011.

Box 3.1

Pension Funds Can and Should Invest More in Infrastructure

[The Economist, 26th October 2013, Print Edition]

IT MIGHT seem like a marriage made in heaven. Infrastructure projects take a long time to build but then deliver cash flows over an extended period. Pension funds have liabilities that stretch over several decades. Why not get the latter to finance the former?

But the couple have barely survived the first date, let alone made it to the altar. A new report from the OECD, a think-tank, estimates that global pension funds have just 0.9 per cent of their portfolios in pure infrastructure plays.

In part, that is due to the OECD's decision to define infrastructure assets as unlisted debt and equity; pension funds have significant exposure to the listed shares and bonds of power companies and the like. From the point of view of public policy, however, the OECD's definition is the correct one. The utility shares owned by pension funds are those of companies that were privatised in the 1980s and 1990s; the infrastructure they operate was the result of government spending in previous decades.

At the moment, public finances are very tight. Although governments would like to see more infrastructure get built (thanks, not least to the Keynesian stimulus that might result), they would rather not bear the whole burden. The difficult bit about infrastructure projects, apart from the original decision to commission them, is the cost of construction. That is where governments would like pension funds, and the rest of the private sector, to open their wallets.

What's stopping them? Risk is clearly an important factor. Pension funds want reliable cash flows that can be used to pay retirees, not the uncertainties that are associated with greenfield projects. As the OECD report points out, there is a 'lack of objective high-quality data on infrastructure investments.' This makes it difficult for funds to calculate how infrastructure would fit into their portfolios: for example, whether its returns would be closely correlated with other assets, such as equities. Another problem is that small pension funds may lack the expertise to get directly involved in such large projects; they have to invest via an infrastructure fund, and pay a management fee for the privilege.

The biggest infrastructure investors so far have been the giant Australian and Canadian pension funds, which can benefit from economies of scale. Britain is trying to achieve the same effect by setting up a Pensions Investment Platform which will pool infrastructure investments; the hope is for a £20 billion ($32 billion) fund within ten years. However, the scheme has been slow to get going—one person involved described it as like 'herding cats'—and even if it is successful it will not be sufficient to fund Britain's highest-profile project, a proposed high-speed rail line from London to Manchester.

A new report from Llewellyn Consulting and the Pensions Insurance Corporation points to other problems for pension funds, including the lack of political certainty. Capital spending is often the first item to be cut when governments run into budget difficulties and tough decisions are put off to suit electoral cycles (expansion of airport capacity near London is a notable example). The report suggests one possible solution: that the government should borrow a separate sum to finance infrastructure spending with the stated intention of selling assets to the likes of pension funds after a number of years. Such debt could be recorded separately in the National Accounts, an idea that was suggested to the British government by one of the report's sponsors back in 2009.

An alternative option would be a national investment bank, along the lines of the European Investment Bank. It would borrow from the market and use its capital to guarantee the equity portion of infrastructure projects. That would allow pension funds to buy the more secure debt elements of the project's funding.

The Olympics showed that Britain can build projects on time when the country puts its mind to it. A similar effort is required now. The need is clear. More than half of companies surveyed by the Confederation of British Industry compared Britain unfavourably with other EU countries on this issue. Among the G7 countries, only Italy is regarded as having worse infrastructure. And there is no shortage of potential funding Britain's pension assets are equal to 112 per cent of GDP. Surely someone can put the two together.

infrastructure is essential for corporate efficiency, competitiveness and profitability.

In summary, the role of the private sector in infrastructure and transport investment will be difficult to achieve at the magnitudes expected unless corporate profitability is restored. It would then become possible for private corporate savings to increase and be invested as equity in the infrastructure sector, in addition to increasing investment in manufacturing and services.

PUBLIC SECTOR SAVINGS

An important development that has taken place since the late 2000s is the deterioration in public sector savings. From being around 5 per cent of GDP in 2007-08, this savings class has fallen to 1.3 per cent of GDP in 2011-12 (Table 3.6). And the main culprit here is public/government administration, where savings were (-) 2.0 per cent of GDP in 2011-12[14]. The combined (Centre and states) fiscal deficit during the 11th Plan averaged 7.3 per cent of GDP; of this, the GFD of the Centre was 5.1 per cent of GDP and the states was 2.3 per cent. The average revenue deficit of the Centre was 3.7 per cent of GDP, while the states had a marginal surplus (0.1 per cent of GDP) on the revenue account. While the revenue account of the states as a whole has improved substantially, the Centre's revenue deficit continues to be an area of concern. The attainment of higher gross domestic savings is therefore crucially dependent on increases in public sector savings. Continuing macro-economic stabilisation and reduction in fiscal deficit is essential if gross domestic savings are to increase further.

The 13th Finance Commission made the case that the fiscal deficit of the Central Government should be brought down to 3 per cent of GDP by 2013-14 and maintained at that level in subsequent years, and the Centre's revenue deficit should be progressively reduced and eliminated, followed by the emergence of revenue surplus by 2014-15. For the consolidated position of the state governments, the Commission's recommendation translates into a fiscal deficit target of 2.4 per cent of GDP in 2013-14 and 2014-15. In view of the fiscal slippage in the aftermath of the 2008 crisis and based on recommendations of the Kelkar panel, the Finance Ministry has now proposed a revised path for fiscal consolidation for the Central Government, wherein by 2016-17, the fiscal deficit will be brought down to 3 per cent and the revenue deficit to 1.5 per cent.

Improved fiscal management by itself can help in increasing domestic savings by 3 per cent of GDP. In this context, the tax-GDP ratio for the Central Government had increased sharply during the 2000s to 11.9 per cent in 2007-08, although it has declined since then to 9.9 per cent in 2011-12. On the other hand, interest payments-GDP ratio for the Central Government has decreased from 4.4 per cent in 2003-04 to 3.0 per cent in 2011-12. It is therefore not unrealistic to project an improvement in both the gross fiscal deficit of the Central Government and in its revenue deficit.

Within the public sector, savings of public sector undertakings (PSU) have been positive and stable on an average ranging between 3 per cent and 4 per cent of GDP over the past 15 years. Going forward, we project savings of these PSUs to increase gradually to around 4.7 per cent of GDP by 2027-32 (Table 3.7).

DOMESTIC SAVINGS: SUMMARY

The plausible projections of savings enhancement made above in each of the three main segments, the household sector, the private corporate sector, and the public sector, yield a good possibility of gross domestic savings increasing from a projected 32.7 per cent in 2012-17 to about 40 per cent of GDP by 2027-32. We may note that the gross domestic savings level had reached 36.8 per cent in 2007-08. Implications of these projections are (Table 3.7):

- That the household sector continues to contribute to long-term formal financial savings instruments in the future. Overall, we are projecting household savings to increase from about 23 per cent in 2012-17 to 28 per cent in 2027-32.
- The expansion of the private corporate sector continues over the next decade along with a continued increase in its share of domestic savings. We are projecting private corporate sector savings to increase from 7.4 per cent in 2012-17 to about 9.6 per cent in 2027-32.
- A sustained improvement in performance of the public sector so that the current drag of public sector savings deficit is reduced. We are projecting overall public sector savings to increase from around 2.2 per cent of GDP in 2012-17 to about 3.4 per cent in 2027-32.

From the point of view of infrastructure investment, a continuing increase in contractual savings in life insurance, provident fund and pension funds from the current level of about 4 per cent of GDP to over 5 per cent by 2027-32 is very important. These projections may be on the conservative side. This kind of expansion in such savings is essential to increase the stock of long-term savings which are most suitable for investment in infrastructure, which typically has long payback periods. With increas-

14. A sharp but temporary decline in public sector savings occurred in 2008-09 largely on account of the Sixth Pay Commission arrear payouts and fiscal stimulus measures. (Report of the Sub-Group on Household Sector Saving during the 12th Five Year Plan (2012-13 to 2016-17 (2011).

Table 3. 5b

India: Gross Domestic Expenditure, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
Current Prices (Per cent of GDP)									
Gross Domestic Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gross Domestic Capital Formation	35.3	36.0	36.7	37.5	38.0	36.8	38.9	41.1	43.3
Public	9.5	9.5	9.5	9.5	9.5	9.5	10.0	10.0	10.0
Private	25.8	26.5	27.2	28.0	28.5	27.3	28.9	31.1	33.3
Total Consumption	71.9	70.1	69.1	68.0	67.1	69.1	65.8	63.3	61.0
Public	13.0	12.5	12.0	12.0	12.0	12.3	11.1	11.0	11.0
Private	58.8	57.6	57.1	56.0	55.1	56.8	54.7	52.3	50.1
Exports of Goods & Services	24.8	25.6	26.4	27.1	27.8	26.5	30.3	34.3	38.5
Imports of Goods & Services	31.9	31.8	32.1	32.6	32.9	32.3	34.9	38.7	42.8
Memo Items									
Gross Fixed Investment	29.3	29.9	30.4	31.1	31.5	30.5	32.2	34.1	35.9
Change in Stocks	3.2	3.2	3.3	3.4	3.4	3.3	3.5	3.7	3.9
Valuables	2.8	2.9	2.9	3.0	3.0	2.9	3.1	3.3	3.5
(2004-05 Prices) (Annual Per cent Change)									
Gross Domestic Product	3.3	6.9	7.2	7.7	7.8	6.6	8.0	8.5	9.0
Gross Domestic Capital Formation	2.8	9.1	9.3	10.0	9.3	8.1	9.3	9.8	9.4
Public	24.9	6.9	7.2	7.7	7.8	10.7	9.1	8.5	9.0
Private	-3.5	9.9	10.0	10.9	9.9	7.3	9.3	10.3	9.5
Total Consumption	4.0	4.5	5.6	6.0	6.5	5.3	7.2	7.5	8.7
Public	25.2	2.7	2.9	7.6	7.8	9.0	6.1	8.5	9.0
Private	10.2	4.8	6.2	5.6	6.2	6.6	7.4	7.3	8.6
Exports of Goods & Services	-0.2	10.4	10.5	10.6	10.7	8.3	10.9	11.2	11.4
Imports of Goods & Services	1.6	6.3	8.5	9.1	9.1	6.9	10.2	10.6	11.1
Memo Items									
Gross Fixed Investment	-1.2	9.1	9.3	10.0	9.3	7.2	9.3	9.8	9.4
Change in Stocks	55.4	9.1	9.3	10.0	9.3	17.4	9.3	9.8	9.4
Valuables	7.7	9.1	9.3	10.0	9.3	9.1	9.3	9.8	9.4
ICOR - Gross Capital Formation	10.7	5.1	5.0	4.8	4.8	6.1	4.8	4.0	4.0

Sources: Government of India, Central Statistical Office, National Account Statistics and NTDPC Projections.

Table 3.6
India: Gross Domestic Savings, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Per cent of GDP												
Gross Domestic Savings	23.8	24.9	25.9	29.0	32.4	33.4	34.6	36.8	32.0	33.7	34.0	30.8
Household Sector	21.4	23.2	22.3	23.2	23.6	23.5	23.2	22.4	23.6	25.2	23.5	22.3
Financial Saving	9.9	10.5	10.0	11.0	10.1	11.4	11.3	11.6	10.1	12.0	10.4	8.0
Financial Savings (Gross)	11.4	12.2	12.8	13.7	13.8	15.8	17.9	15.4	13.0	16.0	13.4	10.8
Currency	0.7	1.2	1.1	1.5	1.1	1.4	1.6	1.6	1.6	1.5	1.8	1.2
Bank Deposits	4.4	4.8	4.8	5.5	5.4	7.2	10.0	7.8	7.4	6.1	5.7	5.5
Non- Banking Deposits	0.1	(0.0)	0.5	0.1	0.0	0.0	0.1	0.0	0.3	0.3	0.1	0.2
Life Insurance Fund	1.6	1.8	2.1	1.8	2.1	2.3	2.7	3.4	2.7	4.0	2.8	2.5
Provident and Pension Fund	2.3	1.9	1.8	1.7	1.7	1.7	1.7	1.4	1.3	2.0	1.8	1.7
Claims on Government	1.8	2.2	2.2	3.1	3.3	2.4	0.4	(0.6)	(0.5)	0.7	0.5	(0.2)
Shares & Debentures	0.5	0.4	0.3	0.3	0.3	0.9	1.2	1.5	(0.0)	0.7	0.0	(0.1)
Units of UTI	(0.0)	(0.1)	(0.1)	(0.3)	(0.1)	(0.0)	(0.0)	(0.0)	(0.0)	-	-	-
Trade Debt(Net)	0.0	(0.0)	-	(0.0)	(0.0)	(0.0)	0.2	0.3	0.2	(0.0)	0.1	0.1
Financial Liabilities	1.5	1.6	2.8	2.7	3.7	5.0	6.6	3.8	2.9	3.1	3.6	2.8
Savings in Physical Assets	11.5	12.7	12.3	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.1	14.3
Private Corportate Sector	3.7	3.3	3.9	4.6	6.6	7.5	7.9	9.4	7.4	8.4	7.9	7.2
Joint Stock Companies	3.5	3.0	3.4	4.0	6.0	7.0	7.4	8.9	7.0	7.9	7.5	6.8
Cooperative Banks & Societies	0.2	0.3	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
Public Sector	(1.3)	(1.6)	(0.3)	1.3	2.3	2.4	3.6	5.0	1.0	0.2	2.6	1.3
Public Authorities	(4.2)	(4.9)	(4.2)	(2.8)	(1.8)	(1.6)	(0.5)	1.1	(2.4)	(2.7)	(0.3)	(1.7)
Government Administration	(5.0)	(5.5)	(4.7)	(3.3)	(2.3)	(2.1)	(1.0)	0.5	(2.8)	(3.1)	(0.6)	(2.0)
Departmental (Comm.) Enterprises	0.8	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.4	0.4	0.3	0.4
Non-Departmental Enterprises	2.8	3.4	3.9	4.1	4.1	4.0	4.0	3.9	3.3	2.8	2.9	3.0
Memo Item												
GDP at Market Prices (Rs Billion at Current Prices)	21,687	23,483	25,307	28,379	32,422	36,934	42,947	49,871	56,301	64,778	77,953	89,749

Source: Government of India, Central Statistical Office, National Account Statistics and Reserve Bank of India.

ing incomes and longer life expectancy, the demand for such savings instruments can also be expected to increase substantially in the coming years. At present, such savings are much easier to make by employees working within the organised sector. It is quite likely that there is considerable latent demand for contractual savings by workers in the unorganised sector across the whole economy. This is also reflected in the consistently high level of savings that are collected through the various government-run small savings schemes, mostly through the post office. The very strong implication of these projections is that if the domestic savings are to be enhanced to the level envisaged, major reforms must be instituted towards further deepening and widening of the life insurance, provident and pension funds in the country. The much delayed approval of the Pension Fund Regulatory and Development Authority Act finally setting up the Pension Fund Regulatory and Development Authority (PFRDA) on a statutory basis is a good sign for the future development of the pension fund industry.

It is vital for infrastructure investment that these savings instruments are available to the widest array of savers throughout the country. Better availability of

Box 3. 2

How to Finance Infrastructure: Macroeconomic Lessons and Emerging Markets Case Studies

How emerging countries have managed rapid economic growth along with supporting infrastructure, contributes to the discussion on the available options for India's current infrastructure investment planning. Examples from Brazil, China, Korea and Chile provide alternatives for financing infrastructure.

As previously established, rapid economic growth is accompanied with increases in infrastructure investment. Specifically, booms in power capacity tend to be financed domestically, while investment in roads usually is financed with the help of foreign capital.

Fiscal and financial conditions, as well as savings, usually improve during periods where infrastructure investment is growing. Therefore, focusing on the way countries finance their infrastructure improvements can be helpful to planning the increase in infrastructure investment that India requires.

There are several options to improve infrastructure financing, depending on the country characteristics. However, it is not clear if increases should be financed domestically or externally. In general, domestic savings increase during strong investment periods in the power sector. Foreign sources on the other hand, tend to prevail during periods of rapid investment in roads.

How are these increases financed? It seems that public finances do not decline during periods of rapid investment. Higher growth due to infrastructure booms leads to higher central government revenues; however it appears that spending totals are not significantly higher.

Another characteristic of high infrastructure investment periods is the financial deepening, both in terms of bank credit and bond finance. Therefore, infrastructure finance could be increased within a growing financial system instead of crowding out other sources of finance.

Country experiences also include the development of the private sector investment in infrastructure. Chile and Korea developed local bond markets to support relatively long-term issuances by infrastructure companies. Chile developed the pension system. With a market for local currency-denominated long-term securities, the country minimised the need for bank finance. In Korea, the main private sources are foreign and individual investors; however, in previous stages banks also purchased infrastructure debt. Further, in China and Brazil, bank loans have been instrumental. In China, public banks have supplied long-term financing, while in Brazil, the Brazilian Development Bank (BNDES), is the major source of finance.

Source: Walsh et al. (2011).

safe and high-return contractual savings instruments is likely to result in an overall enhancement of the household savings level. At the same time, getting public sector savings in order should be of high priority.

At present, households are quite simply not investing in the stockmarket, either directly or indirectly through mutual funds. If private sector investment in infrastructure is to increase by the magnitudes envisaged, vehicles need to be found for household financial savings to be invested in infrastructure companies through the stockmarket. This also implies better and credible governance in private sector infrastructure companies that inspire confidence in investors.

MOBILISING EXTERNAL SAVINGS

Mobilising external savings will be important to augment domestic savings to finance India's gross domestic investment, particularly in infrastructure (See Box 3.1 for lessons from emerging economies). Over the next 20 years, Gross Domestic Investment (GDI) has been projected to increase from an average of around 36.2 per cent of GDP during the 11th Plan period (2007-12) to around 43 per cent during the 15th Plan period (2027-32) (Tables 3.5a and 3.5b). At the same time, domestic savings are projected to increase from their current 30-32 per cent of GDP to 40.9 per cent by 2027-2032 (Table 3.7). Hence, external capital inflows will remain important in the financing

Table 3.7
India: Gross Domestic Savings, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
Per cent of GDP									
Gross Domestic Savings	29.6	31.3	32.5	33.6	34.5	32.5	35.9	38.6	40.9
Household Sector	21.4	22.7	22.8	23.3	23.6	22.8	24.5	26.3	27.9
Financial Saving	7.7	8.2	11.0	11.0	11.0	9.9	11.4	12.3	13.0
Financial Savings (gross)	10.4	11.0	14.5	15.1	15.5	13.5	16.1	17.3	18.3
Currency	1.2	1.2	1.4	1.5	1.5	1.4	1.6	1.7	1.8
Bank Deposits	5.3	5.6	7.2	7.5	7.7	6.8	8.0	8.6	9.1
Non- Banking Deposits	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Life Insurance Fund	2.4	2.5	2.5	2.6	2.7	2.6	2.8	3.0	3.2
Provident and Pension Fund	1.6	1.7	1.5	1.6	1.6	1.6	1.7	1.8	1.9
Claims on Government	(0.2)	(0.2)	1.0	1.0	1.1	0.6	1.1	1.2	1.3
Shares & Debentures	(0.1)	(0.1)	0.7	0.7	0.7	0.4	0.8	0.8	0.9
Units of UTI	-	-	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Trade Debt(Net)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Financial Liabilities	2.7	2.8	3.5	4.0	4.5	3.6	4.6	5.0	5.3
Saving in Physical Assets	13.7	14.6	11.8	12.3	12.6	12.9	13.1	14.0	14.9
Private Corporate Sector	6.9	7.3	7.0	7.6	8.1	7.4	8.5	9.1	9.6
Joint Stock Companies	6.5	6.9	6.5	7.1	7.6	7.0	7.9	8.5	9.0
Cooperative Banks & Societies	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6
Public Sector	1.3	1.3	2.7	2.8	2.8	2.2	3.0	3.2	3.4
Public Authorities	(1.6)	(1.7)	(1.1)	(1.1)	(1.1)	(1.3)	(1.2)	(1.2)	(1.3)
Government Administration	(2.0)	(2.1)	(1.5)	(1.6)	(1.6)	(1.7)	(1.7)	(1.8)	(1.9)
Departmental (comm.) Enterprises	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6
Non-Departmental Enterprises	2.9	3.0	3.7	3.9	4.0	3.5	4.1	4.4	4.7
Memo Item									
Gross Domestic Product at Market Prices - (Rs Billion 2012-13 prices)	100,262	107,221	114,951	123,774	133,481	115,938	169,153	252,143	384,748

Sources: Government of India, Central Statistical Office, National Account Statistics and NTDPC Projections.

of investment in India. And historically, expansion in economic activity, particularly during the 2nd, 3rd, 6th, and 7th Plans have been associated with higher financing through external sources as reflected in larger current account deficits. In the more recent period (since 2008-09), however, the higher recourse to foreign savings has been associated with a slowing economy.

In recent years, there has been a great deal of stress laid on mobilising external savings for transport investment, and for infrastructure as a whole. The objective in this section is to estimate the maximum feasible level of external savings that can be mobilised to finance overall investment in India, and hence for infrastructure and transport. What is of importance is that such external capital inflows should be sustainable. Net capital inflows that are absorbed by the economy as a whole are identically equal to the current account deficit (CAD). Thus, considerations for sustainability include the magnitude of CAD that would be regarded as safe

Table 3. 8a

India: Balance of Payments: Summary, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
US$ Billion												
Current Account Balance	-2.7	3.4	6.3	14.1	-2.5	-9.9	-9.6	-15.7	-27.9	-38.2	-45.9	-78.3
Exports of Goods and Services	61.7	61.8	74.5	93.2	128.5	162.8	202.7	256.5	295.0	276.0	383.3	450.7
Exports of Goods, F.O.B.	45.5	44.7	53.8	66.3	85.2	105.2	128.9	166.2	189.0	182.4	250.5	309.8
Exports of Services	16.3	17.1	20.8	26.9	43.2	40.6	73.8	90.3	106.0	96.0	132.9	140.9
Imports of Goods and Services	72.5	70.1	81.6	96.7	146.7	191.5	235.0	309.1	360.6	359.1	465.1	576.4
Imports of Goods, C.I.F.	57.9	56.3	64.5	80.0	118.9	157.1	190.7	257.6	308.5	300.6	381.1	499.5
Imports of Services	14.6	13.8	17.1	16.7	27.8	34.5	44.3	51.5	52.0	60.0	84.1	76.9
Net Factor Income	-5.0	-4.2	-3.4	-4.5	-5.0	-5.9	-7.3	-5.1	-7.1	-8.0	-17.3	-16.0
Private Transfers (Net)	12.9	15.4	16.4	21.6	20.5	24.5	29.8	41.7	44.6	51.8	53.1	63.5
Official Transfers (Net)	0.3	0.5	0.5	0.6	0.3	0.2	0.3	0.2	0.2	0.3	0.0	0.0
Foreign Investment	5.9	6.7	4.2	13.7	13.0	15.5	14.8	43.3	8.3	50.4	39.7	39.2
Foreign Direct Investment	3.3	4.7	3.2	2.4	3.7	3.0	7.7	15.4	22.4	18.0	9.4	22.1
Portfolio Investment	2.6	2.0	0.9	11.4	9.3	12.5	7.1	27.4	-14.0	32.4	30.3	17.2
External Assistance, net	0.4	1.1	-3.1	-2.9	1.9	1.7	1.8	2.1	2.4	2.9	4.9	2.3
Commercial Borrowings, Net	4.3	-1.6	-1.7	-2.9	5.2	2.5	16.1	22.6	7.9	2.0	12.5	10.3
Short-Term Credit (Supplier's Credit)	0.6	-0.8	1.0	1.4	3.8	3.7	6.6	15.9	-2.0	7.6	11.0	6.7
Bank Capital	-2.0	2.9	10.4	6.0	3.9	1.4	1.9	11.8	-3.2	2.1	5.0	16.2
Rupee Debt Service	-0.6	-0.5	-0.5	-0.4	-0.4	-0.6	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
Other Capital	0.3	0.8	0.6	1.7	0.7	1.2	4.2	11.0	-5.9	-13.2	-11.0	-6.9
Erros and Omissons	-0.3	-0.2	-0.2	0.6	0.6	-0.5	1.0	1.3	0.4	0.0	-3.0	-2.4
Overall Balance	5.9	11.8	17.0	31.4	26.2	15.1	36.6	92.2	-20.1	13.4	13.1	-12.8
Reserves (Increase –/ Decrease +)	-5.9	-11.8	-17.0	-31.4	-26.2	-15.1	-36.6	-92.2	20.1	-13.4	-13.1	12.8
Foreign Exchange Reserves	42.9	54.7	76.1	113.0	141.5	151.6	199.2	309.7	252.0	279.1	304.8	294.4
Foreign Currency Assets, end of period	39.6	51.0	71.9	107.4	135.6	145.1	191.9	299.2	241.4	254.7	274.3	260.1
(Per cent of GDP)												
Exports of Goods and Services	13.0	12.6	14.3	15.1	17.8	19.5	21.4	20.7	24.1	20.2	22.4	24.1
Imports of Goods and Services	15.3	14.2	15.6	15.7	20.3	0.0	24.8	24.9	29.4	26.3	27.2	30.8
Private Transfers (Net)	2.7	3.1	3.1	3.5	2.8	2.9	3.1	3.4	3.6	3.8	3.1	3.4
Foreign Investment	1.2	1.4	0.8	2.2	1.8	1.9	1.6	3.5	0.7	3.7	2.3	2.1
Foreign Direct Investment	0.7	1.0	0.6	0.4	0.5	0.4	0.8	1.2	1.8	1.3	0.5	1.2
Portfolio Investment	0.5	0.4	0.2	1.8	1.3	1.5	0.7	2.2	-1.1	2.4	1.8	0.9
Commercial Borrowings	0.9	-0.3	-0.3	-0.5	0.7	0.3	1.7	1.8	0.6	0.1	0.7	0.6

(Contd...)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
(Per cent Change in US$ Terms)												
Exports of Goods and Services	15.9	0.2	20.5	25.0	37.9	26.7	24.5	26.6	15.0	-6.4	38.9	17.6
Exports of Goods, F.O.B.	21.1	-1.6	20.3	23.3	28.5	23.4	22.6	28.9	13.7	-3.5	37.3	23.7
Exports of Services	3.6	5.4	21.1	29.4	61.0	-6.1	81.7	22.4	17.3	-9.4	38.4	6.0
Imports of Goods and Services	8.1	-3.3	16.4	18.6	51.7	30.5	22.8	31.6	16.6	-0.4	29.5	23.9
Imports of Goods, C.I.F.	4.6	-2.8	14.5	24.1	48.6	32.1	21.4	35.1	19.8	-2.6	26.7	31.1
Imports of Services	25.2	-5.2	23.9	-2.3	66.4	24.0	28.5	16.2	1.1	15.3	40.0	-8.5
Reserves (as Months of G&S Imports)	7.1	9.4	11.2	14.0	11.6	9.5	10.2	12.0	8.4	9.3	7.9	6.1

Source: Reserve Bank of India, Hand Book of Statistics.
Note: F.O.B: Free On Board; C.I.F.: Cost, Insurance and Freight.

and sustainable by financial markets. We examine this issue by first focusing on feasible development in the current account, and then in the capital account.

THE CURRENT ACCOUNT

India's exports have grown at a healthy pace, significantly faster than world exports since 2002, reflecting the resilience of India's exports linked to a strategic trade policy that is aimed at diversifying trade in terms of commodities as well as destinations. This has helped in mitigating the adverse effects of global shocks[15]. Exports of goods and services as a share of GDP increased from 11.8 per cent during 1998-2002, reaching 22.1 per cent during 2008-12 (Tables 3.8a, 3.8b, 3.8c and 3.8d). In terms of products, the share of engineering goods and petroleum products in the export basket has increased while the share of labour-intensive goods has declined. Except for 2008-09 and 2009-10, which were crisis years for global trade, Indian exports of goods and services have been growing at rates in excess of 20-25 per cent since 2002. However, in view of the current slowdown in exports, and the very slow recovery of the global economy and a higher base, we are projecting a much lower growth rate of less than 9 per cent in exports of goods and services over the 12th Plan period, and then accelerating to around 11-12 per cent annually over the following three Plan periods. (These projections are in constant 2012-13 US dollars) (Table 3.9). Whereas the current account deficit had been contained at prudent levels right through the 1990s and upto 2009-10, there has been an expansion of this deficit in the last couple of years, reaching 4.8 per cent of GDP in 2012-13. In projecting exports and imports for the future, we have gradually tapered off this deficit during the remaining years of the 12th Plan to reach 2.6 per cent of GDP by 2016-17. We have then kept the current account deficit at around 2.5 per cent, which is what we believe to be a prudent sustainable level. The growth projections of GDP and of exports then determine the growth projections of imports of goods and services.

With these assumptions, exports of goods and services are projected to grow to about 38 per cent of GDP by 2027-32, the 15th Plan period. By way of comparison, the current exports of goods and services from China amount to about 31 per cent of GDP. In absolute terms, exports of goods and services are projected to increase from $450 billion in 2011-12 to about $680 billion in 2016-17, and annual averages of $930 billion, $1.6 trillion, and $2.7 trillion during the 13th, 14th and 15th Plans respectively. In terms of only goods exports, this implies growth from $310 billion in 2011-12 to $480 billion in 2016-17, and annual averages of $680 billion, $1.2 trillion and $2.1 trillion during the 13th, 14th and 15th Plans. The corresponding projections of imports of goods and services can then be seen, keeping the CAD at around 2.5 per cent of GDP throughout the period after the 12th Plan, and the projections average annually $1.0 trillion, $1.8 trillion and $3.0 trillion during the 13th, 14th and 15th Plan respectively (Tables 3.9a & 3.9b).

Such projections of exports and imports of goods and services will not be feasible without the corresponding growth in investment in all aspects of transport, logistics and ports. The various sectoral chapters outline the kind of investments envisaged. Furthermore, the special attention given to the transport of energy commodities coal, iron ore and petroleum in Chapter 8 provides a specific focus on the need for coordination between investment strategies for the power, coal, railways and ports sectors.

15. Report of the Sub Group on Inflow of Foreign Savings: 12th Five Year Plan (2012-13 to 2016-17), Planning Commission, 2011.

Table 3. 8b

India: Balance of Payments: Current Account, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
US$ Billion												
Exports of goods, f.o.b.	45.5	44.7	53.8	66.3	85.2	105.2	128.9	166.2	189.0	182.4	250.5	309.8
Primary Products	7.1	7.2	8.7	9.9	13.6	16.4	19.7	27.6	25.3	26.4	32.8	45.6
Petroleum Products	1.9	2.1	2.6	3.6	7.0	11.6	18.6	28.4	27.5	28.2	41.5	55.6
Manufactured Goods	34.3	33.4	40.2	48.5	60.7	54.3	84.9	103.0	123.1	115.2	158.0	186.8
Other Goods	2.1	2.1	2.2	4.3	3.9	11%	5.6	7.3	13.0	12.7	18.1	21.8
Exports of Services	16.3	17.1	20.8	26.9	43.2	57.7	73.8	90.3	106.0	96.0	132.9	140.9
Travel	3.5	3.1	3.3	5.0	6.7	7.9	9.1	11.3	10.9	11.9	15.3	18.5
Transportation,	2.0	2.2	2.5	3.2	4.7	6.3	8.0	10.0	11.3	11.2	14.3	18.2
Software Services	6.3	7.6	9.6	12.8	17.7	23.6	31.3	40.3	46.3	49.7	55.5	67.6
Business Services	..	..	..	..	5.2	9.3	14.5	16.8	18.6	11.3	24.0	25.9
Financial Services	..	..	..	..	0.5	1.2	3.1	3.2	4.4	3.7	6.5	6.0
Other Services	4.4	4.3	5.3	5.8	8.5	9.4	7.7	8.7	14.4	8.3	17.3	4.7
Imports of Goods, C.I.F.	57.9	56.3	64.5	80.0	118.9	157.1	190.7	257.6	308.5	300.6	381.1	499.5
Petroleum, Crude and Products	15.7	14.0	17.6	20.6	29.8	44.0	56.9	79.6	93.7	87.1	106.0	154.9
Capital Goods	8.9	9.9	13.5	18.3	25.1	37.7	47.1	70.1	71.8	65.9	78.5	99.4
Mainly Export Related Goods	8.1	8.3	10.3	12.7	17.1	18.6	17.9	20.8	31.9	31.3	53.6	54.5
Consumption Goods	1.4	2.0	2.4	3.1	3.1	2.8	4.3	4.6	5.0	9.0	8.9	11.6
Other goods	23.8	22.1	20.6	25.4	43.7	54.0	64.5	82.5	106.1	107.4	134.1	179.2
Imports of Services	14.6	13.8	17.1	16.7	27.8	34.5	44.3	51.5	52.0	60.0	84.1	76.9
Travel	2.8	3.0	3.3	3.6	5.2	6.6	6.7	9.3	9.4	9.3	11.1	13.8
Transportation,	3.6	3.5	3.3	2.3	4.5	8.3	8.1	11.5	12.8	11.9	13.9	16.4
Software Services	0.6	0.7	0.7	0.5	0.8	1.3	2.3	3.4	2.6	1.5	2.2	8.1
Business Services	..	..	..	..	7.3	7.7	15.9	16.6	15.3	18.0	27.8	26.8
Financial Services	..	..	..	..	0.8	1.0	3.0	3.1	3.0	4.6	7.5	8.0
Other Services	..	..	..	..	0.7	0.3	0.8	0.9	1.1	1.4	1.2	1.6
Net Factor Income	-5.0	-4.2	-3.4	-4.5	-5.0	-5.9	-7.3	-5.1	-7.1	-8.0	-17.3	-16.0
Factor Receipts	2.7	3.4	3.5	3.9	4.6	6.4	9.3	14.3	14.3	13.0	9.1	10.1
Factor Payments	7.7	7.6	7.0	8.4	9.6	12.3	16.6	19.3	21.4	21.1	26.4	26.1
of which: Interest payments	4.2	4.4	4.2	5.5	4.4	4.5	5.0	7.3	7.3	5.5	5.4	7.0
of which: Other factor payments	3.5	3.2	2.7	2.9	5.1	7.7	11.7	12.0	14.1	15.5	21.0	19.1
Private Transfers (Net)	12.9	15.4	16.4	21.6	20.5	24.5	29.8	41.7	44.6	51.8	53.1	63.5
Private Transfers Receipts	13.1	15.8	17.2	22.2	21.1	25.0	30.8	43.5	46.9	53.6	55.6	66.1
Private Transfers Payments	0.2	0.4	0.8	0.6	0.6	0.5	1.0	1.8	2.3	1.8	2.5	2.7
Official Transfers (Net)	0.3	0.5	0.5	0.6	0.3	0.2	0.3	0.2	0.2	0.3	0.0	0.0
Official Transfers Receipts	0.3	0.5	0.5	0.6	0.6	0.7	0.6	0.8	0.6	0.7	0.6	0.6
Official Transfers Payments	0.0	0.0	0.0	0.0	0.4	0.5	0.4	0.5	0.4	0.5	0.6	0.6
Current Account Balance	-2.7	3.4	6.3	14.1	-2.5	-9.9	-9.6	-15.7	-27.9	-38.2	-45.9	-78.3

Source: Reserve Bank of India, Hand Book of Statistics.

Table 3. 8c

India: Balance of Payments: Capital Account, 2000-01 TO 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
US$ Billion												
Capital Account	8.8	8.6	10.8	16.7	28.0	25.5	45.2	106.6	7.4	51.6	62.0	67.8
Receipts	54.1	43.3	46.4	75.9	98.5	144.4	233.3	438.4	315.8	345.8	499.4	478.8
Payments	45.3	34.7	35.5	59.1	70.5	70.5	188.1	331.8	308.4	294.1	437.4	411.1
Foreign Investment	5.9	6.7	4.2	13.7	13.0	15.5	14.8	43.3	8.3	50.4	39.7	39.2
Inbound	17.7	15.5	14.0	32.7	46.9	77.3	133.2	271.1	171.7	198.7	289.4	234.6
Outbound	11.9	8.8	9.8	18.9	33.9	61.8	118.5	227.8	163.3	148.3	249.8	195.4
Foreign Direct Investment	3.3	4.7	3.2	2.4	3.7	3.0	7.7	15.4	22.4	18.0	9.4	22.1
FDI in India	4.0	6.1	5.0	4.3	6.0	8.9	22.7	34.2	41.7	33.1	25.9	33.0
FDI Abroad	0.8	1.4	1.8	1.9	2.3	5.9	15.0	18.8	19.4	15.1	16.5	10.9
Portfolio Investment	2.6	2.0	0.9	11.4	9.3	12.5	7.1	27.4	(14.0)	32.4	30.3	17.2
Inflow	13.6	9.3	8.8	28.2	40.8	68.1	109.6	233.8	128.7	160.2	254.0	185.6
Outflow	11.0	7.3	7.9	16.9	31.6	55.6	102.6	206.4	142.7	127.8	223.7	168.4
External Assistance, Net	0.4	1.1	(3.1)	(2.9)	1.9	1.7	1.8	2.1	2.4	2.9	4.9	2.3
Disbursements	2.9	3.4	2.9	3.4	3.8	3.6	3.8	4.2	5.2	5.9	7.9	5.6
Repayments	2.5	2.2	6.0	6.2	1.9	1.9	2.0	2.1	2.8	3.0	2.9	3.4
Commercial Borrowings, Net	4.3	(1.6)	(1.7)	(2.9)	5.2	2.5	16.1	22.6	7.9	2.0	12.5	10.3
Disbursements	9.6	2.7	3.5	5.2	9.1	14.3	20.9	30.3	15.2	15.0	24.1	32.6
Repayments	5.3	4.3	5.2	8.2	3.9	11.8	4.8	7.7	7.4	13.0	11.6	22.2
Short-Term Credit (Supplier's Credit)	0.6	(0.8)	1.0	1.4	3.8	3.7	6.6	15.9	(2.0)	7.6	11.0	6.7
Disbursements	11.2	5.6	5.2	11.1	17.4	21.5	30.0	47.7	41.8	53.3	75.7	102.8
Repayments	10.7	6.4	4.2	9.7	13.6	17.8	23.4	31.7	43.8	45.7	64.7	96.1
Bank Capital	(2.0)	2.9	10.4	6.0	3.9	1.4	1.9	11.8	(3.2)	2.1	5.0	16.2
of which: NRI Deposits (Net)	2.3	2.8	3.0	3.6	(1.0)	2.8	4.3	0.2	4.3	2.9	3.2	11.9
Disbursements	9.7	13.9	19.0	19.2	14.6	21.7	37.2	55.8	65.2	61.5	92.3	89.9
of which: NRI Deposits	9.0	11.4	10.2	14.3	8.1	17.8	19.9	29.4	37.1	41.4	49.3	64.3
Repayments	11.7	11.0	8.5	13.2	10.7	20.3	35.3	44.1	68.5	59.4	87.4	73.7
of which: NRI Deposits	6.7	8.7	7.2	10.6	9.0	15.0	15.6	29.2	32.9	38.4	46.0	52.4
Rupee Debt Service	(0.6)	(0.5)	(0.5)	(0.4)	(0.4)	(0.6)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Other Capital	0.3	0.8	0.6	1.7	0.7	1.2	4.2	11.0	(5.9)	(13.2)	(11.0)	(6.9)
Disbursements	2.9	2.3	1.8	4.3	6.7	5.9	8.2	29.2	16.7	11.5	9.9	13.3
Repayments	2.6	1.5	1.3	2.6	6.1	4.7	4.0	18.3	22.6	24.6	20.9	20.2
Errors and Omissions	(0.3)	(0.2)	(0.2)	0.6	0.6	(0.5)	1.0	1.3	0.4	(0.0)	(3.0)	(2.4)
Overall Balance	5.9	11.8	17.0	31.4	26.2	15.1	36.6	92.2	(20.1)	13.4	13.1	(12.8)
Foreign Exchange Reserves	42.9	54.7	76.1	113.0	141.5	151.6	199.2	309.7	252.0	279.1	304.8	294.4
Foreign Currency Assets	39.6	51.0	71.9	107.4	135.6	145.1	191.9	299.2	241.4	254.7	274.3	260.1
Gold	2.7	3.0	3.5	4.2	4.5	5.8	6.8	10.0	9.6	18.0	23.0	27.0
SDRs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	4.6	4.5
Reserve Trench Position in International Monetary Fund (IMF)	0.6	0.6	0.7	1.3	1.4	0.8	0.5	0.4	1.0	1.4	2.9	2.8

Source: Reserve Bank of India, Hand Book of Statistics.

Table 3. 8d

India: Balance of Payments: Capital Account, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Per cent of GDP												
Capital Account	1.9	1.7	2.1	2.7	3.9	3.1	4.8	8.6	0.6	3.8	3.6	3.6
Receipts	11.4	8.8	8.9	12.3	13.7	17.3	24.6	35.4	25.8	25.3	29.2	25.6
Payments	9.5	7.0	6.8	9.6	9.8	8.5	19.8	26.8	25.2	21.5	25.6	21.9
Foreign Investment	1.2	1.4	0.8	2.2	1.8	1.9	1.6	3.5	0.7	3.7	2.3	2.1
Inbound	3.7	3.1	2.7	5.3	6.5	9.3	14.0	21.9	14.0	14.5	16.9	12.5
Outbound	2.5	1.8	1.9	3.1	4.7	7.4	12.5	18.4	13.3	10.9	14.6	10.4
Foreign Direct Investment	0.7	1.0	0.6	0.4	0.5	0.4	0.8	1.2	1.8	1.3	0.5	1.2
FDI in India	0.8	1.2	1.0	0.7	0.8	1.1	2.4	2.8	3.4	2.4	1.5	1.8
FDI Abroad	0.2	0.3	0.3	0.3	0.3	0.7	1.6	1.5	1.6	1.1	1.0	0.6
Portfolio Investment	0.5	0.4	0.2	1.8	1.3	1.5	0.7	2.2	(1.1)	2.4	1.8	0.9
Inflow	2.9	1.9	1.7	4.6	5.7	8.2	11.6	18.9	10.5	11.7	14.8	9.9
Outflow	2.3	1.5	1.5	2.7	4.4	6.7	10.8	16.7	11.6	9.4	13.1	9.0
External Assistance, Net	0.1	0.2	(0.6)	(0.5)	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.1
Disbursements	0.6	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.4	0.4	0.5	0.3
Repayments	0.5	0.5	1.1	1.0	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Commercial Borrowings, Net	0.9	(0.3)	(0.3)	(0.5)	0.7	0.3	1.7	1.8	0.6	0.1	0.7	0.6
Disbursements	2.0	0.5	0.7	0.8	1.3	1.7	2.2	2.4	1.2	1.1	1.4	1.7
Repayments	1.1	0.9	1.0	1.3	0.5	1.4	0.5	0.6	0.6	1.0	0.7	1.2
Short-Term Credit (Supplier's Credit)	0.1	(0.2)	0.2	0.2	0.5	0.4	0.7	1.3	(0.2)	0.6	0.6	0.4
Disbursements	2.4	1.1	1.0	1.8	2.4	2.6	3.2	3.8	3.4	3.9	4.4	5.5
Repayments	2.3	1.3	0.8	1.6	1.9	2.1	2.5	2.6	3.6	3.3	3.8	5.1
Bank Capital	(0.4)	0.6	2.0	1.0	0.5	0.2	0.2	0.9	(0.3)	0.2	0.3	0.9
Of Which: NRI Deposits (Net)	0.5	0.6	0.6	0.6	(0.1)	0.3	0.5	0.0	0.3	0.2	0.2	0.6
Disbursements	2.1	2.8	3.6	3.1	2.0	2.6	3.9	4.5	5.3	4.5	5.4	4.8
Of Which: NRI Deposits	1.9	2.3	2.0	2.3	1.1	2.1	2.1	2.4	3.0	3.0	2.9	3.4
Repayments	2.5	2.2	1.6	2.1	1.5	2.4	3.7	3.6	5.6	4.3	5.1	3.9
Of Which: NRI Deposits	1.4	1.8	1.4	1.7	1.3	1.8	1.6	2.4	2.7	2.8	2.7	2.8
Rupee Debt Service	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Other Capital	0.1	0.2	0.1	0.3	0.1	0.1	0.4	0.9	(0.5)	(1.0)	(0.6)	(0.4)
Disbursements	0.6	0.5	0.4	0.7	0.9	0.7	0.9	2.4	1.4	0.8	0.6	0.7
Repayments	0.5	0.3	0.2	0.4	0.8	0.6	0.4	1.5	1.8	1.8	1.2	1.1
Errors and Omissions	(0.1)	(0.0)	(0.0)	0.1	0.1	(0.1)	0.1	0.1	0.0	(0.0)	(0.2)	(0.1)

(Contd...)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Per cent of GDP												
Overall Balance	1.2	2.4	3.2	5.1	3.6	1.8	3.9	7.4	(1.6)	1.0	0.8	(0.7)
Foreign Exchange Reserves	9.0	11.1	14.6	18.3	19.6	18.2	21.0	25.0	20.6	20.4	17.8	15.7
Foreign Currency Assets	8.3	10.4	13.7	17.4	18.8	17.4	20.2	24.1	19.7	18.6	16.0	13.9
Gold	0.6	0.6	0.7	0.7	0.6	0.7	0.7	0.8	0.8	1.3	1.3	1.4
SDRs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.2
Reserve trench position in IMF	0.1	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.1	0.1	0.2	0.2
GDP (US$ BILLION)	474.7	492.4	522.9	617.6	721.6	834.2	948.4	1239.3	1226.1	1366.2	1711.0	1872.9

Source: Reserve Bank of India, Hand Book of Statistics.

What is also noteworthy in the developments expected in the current account is the increase in factor payments expected over time as a consequence of the debt and equity flows needed as external savings for financing the projected investments. From the existing factor payment of about $26 billion in 2011-12, including interest and other payments, this may be expected to rise to about $60 billion by 2016-17, and then increasing to about $80 billion, $130 billion and $220 billion annually during the 13th, 14th and 15th Plan. As a proportion of GDP, factor payments amount to around 1.8 per cent of GDP: this would increase to about 3 per cent of GDP by the 15th Plan (Table 3.9b). These projections attempt to quantify the servicing of debt and equity flows that have been projected.

THE CAPITAL ACCOUNT

In arriving at feasible estimates of the external savings that can be projected for financing investment in India, the key issue that has to be considered is the sustainability of external capital flows. There has been an increasing tendency to focus on external flows for the financing of infrastructure and transport investment in recent years. Our approach is to estimate the level of feasible capital flows while aiming to keep the current account deficit at around 2.5 per cent of GDP after the 12th Plan period. Owing to the expanded CAD in 2010-13, the average CAD will be higher than this during the 12th Plan period at around 3.6 per cent of GDP, tapering from 4.8 per cent in 2012-13 to 2.6 per cent in 2016-17. This can be achieved by keeping the CAD broadly stable at around $80 billion through the rest of this Plan period, and in the next Plan period (2017-22). We have then kept the CAD constant in the region of 2.5 per cent of GDP in subsequent Plan periods, which is what we consider prudent. The volatility of capital flows experienced in the first half of 2013, along with the corresponding pressure on the exchange rate illustrate the difficulties that can arise as a consequence of expansion of the CAD and corresponding external debt flows.

In estimating the total capital flows needed, we have also kept under consideration the need to keep foreign exchange reserves at prudent levels that are necessary for ensuring financial stability and to deal with situations that may arise from volatility in capital flows. We have therefore aimed to keep the foreign exchange reserves in the region of six months of imports of goods and services. With trade projected to grow faster than GDP, this implies stepping up reserves from just under 16 per cent of GDP in 2011-12 to about 19, 20 and 22 per cent in the 13th, 14th and 15th Plans. To put things in context, the foreign exchange reserves of China amounted to $3.4 trillion at end-2012, about 18 months of imports of goods and services and 41 per cent of GDP. This criterion implies that net capital flows have to be in excess of CAD by the required additions to reserves. Incidentally, the expansion in reserves is also necessary for the required expansion of base money, the Reserve Bank of India's balance sheet, that is necessary to fuel the monetary expansion consistent with projected GDP growth.

Consequently, while keeping the CAD at around 2.5 per cent of GDP, net capital flows will need to be in excess of 4 per cent of GDP through the whole period considered, nearing 4.5-5.0 per cent during the 15th Plan period (Table 3.9).

During the last two decades, there has been a process of continued phased liberalisation of the capital account. Consequently, the share of FDI as a proportion of GDP has gone up from 0.2 per cent of GDP in 1993-94 to 1.0 per cent in 2005-06 and further to 1.2 per cent during 2010-11. Net FDI flows are accordingly projected to keep increasing from 1.5 per cent of GDP ($32 billion) during the 12th Plan to 1.7 per cent ($50 billion and $80 billion) during the 13th Plan and 14th Plan respectively and just under 2 per cent ($130 billion) in the 15th Plan period. There has been a substantial rise in the outward FDI by Indian companies since 2006-07 due to liberalisation

Table 3. 9a

India: Balance of Payments: Summary, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (Annual Average)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
US$ Billion									
Current Account Balance	(87)	(77)	(75)	(73)	(69)	(76)	(77)	(115)	(177)
Exports of Goods and Services	452	499	552	610	676	558	930	1,573	2,692
Exports of Goods, F.O.B.	307	343	384	429	481	389	683	1,206	2,137
Exports of Services	146	156	168	181	195	169	247	367	555
Imports of Goods and Services	582	619	672	733	800	681	1,073	1,775	2,992
Imports of Goods, C.I.F.	502	533	579	632	690	587	926	1,535	2,592
Imports of Services	81	86	93	101	110	94	146	240	400
Net Factor Income	(22)	(26)	(31)	(35)	(39)	(30)	(55)	(92)	(152)
Private Transfers (Net)	64	69	77	85	94	78	120	179	275
Official Transfers (Net)	0	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Foreign Investment	47	51	54	59	63	55	83	124	203
Foreign Direct Investment	20	31	33	36	39	32	52	78	133
Portfolio Investment	27	19	21	23	24	23	31	46	70
Commercial Borrowings	21	43	48	48	38	40	48	76	126
Overall Balance	4	22	33	38	37	23	56	86	151
Foreign Exchange Reserves	293	315	348	386	422	353	586	943	1,557
Memo Items									
(Per cent of GDP)									
Exports of Goods and Services	24.5	25.3	26.1	26.8	27.5	26.2	29.9	33.9	38.1
Imports of Goods and Services	31.6	31.4	31.8	32.2	32.6	32.0	34.5	38.3	42.3
Private Transfers (Net)	3.5	3.5	3.6	3.7	3.8	3.7	3.8	3.9	3.9
Current Account Balance	(4.7)	(3.9)	(3.5)	(3.2)	(2.8)	(3.6)	(2.5)	(2.5)	(2.5)
Foreign Investment	2.5	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.9
Foreign Direct Investment	1.1	1.6	1.6	1.6	1.6	1.5	1.7	1.7	1.9
Portfolio Investment	1.4	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0
Commercial Borrowings, Net	1.1	2.2	2.3	2.1	1.6	1.9	1.5	1.6	1.8
(Per cent change in US$ terms)									
Exports of Goods and Services	0.4	10.4	10.5	10.6	10.7	8.5	10.9	11.2	11.4
Exports of Goods, F.O.B.	(1.0)	11.9	11.9	11.9	11.9	9.3	12.0	12.1	12.1
Exports of Services	3.4	7.2	7.4	7.8	7.9	6.7	8.0	8.4	8.8
Imports of Goods and Services	1.0	6.3	8.6	9.1	9.1	6.8	10.2	10.7	11.1
Imports of Goods, C.I.F.	0.4	6.4	8.6	9.1	9.1	6.7	10.2	10.7	11.1
Imports of Services	5.0	5.9	8.2	8.7	8.8	7.3	10.0	10.4	11.1
Reserves (as Months of G&S Imports)	6.0	6.1	6.2	6.3	6.3	6.2	6.6	6.4	6.2
GDPmp (US$ Billion)	1,843	1,971	2,113	2,275	2,453	2,131	3,109	4,634	7,071

Source: Reserve Bank of India, Hand Book of Statistics and NTDPC Estimates.

Table 3. 9b

India: Balance of Payments: Current Account, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
US$ Billion									
Exports of Goods, F.O.B.	307	343	384	429	481	389	683	1,206	2,137
Petroleum Products	60	66	73	80	88	73	118	190	306
Manufactured Goods	191	215	243	275	311	247	455	839	1,545
Other Goods	56	62	68	74	82	68	110	177	285
Exports of Services	146	156	168	181	195	169	247	367	555
Imports of Goods, C.I.F.	502	533	579	632	690	587	926	1,535	2,592
POL and Other Energy	169	179	194	211	230	197	307	503	839
Capital Goods	96	104	114	127	140	116	191	331	581
Mainly Export Related	38	41	44	48	52	44	69	114	190
Other Imports	198	210	227	247	269	230	359	588	982
Imports of Services	81	86	93	101	110	94	146	240	400
Net Factor Income	(22)	(26)	(31)	(35)	(39)	(30)	(55)	(92)	(152)
Factor Receipts	13	12	13	15	17	14	24	40	68
Factor Payments	34	39	44	50	56	45	79	132	219
Of which: Interest payments	10	12	14	17	20	15	29	50	83
Of which: Other factor payments	25	27	30	32	35	30	49	83	136
Private Transfers (Net)	64	69	77	85	94	78	120	179	275
Private Transfers Receipts	67	72	79	88	97	81	123	183	280
Private Transfers Payments	3	3	3	3	3	3	3	4	5
Official Transfers (Net)	0	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Official Transfers Receipts	1	1	1	1	1	1	1	1	1
Official Transfers Payments	1	1	1	1	1	1	1	1	1
Current Account Balance	(87)	(77)	(75)	(73)	(69)	(76)	(77)	(115)	(177)

Source: Reserve Bank of India, Hand Book of Statistics and NTDPC projections.

of outward investment policies and efforts by Indian companies to compete better in the global economy. This trend may be expected to continue. The projections given here are in terms of net FDI; hence the implication is that incoming FDI will have to be significantly higher than the net projected to take account of the outward FDI from India (Table 3.9c and 3.9d).

The Indian capital market has picked up in terms of investments by 'Foreign Institutional Investors' (FII). Excluding 2008-09 (the crisis year), the average net FII inflows during 11th Plan worked out to over $26 billion. A glance at the record of FII inflows suggests high volatility in these flows, which are very dependent on perceptions of developments in the Indian economy, along with changing conditions in global financial markets. What may also be observed is that net flows are a fraction of gross inflows, since there is a constant churning of portfolio investments. Projections made are only for net FII flows.

Table 3. 9c

India: Balance of Payments: Capital Account, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
US$ Billion									
Capital Account Balance	72	99	107	111	105	99	134	201	328
Foreign Investment	47	51	54	59	63	55	83	124	203
Direct Investment	20	31	33	36	39	32	52	78	133
Portfolio Investment	27	19	21	23	24	23	31	46	70
Commercial Borrowing	21	43	48	48	38	40	48	76	126
Disbursements	43	63	73	79	82	68	123	194	303
Repayments	22	20	25	31	44	28	75	118	177
Change in Reserves (- Increase/+ Decrease)	(4)	(22)	(33)	(38)	(37)	(23)	(56)	(86)	(151)
Total External Debt	360	408	461	513	556	460	702	1,026	1,544
External Debt Service	37	37	45	55	71	49	112	176	271
Short-term debt	78	79	84	88	95	85	125	199	359
Foreign Exchange Reserves	293	315	348	386	422	353	586	943	1,557
Foreign Exchange Reserves (as Months of G & S Imports)	6.0	6.1	6.2	6.3	6.3	6.2	6.6	6.4	6.2
Foreign Exchange Reserves (Percentage of GDP)	15.9	16.0	16.5	16.9	17.2	16.6	18.8	20.3	22.0
Memo Item									
GDP (US$ Billion)	1,843	1,971	2,113	2,275	2,453	2,131	3,109	4,634	7,071

Source: Reserve Bank of India, Hand Book of Statistics and NTDPC projections.

Net portfolio investment is seen to be about 1.1 per cent of GDP in 2012-17 and then projected to stay at about 1.0 per cent of GDP during the subsequent Plan periods. Some would find such a foreign investment profile to be too conservative. Even with such a profile, the servicing of the accumulated stock of foreign equity capital, including both FDI and portfolio investment, would rise to 1.5-1.6 per cent of GDP by 2012-17 and increase by 0.1 percentage points in each of the subsequent Plan periods.

How do we project overall foreign equity and debt flows? In general, foreign equity flows are deemed better than debt flows from the point of view of financial stability. On the other hand, from the point of view of infrastructure and transport investments, it is felt necessary to attract long-term debt flows. In order to keep a reality check, we have observed the current overall debt-equity ratios in the Indian corporate sector. This comes to about 70:100, or say, about 2:3. We have therefore projected the debt flow/equity flow ratios in overall capital flows at roughly this ratio through the period projected (Table 3.9c).

In fact, infrastructure projects actually tend to have higher debt-equity ratios. Moreover, one of the advantages of receiving foreign equity inflows is that it is then easier to leverage foreign debt inflows at more favourable rates. However, the existing high level of Indian foreign debt of approximately $390 billion (March 2013) reduces the degree of flexibility in receiving larger inflows of new foreign debt flows in the near term future. Thus, the recent expansion of debt flows will need to be restrained for the rest of the 12th Plan period. The projections suggest that as a consequence of this recent increase in debt, repayment levels will increase during the 13th Plan period, thus reducing net flows even if gross flows are adequate. As may be appreciated, these projections are difficult to make. Whereas our projections are suggesting a roughly 3:2 ratio between equity and debt flows, there may be some room for

Table 3. 9d

India: Balance of Payments: Capital Account, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
Per cent of GDP									
Capital Account Balance	3.9	5.0	5.1	4.9	4.3	4.6	4.3	4.3	4.6
Foreign Investment	2.5	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.9
Direct Investment	1.1	1.6	1.6	1.6	1.6	1.5	1.7	1.7	1.9
Portfolio Investment	1.4	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0
Commercial Borrowing (Net)	1.1	2.2	2.3	2.1	1.6	1.9	1.5	1.6	1.8
Disbursements	2.3	3.2	3.4	3.5	3.4	3.2	4.0	4.2	4.3
Repayments	1.2	1.0	1.2	1.4	1.8	1.3	2.4	2.5	2.5
Change in Reserves (- Increase/+ Decrease)	(0.2)	(1.1)	(1.5)	(1.7)	(1.5)	(1.1)	(1.8)	(1.9)	(2.1)
Total External Debt	19.5	20.7	21.8	22.6	22.7	21.6	22.6	22.1	21.8
External Debt Service	2.0	1.9	2.1	2.4	2.9	2.3	3.6	3.8	3.8
Short-Term Debt	4.2	4.0	4.0	3.8	3.9	4.0	4.0	4.3	5.1
Foreign Exchange Reserves	15.9	16.0	16.5	16.9	17.2	16.6	18.8	20.3	22.0
Memo Item									
GDP (US$ Billion)	1,843	1,971	2,113	2,275	2,453	2,131	3,109	4,634	7,071

Source: Reserve Bank of India, Hand Book of Statistics and NTDPC projections.

adjusting this composition to increase the share of debt flows. From the point of view of infrastructure and transport projects, which typically have higher leverage ratios, the composition of external capital flows may need to be tweaked somewhat in favour of debt, while keeping in mind the implications for interest payments and debt repayments. We have not attempted to change our projections in this direction.

The debt repayments for external commercial borrowing are expected to rise from the current $28 billion to about $75 billion during the 13th Plan, rising to about $180 billion annually during the 15th Plan. Consequently, substantial increases in gross external commercial borrowing will have to take place if the projected level of net debt flows are to materialise. The projections suggest that gross external commercial borrowing (including private non-guaranteed) will have to increase from about $33 billion in 2011-12 to average annual gross inflows of about $70 billion in the 12th Plan and $120 billion in the 13th Plan and rising to $300 billion in the 15th Plan. Furthermore, the external commercial borrowing policy should be tilted towards encouraging long-term debt flows to infrastructure. If external commercial borrowings continue to be controlled during this period, these are the kind of magnitudes which would have to be permitted so that appropriate capital inflows take place to fuel the increasing needs for overall investment.

With most of new debt being expected to be private non-guaranteed, these projections are crucially dependent on continuing improvement in India's sovereign credit rating, and of its corporate entities, both public and private, investing in the infrastructure and transport sector, along with its financial institutions internationally. In order to facilitate good credit ratings, and to provide adequate cushion in the face of rising capital inflows, imports levels and debt servicing requirements, our projections have provided for a cover of foreign exchange reserves at about 6 months of imports. The reserves are thus projected to rise from approximately *$290 billion (March 2013) to an average of $350 billion in the 12th Plan to $590 billion in the 13th Plan and rising to $1.5 trillion by the 15th Plan*. Sudden unforeseen shocks occurring internationally or within the domestic economy should then not have significant effects on the international confidence. It is also important to understand that with rising exposure of the domestic economy to trade and to foreign debt and equity, large volatility in the domestic currency would cause considerable difficulty to domestic firms, particularly in infrastructure sectors, to service their external obligations. A relatively high

level of reserves should then help in maintaining a stable real exchange rate. In order to provide this continuing accretion to reserves, capital inflows have therefore to be somewhat higher than the current account deficit at any given time.

The mobilisation of such external capital inflows will be crucial for infrastructure and transport investment. As emphasised earlier, the maintenance of good credit ratings will be essential to impart confidence to would-be investors. The substantial and ambitious trade expansion projected would form the basis of market confidence in India's ability to service such external liabilities of both equity and debt. *A key lesson of this exercise is that continuing expansion of trade, both imports and exports, is crucial for the financing of growing domestic investment in India, and particularly that of infrastructure*. Finally, sustaining a current account deficit of much higher than 2.5 per cent of GDP is unlikely to be viable in the foreseeable future. This provides the maximum feasible limit on the volume of foreign savings that can be prudently absorbed, although, keeping in mind the need for adding to reserves, net capital flows will need to be at around 4.5 per cent of GDP (Table 3.9d).

As mentioned in the beginning, these projections of external capital inflows have been made on a judgemental basis on what the markets would be willing to lend to and invest in India based on the fundamentals of the economy. *The debt service ratio* according to these projections *would range between about 3 to 6 per cent as a proportion of current receipts over the next 20 years*. Exports as a percentage of GDP would rise from current 28 per cent of GDP to about 40 per cent, while imports would rise from the current 30 per cent to about 42 per cent. The implications of these projections is that export expansion and an open regime for equity flows, especially foreign direct investment will be essential to mobilise the volume of capital inflows projected.

Within these overall projections for external capital ,inflows the volume flowing into the infrastructure sectors will depend on how hospitable the regulatory regimes are in each sector for foreign investment. As in the other sectors, external commercial debt would tend to be closely associated with foreign investment. In sectors such as power and telecommunications, foreign equity inflows would tend to be associated with suppliers' credits as well as credits from official export credit agencies such as US EXIM Bank, the Japanese EXIM Bank and others. Since the repayment for both equity and debt associated with infra¬structure projects would have a longer duration, the payment burden arising from such capital inflows would be stretched out over time if the proportion of such inflows going into infra¬structure can be maintained at a high level. In our projections for the financing of infrastructure

Since infrastructure projects typically have higher leverage ratios, the composition of external capital flows may need to be tweaked somewhat in favour of debt, while keepiing in mind implcations of repayment issues

investment requirements, we have assumed that a total of about 40 per cent of external capital in¬flows would flow to the infrastructure sector.

Even somewhat conservative projections of the current account deficit at about 2.5 per cent of GDP by 2031-32, and optimistic assumptions of trade expansion, yield quite large volumes of capital inflows. Total net capital inflows are projected to rise from the current *$90 billion (2012-13) to about $110 billion by the end of the 12th Five Year Plan*, $135 billion, $200 billion, $330 billion, annually in the 13th, 14th and 15th Plans, divided between debt and foreign equity with the latter being preferably somewhat higher.

With these projections, the stock of total debt would rise to about *$550 billion by 2016-17, $700 billion average during the 13th Plan and $1.5 trillion by the 15th Plan period*. Debt service payments would rise to about *$130 billion by 2021-22 and $300 billion by 2031-32 (Tables 3.10, 3.11, 3.12)*. Such magnitude of flows, both inflows and out flows, are not feasible to maintain without healthy and sustained overall economic growth of the kind that has been projected and prudent macroeconomic and financial policies. And this will only be possible if there is no further widening of the current account deficit.

Capital flows should tend to be higher in those infrastructure areas where the cash flow already forms a natural hedge and it is denominated in US dollars. Some of these areas are ports, airports, airlines, and telecommunications.

There are some problems for certain areas where infrastructure investment does not receive such high cash flows. These areas are more likely to be rupee-denominated, for example roads and the power sector. Another problem relates to the volume of infrastructure financing which depends on how long it takes to receive returns on investments. In many cases, the returns occur over very long periods of time (from 30 to 100 years), whereas financing returns are usually needed in a much shorter time. Another problem related to the Indian financial system is that it does not have much long-term debt available. These problems could be partially solved if international capital markets feel that the country has a sustainable current account, with a small possibility of widening it. Moreover, as already emphasised, growth of pensions and other long-term contractual savings is crucial for development of long-term debt markets in the country.

Thinking about the rules for foreign equity investment in India, most of the investments do not require approval of the Indian government. Infrastructure companies have also tapped external credit markets. About a third of external commercial borrowings (ECBs) in the 11th Plan were for infrastructure, particularly air transport (aircraft), telecom, and power equipment. There was very little external commercial borrowing for the transport sectors, except for aircraft acquisition.

For the future, a judicious balance is envisaged between debt and non-debt-creating inflows. Both kinds of inflows need to be serviced. In principle, the returns on equity ought to be higher than those on debt. But the returns on equity are performance-related, and therefore better for financial stability than those on debt. More over, a portion of the returns on FDI tends to be continually reinvested. Such retained earnings finance new investment but also need to be serviced in future years. The simulations have taken account of this. FDI is, by its nature, less mobile: once invested, it is not usually expected to be disinvested for a long period of time, if ever.

Capital flows should tend to be higher in those transport infrastructure sectors where the cash flow already forms a natural hedge and is denominated in US dollars. Some of these areas are ports, airports, airlines, and telecommunications

The debt projections have assumed average debt terms of seven years maturity and returns of 150 basis points above LIBOR (London Inter Bank Offered Rate). The net debt inflow is limited by the debt service targets mentioned above.

INVESTMENT IN INFRASTRUCTURE AND TRANSPORT REQUIRED FOR ECONOMIC GROWTH

Achieving a high sustained rate of economic growth requires corresponding investments in infrastructure, including all aspects of transportation. As argued earlier, industrial growth will need to be accelerated in particular, which place higher demands on the provision of power, transportation and logistics. The continued expansion of trade requires corresponding investment in ports, airports and all forms of domestic transport linkages as well.

Broad magnitudes of the trends expected in the demand for transport have been indicated in Chapter 2. In this section, we obtain broad orders of magnitude of infrastructure investment, and transport investment in particular, that will be consistent with growth in macroeconomic magnitudes, while maintaining appropriate domestic and external balances.

INFRASTRUCTURE INVESTMENT: A HISTORICAL PERSPECTIVE

In order to estimate the infrastructure requirements over the next 20 years, it is useful to look at its investment history since the 1990s. The key infrastructure categories are electricity, gas and water supply (EGW) and transport, storage and communication (TSC). For a more detailed break-up, TSC is sub-divided into railways, other transport (roads, ports, airports, aviation, trucks, buses etc.), storage and communication. Urban infrastructure is not isolated as a separate category in the National Accounts; therefore, a part of this will be included in water supply (including sanitation) and urban transport will be incorporated in 'other transport'.

The estimates for infrastructure investment provided in this chapter are based on National Accounts estimates for gross domestic capital formation (GDCF). These estimates are typically lower than those usually made for infrastructure investment by the Planning Commission and other agencies[16]. For example, expenditures made for buying land in the process of making infrastructure investments are not included in GDCF since such expenditures are regarded as transfer payments in the GDP context. Nonetheless, such expenditures are real expenditures from the point of view of the investor, public or private. Apart from land, there are also other definitional differences. In addition, with the increase in the number of PPP projects in recent years, the statistical system is yet to fully devise procedures to cover these investments on a systemic basis. It is therefore likely that GDCF estimates according to National Accounts may be underestimated for recent year Whereas it is difficult to arrive at precise estimates, such underestimation could be of the order of 1 to 1.5 per cent of GDP.

As a proportion of GDP, total GDCF in infrastructure (National Accounts basis) ranged from about 3.9 per cent to 4.4 per cent, averaging 4.1 per cent of GDP during the 1990s. In the 2000s, the average was about 5.0 per cent. Currently, total investment in infrastructure is around 5.3 per cent. The absolute amount of investment on infrastructure in 1993-94 was about Rs 420 billion ($13.2 billion). The corresponding figure for 2001-02, the last year of the 9th Plan, was about Rs 1,070 billion ($22 billion), Rs 2,150 billion ($47 billion) at the end of the 10th Plan in 2006-07, and Rs 4,900 billion ($102 billion) in 2011-12 at the end of the 11th Plan, all in current prices (Table 3.13a). Thus, there has been substantial growth in absolute

16. Planning Commission (2011a).

Table 3.10
India: External Debt Summary, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
US$ Billion												
Multilateral	31.1	31.9	30.0	29.3	31.7	32.6	35.3	39.5	39.5	42.9	48.5	50.5
Government Borrowing	27.4	28.3	27.3	26.8	29.2	30.0	32.5	36.2	35.7	37.8	42.6	43.7
Concessional	19.1	19.7	21.6	22.7	24.0	23.7	24.9	26.9	25.1	25.7	27.0	27.2
Non-Concessional	8.3	8.6	5.7	4.2	5.2	8.4	7.6	9.3	10.6	12.1	15.6	16.5
Non-Government Borrowing	3.7	3.6	2.7	2.5	2.5	2.6	2.8	3.3	3.8	5.0	5.9	6.8
Concessional	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non - Concessional	3.7	3.6	2.7	2.5	2.5	2.6	2.8	3.3	3.8	5.0	5.9	6.8
Bilateral	16.0	15.3	16.8	17.3	17.0	15.8	16.1	19.7	20.6	22.6	25.7	26.8
Government Borrowing	12.2	11.5	12.7	13.0	13.1	12.2	12.3	14.9	14.7	15.9	18.0	18.0
Concessional	11.9	11.4	12.5	12.9	13.1	12.2	12.3	14.9	14.7	15.9	18.0	18.0
Non-Concessional	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-Government Borrowing	3.8	3.8	4.1	4.3	3.9	3.5	3.7	4.9	6.0	6.7	7.7	8.8
Concessional	1.2	1.4	1.7	2.0	1.7	1.6	0.4	0.4	0.6	0.7	0.9	1.3
Non-Concessional	2.6	2.4	2.5	2.3	2.2	2.0	3.3	4.4	5.3	6.0	6.8	7.4
International Monetary Fund	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.1	1.0	6.0	6.3	6.2
Trade Credit	5.9	5.4	5.0	4.7	5.0	5.4	7.2	10.3	14.5	16.8	18.6	19.9
Commercial Borrowings	24.4	23.3	22.5	22.0	26.4	26.5	41.4	62.3	62.5	70.7	88.6	104.4
NRI Deposits	16.6	17.2	23.2	31.2	32.7	36.3	41.2	43.7	41.6	47.9	51.7	58.6
Rupee Debt	3.7	3.0	2.8	2.7	2.3	2.1	2.0	2.0	1.5	1.7	1.6	1.4
Total Long-Term Debt	97.7	96.1	100.2	108.2	116.3	119.6	144.2	178.7	181.2	208.6	240.9	280.7
Short-Term Debt	3.6	2.7	4.7	4.4	17.7	19.5	28.1	47.0	49.4	52.3	65.0	65.1
Gross Total Debt	101.3	98.8	104.9	112.7	134.0	139.1	172.4	224.4	224.5	260.9	305.9	345.8
Memo Items												
Concessional Debt as Per cent of Total Debt	35.4	35.9	36.8	35.8	30.7	28.4	23.0	19.7	18.7	16.8	15.5	15.6
Short Term Debt as Per cent of Total Debt	3.6	2.8	4.5	3.9	13.2	14.0	16.3	20.4	19.3	20.0	21.2	22.6
Debt Stock-GDP Ratio	22.5	21.1	20.3	18.0	18.1	16.8	17.5	18.0	20.3	18.3	17.8	20.0
Short Term Debt as Per cent of Foreign Reserves	8.5	5.0	6.1	3.9	12.5	12.9	14.1	15.2	19.6	18.8	21.3	22.1
Debt Service Ratio (Per cent)	16.6	13.7	16.0	16.1	5.9	10.1	4.7	4.8	4.4	5.8	4.3	6.0
Foreign Exchange Reserves	42.9	54.7	76.1	113.0	141.5	151.6	199.2	309.7	252.0	279.1	304.8	294.4
GDPmp (US$ Billion)	475	492	523	618	722	834	948	1239	1226	1366	1711	1873

Source: Reserve Bank of India, Handbook of Statistics.

Table 3.11
India: External Debt Service, 2001-02 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
US$ Billion											
Multilateral	2.2	5.9	4.6	1.3	1.5	1.9	2.1	2.0	2.1	2.3	2.5
Principal	1.4	5.1	4.1	0.9	1.1	1.1	1.3	1.4	1.6	1.9	2.0
Interest	0.8	0.8	0.5	0.4	0.5	0.7	0.8	0.6	0.5	0.5	0.5
Bilateral	1.5	1.6	2.9	2.0	1.5	1.4	1.6	1.9	2.0	2.1	2.3
Principal	1.1	1.2	2.5	1.5	1.2	1.0	1.1	1.3	1.4	1.5	1.6
Interest	0.4	0.5	0.4	0.4	0.3	0.4	0.5	0.6	0.6	0.5	0.7
IMF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Principal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export Credit	1.2	1.4	1.1	0.7	1.3	1.0	2.0	1.7	2.0	2.1	3.2
Principal	0.9	1.2	0.9	0.6	1.1	0.6	1.3	1.2	1.4	1.7	2.7
Interest	0.3	0.2	0.2	0.1	0.2	0.4	0.6	0.6	0.7	0.5	0.5
Commercial Borrowings	3.9	4.4	8.6	3.4	13.1	5.0	7.3	8.3	12.1	10.7	21.1
Principal	2.8	3.6	6.7	2.6	10.4	3.0	4.5	5.2	9.8	7.8	16.6
Interest	1.1	0.8	1.8	0.8	2.7	2.0	2.8	3.2	2.3	2.9	4.5
NRI Deposits	1.8	1.4	1.6	1.4	1.5	2.0	1.8	1.5	1.6	1.7	2.3
Interest	1.8	1.4	1.6	1.4	1.5	2.0	1.8	1.5	1.6	1.7	2.3
Rupee Debt	0.5	0.5	0.4	0.4	0.6	0.2	0.1	0.1	0.1	0.1	0.1
Principal	0.5	0.5	0.4	0.4	0.6	0.2	0.1	0.1	0.1	0.1	0.1
Total Debt Service	11.1	15.2	19.2	9.2	19.6	11.4	14.9	15.6	19.9	19.1	31.5
Principal	6.8	11.5	14.6	6.1	14.3	5.9	8.3	9.1	14.2	13.0	23.0
Interest	4.3	3.7	4.6	3.0	5.2	5.5	6.6	6.5	5.7	6.1	8.5
Memo Items											
Current Receipts	81.0	95.2	119.2	154.1	194.2	242.8	314.3	356.2	345.1	448.1	528.4
Debt Service Ratio	13.7	16.0	16.1	5.9	10.1	4.7	4.8	4.4	5.8	4.3	6.0
Interest Current Receipts	5.4	3.9	3.8	2.0	2.7	2.3	2.1	1.8	1.7	1.4	1.6

Source: Ministry of Finance, India's External Debt - A Status Report 2011-12.

terms. As a proportion of GDP also, GDCF in infrastructure has increased from 4.2-4.3 per cent in the 8th and 9th Plans to around 5.8 per cent of GDP in the 11th Plan, although as mentioned earlier, there is reasonable likelihood that private investment in infrastructure has been underestimated in PPP projects during the 11th Plan. Looking at different infrastructure sectors, investment in electricity, gas and water supply has been relatively stable at around 1.5 to 1.7 per cent during the 9th and 10th Plans, rising to about 2.1 per cent during the 11th Plan. Investment in transport has increased significantly from about 1.5 to 1.6 per cent in the 1990s to around 2.5 to 2.6 per cent in the 11th Plan period. Within transport, what has increased is investment in roads and bridges, from about 0.4 per cent of GDP in 2000-01 to about 1.2 per cent by 2011-12. This is manifested by the National Highway Development Project (NHDP) and the Pradhan Mantri Gram Sadak Yojana (PMGSY) (Prime Minister's Rural Roads Programme). Over the same period, investment in railways has been stagnant at around 0.4 per cent of GDP. It is then not surprising that, as documented in

Table 3.12
India: External Debt Summary, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
US$ Billion									
A. Disbursements									
Public & Publicly Guaranteed	17.9	23.1	28.0	32.7	32.6	26.9	32.0	31.5	31.5
2. Private Creditors	7.5	12.3	17.1	22.0	22.0	16.2	22.0	22.0	22.0
a. Bonds	5.0	10.0	15.0	20.0	20.0	14.0	20.0	20.0	20.0
b. Commercial	2.5	2.2	2.1	2.0	2.0	2.2	2.0	2.0	2.0
c. Other Private	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
Private Non-Guaranteed	35.0	50.5	50.3	53.3	53.2	48.5	90.2	154.3	236.7
Total From Long-Term Loans	52.9	73.6	78.4	86.0	85.8	75.3	122.2	185.8	268.2
IMF Purchases	-	-	-	-	-	-	-	-	-
Net Short-Term Capital	-	0.7	5.4	3.5	7.3	3.4	11.2	17.3	44.4
Total Disbursements (LT+IMF+ST)	52.9	74.3	83.7	89.5	93.0	78.7	133.4	203.1	312.6
B. External Debt									
Public & Publicly Guaranteed	112.9	123.5	137.2	155.4	168.4	139.5	188.9	196.9	197.4
2. Private Creditors	32.3	38.0	46.9	60.6	69.6	49.5	81.1	81.3	81.0
a. Bonds	16.8	21.6	29.7	45.2	56.4	33.9	68.8	70.0	70.0
b. Commercial	15.5	16.4	17.1	15.4	13.1	15.5	12.2	11.2	11.0
c. Other Private	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
Private Non-Guaranteed	163.1	200.1	234.0	264.4	286.4	229.6	382.3	623.4	982.4
Total from Long-Term Loans	276.0	323.6	371.2	419.8	454.8	369.1	571.2	820.3	1,179.8
Use of IMF Credit	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Net Short-Term Capital	78.1	78.7	84.1	87.6	94.8	84.6	124.5	199.3	358.6
Total DOD (LT+IMF+ST)	360.1	408.5	461.4	513.5	555.7	459.8	701.8	1,025.7	1,544.5
Memo Items (Per cent)									
Disbursements/GDP	2.9	3.8	4.0	3.9	3.8	3.7	4.3	4.4	4.4
External Debt/GDP	19.5	20.7	21.8	22.6	22.7	21.6	22.6	22.1	21.8
External Debt/Current Receipts	67.7	70.0	71.6	72.0	70.4	70.5	65.1	57.1	50.8
Short-Term Debt/External Debt	21.7	19.3	18.2	17.1	17.1	18.4	17.7	19.4	23.2
Concessional Debt/Total Debt	15.4	14.4	13.3	12.5	12.0	13.3	10.4	8.0	5.6
Short-Term Debt/Reserves	28.8	26.8	25.8	24.1	23.7	25.6	22.1	21.6	23.4
GDPmp (US$ Billion)	1,843	1,971	2,113	2,275	2,453	2,131	3,109	4,634	7,071
Current Receipts (US$ Billion)	532	584	644	713	790	653	1,077	1,797	3,039
Reserves (US$ billion)	271	293	326	364	401	331	564	921	1,535

Source: The World Bank Debt Reporting System and NTDPC Projections.

Table 3.13a

India: Investments in Infrastructure, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
(RUPEES BILLION IN CURRENT PRICES)												
Infrastructure - Total	981	1,071	1,096	1,232	1,489	1,867	2,149	2,586	3,574	4,031	4,516	4,891
Electricity, Gas, Water Supply	365	402	390	507	533	674	837	982	1,182	1,360	1,730	1,892
Railways	54	68	91	109	131	154	183	222	297	318	312	312
Other Transport	222	195	281	303	368	428	378	501	692	700	734	1,002
Roads and Bridges	78	169	170	219	280	354	499	544	671	789	921	1,057
Storage	13	15	14	14	-3	7	8	10	18	21	25	37
Communications	249	221	150	80	180	251	244	327	714	843	794	590
Infrastructure - Public Sector	720	806	743	944	977	1,246	1,588	1,910	2,292	2,544	2,680	2,890
Electricity, Gas, Water Supply	319	332	311	447	452	590	758	861	1,030	1,145	1,344	1,477
Railways	55	70	89	108	131	154	183	222	297	318	312	312
Other Transport	38	27	35	32	34	59	83	200	168	157	139	130
Roads and Bridges	78	169	170	219	280	354	499	544	671	789	808	923
Storage	13	14	14	13	-5	0	1	0	0	3	7	11
Communications	218	194	125	125	84	89	64	82	127	133	70	36
Infrastructure - Private Sector	262	265	352	288	512	621	560	676	1,282	1,486	1,836	2,001
Electricity, Gas, Water Supply	47	71	79	60	81	83	79	120	152	215	386	415
Railways	-1	-2	2	1	0	0	0	0	0	0	0	0
Other Transport	184	168	246	271	334	369	295	301	524	543	595	872
Roads and Bridges	0	0	0	0	0	0	0	0	0	0	113	134
Storage	0	1	1	1	1	7	7	9	18	18	18	26
Communications	31	27	25	-45	96	162	180	245	587	711	724	554
(US$ BILLION IN CURRENT PRICES)												
Infrastructure - Total	21.5	22.4	22.6	26.8	33.1	42.2	47.5	64.3	77.8	85.0	99.1	102.1
Electricity, Gas, Water Supply	8.0	8.4	8.1	11.0	11.9	15.2	18.5	24.4	25.7	28.7	37.9	39.5
Railways	1.2	1.4	1.9	2.4	2.9	3.5	4.0	5.5	6.5	6.7	6.8	6.5
Other Transport	4.9	4.1	5.8	6.6	8.2	9.7	8.3	12.5	15.1	14.8	16.1	20.9
Roads and Bridges	1.7	3.5	3.5	4.8	6.2	8.0	11.0	13.5	14.6	16.6	20.2	22.1
Storage	0.3	0.3	0.3	0.3	-0.1	0.1	0.2	0.2	0.4	0.4	0.5	0.8
Communications	5.5	4.6	3.1	1.8	4.0	5.7	5.4	8.1	15.6	17.8	17.4	12.3
Infrastructure - Public Sector	15.8	16.9	15.4	20.5	21.7	28.2	35.1	47.5	49.9	53.7	58.8	60.3
Electricity, Gas, Water Supply	7.0	7.0	6.4	9.7	10.1	13.3	16.7	21.4	22.4	24.1	29.5	30.8
Railways	1.2	1.5	1.8	2.4	2.9	3.5	4.0	5.5	6.5	6.7	6.8	6.5
Other Transport	0.8	0.6	0.7	0.7	0.8	1.3	1.8	5.0	3.7	3.3	3.0	2.7
Roads and Bridges	1.7	3.5	3.5	4.8	6.2	8.0	11.0	13.5	14.6	16.6	17.7	19.3
Storage	0.3	0.3	0.3	0.3	-0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.2
Communications	4.8	4.1	2.6	2.7	1.9	2.0	1.4	2.0	2.8	2.8	1.5	0.8

(Contd...)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure - Private Sector	5.7	5.6	7.3	6.3	11.4	14.0	12.4	16.8	27.9	31.3	40.3	41.8
Electricity, Gas, Water Supply	1.0	1.5	1.6	1.3	1.8	1.9	1.7	3.0	3.3	4.5	8.5	8.7
Railways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Transport	4.0	3.5	5.1	5.9	7.4	8.3	6.5	7.5	11.4	11.5	13.1	18.2
Roads and Bridges	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.8
Storage	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4	0.4	0.4	0.5
Communications	0.7	0.6	0.5	-1.0	2.1	3.7	4.0	6.1	12.8	15.0	15.9	11.6

Source: Government of India, Central Statistical Office, National Account Statistics.

chapter 2, there has been a continuing shift of both freight and passenger traffic from the railways to roads (Tables 3.13a, 3.13b, 3.13c, and 3.13d).

As a proportion of total GDCF, investment in infrastructure has varied between 14 and 19 per cent since the 2000s. In some other fast-growing middle-income countries, this proportion is near 20-25 per cent. This suggests that investment in infrastructure needs to be accelerated so that high sustainable overall growth can be achieved.

Looking at other features of infrastructure investment, the key systemic change is in the increasing share of private investment, as has been promoted by policy. Overall, the share of private sector investment has increased from around 12-18 per cent in the 8th Plan to about 40 per cent in the last years of the 11th Plan, with a corresponding fall in the public sector share. The most dramatic change is in the communication sector, as might be expected, with the private sector share increasing from zero in the early 1990s to almost 90 per cent towards the end of the 11th Plan. There is also a significant increase in the transport sector, in both roads and bridges and other transport, though not in railways. It seems, however, that the National Accounts may not adequately capture all the investments in roads through PPP, and in ports and airports.

PROJECTING INFRASTRUCTURE AND TRANSPORT INVESTMENT REQUIREMENTS 2012-32

Stepping up infrastructure investments is key for accelerating industrial development and economic growth in India. Based on the macro consistent projections, we are projecting infrastructure investments to increase from the 11th Plan average level of 5.8 per cent of GDP (2007-12) to 6.9 per cent in the 12th Plan and then 8.0 per cent for the remaining period from 2018 through 2032. Infrastructure investments of around 8 per cent of GDP are needed for economic transformation, and lessons from South East and East Asian countries show similar patterns. In these countries, gross domestic investment rates increased to over 30 per cent of GDP, and rates of infrastructure investment rose to levels of 7 to 8per centof GDP. Gross domestic investment levels in India have been over 35 per cent of GDP during the 11th Plan period despite the slowdown in recent years, similar to recently fast-growing South East and East Asian countries. During the 15th Plan period (2027-32), we are projecting that gross domestic investment (gross domestic capital formation) to increase to 42 per cent of GDP. Once the country reaches a per capita GDP of about $6,000 (2012-13 prices) and the basic infrastructure is in place, we can envisage some tapering down of gross domestic capital formation rates, as we may expect in China now, including those for infrastructure and transport (Table 3.14).

SECTORAL PROJECTIONS

Within infrastructure, we are projecting a significant enhancement in the investment in transport (railways, roads and bridges, and other transport) from around 2.7 per cent of GDP during the 11th Plan, with a step jump to 3.2 per cent in the 12th Plan and 3.7 per cent in the subsequent three Plan periods. Total investment in transport can then be seen to range between 45 to 50 per cent of total infrastructure investment (Figure 3.1).

It is difficult to project the sectoral composition of investment in infrastructure on any systematic basis, and the different sectors within the transport sector. The only guidance available is some continuation of past trends and the use of judgement in some inter se changes in sectoral shares as may be desirable from the policy viewpoint. For example, as shown earlier, we have been underinvesting in Indian Railways relative to the roads sector. That it is feasible to enhance investment in a particular sector from a policy point of view is demonstrated by the increase in investment in roads from 0.2 per cent of GDP in the early 1990s to more than 1 per cent in recent years (Table 3.13b). Finally, we also make use of the

Table 3.13b

India: Investments in Infrastructure, 2000-01 to 2011-12

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Per cent of GDP												
Infrastructure - Total	4.5	4.6	4.3	4.3	4.6	5.1	5.0	5.2	6.3	6.2	5.8	5.4
Electricity, Gas, Water Supply	1.7	1.7	1.5	1.8	1.6	1.8	1.9	2.0	2.1	2.1	2.2	2.1
Railways	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.3
Other Transport	1.0	0.8	1.1	1.1	1.1	1.2	0.9	1.0	1.2	1.1	0.9	1.1
Roads and Bridges	0.4	0.7	0.7	0.8	0.9	1.0	1.2	1.1	1.2	1.2	1.2	1.2
Storage	0.1	0.1	0.1	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	1.1	0.9	0.6	0.3	0.6	0.7	0.6	0.7	1.3	1.3	1.0	0.7
Infrastructure - Public Sector	3.3	3.4	2.9	3.3	3.0	3.4	3.7	3.8	4.1	3.9	3.4	3.2
Electricity, Gas, Water Supply	1.5	1.4	1.2	1.6	1.4	1.6	1.8	1.7	1.8	1.8	1.7	1.6
Railways	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.3
Other Transport	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.3	0.2	0.2	0.1
Roads and Bridges	0.4	0.7	0.7	0.8	0.9	1.0	1.2	1.1	1.2	1.2	1.0	1.0
Storage	0.1	0.1	0.1	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	1.0	0.8	0.5	0.4	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.0
(PER CENT OF GROSS DOMESTIC CAPITAL FORMATION)												
Infrastructure - Total	19.2	18.2	17.7	17.2	14.1	16.4	13.9	13.6	17.9	17.1	15.7	15.4
Electricity, Gas, Water Supply	7.2	6.8	6.3	7.1	5.1	5.9	5.4	5.2	5.9	5.8	6.0	5.9
Railways	1.1	1.2	1.5	1.5	1.2	1.4	1.2	1.2	1.5	1.4	1.1	1.0
Other Transport	4.4	3.3	4.5	4.2	3.5	3.8	2.5	2.6	3.5	3.0	2.5	3.2
Roads and Bridges	1.5	2.9	2.7	3.0	2.7	3.1	3.2	2.9	3.4	3.4	3.2	3.3
Storage	0.3	0.3	0.2	0.2	(0.0)	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Communications	4.9	3.8	2.4	1.1	1.7	2.2	1.6	1.7	3.6	3.6	2.8	1.9
Infrastructure - Public Sector	14.1	13.7	12.0	13.1	9.3	11.0	10.3	10.1	11.5	10.8	9.3	9.1
Electricity, Gas, Water Supply	6.2	5.6	5.0	6.2	4.3	5.2	4.9	4.5	5.1	4.9	4.7	4.6
Railways	1.1	1.2	1.4	1.5	1.2	1.4	1.2	1.2	1.5	1.4	1.1	1.0
Other Transport	0.7	0.5	0.6	0.4	0.3	0.5	0.5	1.1	0.8	0.7	0.5	0.4
Roads and Bridges	1.5	2.9	2.7	3.0	2.7	3.1	3.2	2.9	3.4	3.4	2.8	2.9
Storage	0.2	0.2	0.2	0.2	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	4.3	3.3	2.0	1.7	0.8	0.8	0.4	0.4	0.6	0.6	0.2	0.1
Infrastructure - Private Sector	5.1	4.5	5.7	4.0	4.9	5.5	3.6	3.6	6.4	6.3	6.4	6.3

(Contd...)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Electricity, Gas, Water Supply	0.9	1.2	1.3	0.8	0.8	0.7	0.5	0.6	0.8	0.9	1.3	1.3
Railways	(0.0)	(0.0)	0.0	0.0	0.0	(0.0)	0.0	0.0	0.0	0.0	(0.0)	0.0
Other Transport	3.6	2.9	4.0	3.8	3.2	3.3	1.9	1.6	2.6	2.3	2.1	2.7
Roads and Bridges	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
Storage	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1
Communications	0.6	0.5	0.4	(0.6)	0.9	1.4	1.2	1.3	2.9	3.0	2.5	1.7
MEMO ITEMS (RS BILLION AT CURRENT PRICES)												
GDPmp	21,687	23,483	25,307	28,379	32,422	36,934	42,947	49,871	56,301	64,778	77,953	89,749
Gross Domestic Capital Formation	5,104	5,883	6,193	7,181	10,522	11,356	15,406	18,968	20,001	23,513	28,824	31,814

Source: Government of India, Central Statistical Office, National Account Statistics.

Table 3. 13c
India: Investments in Infrastructure, 2000-01 to 2011-12

(PUBLIC-PRIVATE SHARES (PER CENT) OF TOTAL INFRASTRUCTURE INVESTMENTS)												
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Infrastructure - Public Sector	73.3	75.3	67.8	76.6	65.6	66.8	73.9	73.9	64.1	63.1	59.3	59.1
Electricity, Gas, Water Supply	87.2	82.4	79.8	88.1	84.8	87.6	90.6	87.8	87.1	84.2	77.7	78.1
Railways	101.1	103.0	97.7	99.4	100.0	100.1	100.0	100.0	100.0	100.0	100.0	100.0
Other Transport	17.1	13.8	12.4	10.6	9.3	13.7	22.0	39.9	24.3	22.4	18.9	13.0
Roads and Bridges	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	87.7	87.4
Storage	96.3	95.3	96.3	91.2	135.0	0.9	13.9	1.6	0.6	14.5	28.0	29.5
Communications	87.5	87.8	83.5	155.7	46.8	35.5	26.2	25.0	17.8	15.7	8.8	6.1
INFRASTRUCTURE - PRIVATE SECTOR	26.7	24.7	32.2	23.4	34.4	33.2	26.1	26.1	35.9	36.9	40.7	40.9
Electricity, Gas, Water Supply	12.8	17.6	20.2	11.9	15.2	12.4	9.4	12.2	12.9	15.8	22.3	21.9
Railways	(1.1)	(3.0)	2.3	0.6	-	(0.1)	-	-	-	0.0	(0.0)	-
Other Transport	82.9	86.2	87.6	89.4	90.7	86.3	78.0	60.1	75.7	77.6	81.1	87.0
Roads and Bridges	-	-	-	-	-	-	-	-	-	-	12.3	12.6
Storage	3.7	4.7	3.7	8.8	(35.0)	99.1	86.1	98.4	99.4	85.5	72.0	70.5
Communications	12.5	12.2	16.5	(55.7)	53.2	64.5	73.8	75.0	82.2	84.3	91.2	93.9

Source: Government of India, Central Statistical Office, National Account Statistics.

Table 3.13d

India: Investments in Infrastructure, 2004-05 to 2011-12

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
(RUPEES BILLION IN 2004-05 PRICES)								
Infrastructure - Total	1,489	1,802	1,980	2,286	3,005	3,239	3,472	3,585
Electricity, Gas, Water Supply	533	647	764	860	990	1,075	1,322	1,383
Railways	131	150	170	193	237	251	237	222
Other Transport	368	415	357	459	600	585	593	780
Roads and Bridges	280	343	459	476	555	634	697	737
Storage	(3)	6	8	8	14	15	17	24
Communications	180	240	224	289	609	678	605	438
Infrastructure - Public Sector	977	1,201	1,459	1,682	1,914	2,027	2,105	2,098
Electricity, Gas, Water Supply	452	566	692	756	869	903	1,024	1,079
Railways	131	150	170	193	237	251	237	222
Other Transport	34	56	78	183	145	128	108	97
Roads and Bridges	280	343	459	476	555	634	675	665
Storage	(5)	0	1	0	0	2	5	7
Communications	84	85	59	72	109	109	56	28
Infrastructure - Private Sector	512	601	521	604	1091	1239	1514	1656
Electricity, Gas, Water Supply	81	81	71	104	121	172	298	304
Railways	0	0	0	0	0	0	0	0
Other Transport	334	359	278	276	456	458	485	683
Roads and Bridges	0	0	0	0	0	0	22	73
Storage	1	6	6	8	14	13	12	17
Communications	96	155	165	217	501	569	549	410
(US$ BILLION IN 2004-05 PRICES)								
Infrastructure - Total	33.1	40.7	43.7	56.8	65.4	68.3	76.2	74.8
Electricity, Gas, Water Supply	11.9	14.6	16.9	21.4	21.6	22.7	29.0	28.9
Railways	2.9	3.4	3.8	4.8	5.2	5.3	5.2	4.6
Other Transport	8.2	9.4	7.9	11.4	13.1	12.3	13.0	16.3
Roads and Bridges	6.2	7.7	10.1	11.8	12.1	13.4	15.3	15.4
Storage	-0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.5
Communications	4.0	5.4	4.9	7.2	13.3	14.3	13.3	9.1
Infrastructure - Public Sector	21.7	27.1	32.2	41.8	41.7	42.8	46.2	43.8
Electricity, Gas, Water Supply	10.1	12.8	15.3	18.8	18.9	19.0	22.5	22.5
Railways	2.9	3.4	3.8	4.8	5.2	5.3	5.2	4.6
Other Transport	0.8	1.3	1.7	4.6	3.1	2.7	2.4	2.0
Roads and Bridges	6.2	7.7	10.1	11.8	12.1	13.4	14.8	13.9
Storage	-0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Communications	1.9	1.9	1.3	1.8	2.4	2.3	1.2	0.6
Infrastructure - Private Sector	11.4	13.6	11.5	15.0	23.8	26.1	33.2	34.6
Electricity, Gas, Water Supply	1.8	1.8	1.6	2.6	2.6	3.6	6.5	6.3

(Contd...)

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Railways	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Transport	7.4	8.1	6.1	6.8	9.9	9.6	10.6	14.2
Roads and Bridges	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.5
Storage	0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.4
Communications	2.1	3.5	3.6	5.4	10.9	12.0	12.1	8.6

Source: Government of India, Central Statistical Office, National Account Statistics.

estimates derived by the different sectoral Working Groups of the NTDPC.

For the non-transport sectors, we have increased the share of the power sector slightly from about a third of total infrastructure investment in the 12th Plan to 35 per cent in view of the still many unmet needs of large sections of the population. The share of the telecom sector has correspondingly been brought down from about 22 per cent of total infrastructure investment in the 12th Plan to about 20 per cent in subsequent Plans (Table 3.14).

Coming to the transport sectors, there is a clear need for raising the share of Indian Railways in total infrastructure investment and within the transport sector as well. As noted, significant success has been achieved in ramping up investment in roads over the past 2 decades, and particularly since the year 2000. Thus, we are proposing a significant increase in investment in Railways from about 0.4 per cent of GDP in the last 2 decades to around 0.8 per cent in the 12th Plan and then rising to around 1.1 and 1.2 per cent of GDP in the following three Plan periods. (The estimates in the Railways chapter 1 Volume III suggest some tapering during the 15th Plan period). The initiative of the Dedicated Freight Corridor (DFC) and its continued expansion throughout the next two decades will require sustained investment in the Railways. Given the need for total renewal of rolling stock as well, this projected increase is absolutely essential if adequate transport facilities have to be provided in the next two decades. This projection would not accommodate investment in capital intensive projects such as the high speed rail transport that is sometimes proposed. For roads and bridges, we have kept up the investment at an enhanced level, around 1.2 per cent of GDP in the 12th Plan and 1.3 per cent of GDP thereafter over the subsequent three Plan periods. Thus, the scorching pace of growth over the past two decades has been slowed down. There is still considerable need for rural road connectivity in the country, with only about 54 per cent of unconnected habitations been provided with all weather roads in the recent past. We can also expect the graded construction of expressways over the 13th Plan and beyond (Figure 3.1).

'Other transport' covers all the other transport sectors This includes all of road transport vehicles, ports, shipping, inland water transport, civil aviation and urban transport. We are projecting a slight acceleration in this category as investment in each of these categories can be expected to grow faster than in the past as incomes grow and urbanization proceeds apace. As detailed in the urban transport chapter, with accelerating urbanization, increased motorization and need for mass transit of all varieties, we can expect continuing increases in the investments in urban transport for urban roads, mass transit systems, buses and intermediate public transport. As the number of million plus and ten million plus cities increases, there will be increasing need for efficient urban transport.

Our macroeconomic projections suggest a continued expansion in trade both exports and imports. Total trade in goods and services is projected to grow from around 60 per cent of GDP in the 12th Plan to around 80 per cent in the 15th Plan (2027-32). It is trade in goods that is more transport intensive. In our projections, the share of goods in total trade in good and services is projected to increase from about 78 per cent in the 12th Plan to 83 per cent during the 15th Plan, while undergoing more than sevenfold increase in absolute terms. This will not be possible without significant growth in port capacity, domestic transport links through Railways DFCs and an expanded highway system, along with modernization of associated logistics system.

What do our projections suggest for the overall investment in transport over the next twenty years? First, we are projecting overall infrastructure investment to increase from about 5.8 per cent of GDP achieved in the Eleventh Plan to 6.9 per cent in the 12th Plan and to 8 per cent in the following three Plan periods. Within that, we are projecting transport investment to increase from about 2.7 per cent of GDP during the Eleventh Plan period to 3.2 per cent in the 12th Plan and 3.7 per cent thereafter. That implies that the share of transport in infrastructure investment would remain roughly constant at around 46 to 48 per cent.

Table 3.14a

India: Investments in Infrastructure, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE) FY13-FY17 12TH PLAN	FY18-FY22 13TH PLAN	FY23-FY27 14TH PLAN	FY28-FY32 15TH PLAN
(RUPEES BILLION IN 2012-13 PRICES)									
Infrastructure - Total	5,795	6,680	7,794	9,141	10,592	8,107	13,769	20,524	31,318
Electricity, Gas, Water Supply	1,905	2,144	2,529	2,971	3,471	2,604	4,736	7,060	10,773
Railways	501	590	805	990	1,201	928	1,861	3,026	4,617
Other Transport	902	1,072	1,150	1,362	1,602	1,391	2,199	3,278	5,002
Roads and Bridges	1,253	1,447	1,667	1,918	2,136	1,507	2,199	3,026	4,617
Storage	30	32	34	43	47	37	68	101	154
Communications	1,203	1,394	1,609	1,857	2,136	1,640	2,706	4,034	6,156
Infrastructure - Public Sector	3,459	3,861	4,521	5,217	5,887	4,603	7,535	11,050	16,700
Electricity, Gas, Water Supply	1,486	1,651	1,897	2,169	2,499	1,940	3,315	4,942	7,541
Railways	486	566	764	911	1,081	864	1,675	2,526	3,694
Other Transport	244	279	287	327	384	348	463	656	1,000
Roads and Bridges	1,003	1,086	1,250	1,439	1,495	1,122	1,539	2,118	3,232
Storage	0	0	0	0	0	0	1	1	2
Communications	241	279	322	371	427	328	541	807	1,231
Infrastructure - Private Sector	2,336	2,819	3,273	3,924	4,705	3,504	6,234	9,475	14,619
Electricity, Gas, Water Supply	419	493	632	802	972	664	1,421	2,118	3,232
Railways	15	24	40	79	120	63	186	499	923
Other Transport	659	793	862	1,035	1,217	1,044	1,735	2,622	4,001
Roads and Bridges	251	362	417	480	641	385	660	908	1,385
Storage	30	32	34	43	46	37	67	100	152
Communications	963	1,115	1,287	1,485	1,709	1,312	2,165	3,227	4,925
(US$ BILLION IN 2012-13 PRICES)									
Infrastructure - Total	107	123	143	168	195	149	253	377	576
Electricity, Gas, Water Supply	35	39	46	55	64	48	87	130	198
Railways	9	11	15	18	22	17	34	56	85
Other Transport	17	20	21	25	29	26	40	60	92
Roads and Bridges	23	27	31	35	39	28	40	56	85
Storage	1	1	1	1	1	1	1	2	3
Communications	22	26	30	34	39	30	50	74	113
Infrastructure - Public Sector	64	71	83	96	108	85	138	203	307
Electricity, Gas, Water Supply	27	30	35	40	46	36	61	91	139
Railways	9	10	14	17	20	16	31	46	68
Other Transport	4	5	5	6	7	6	9	12	18
Roads and Bridges	18	20	23	26	27	21	28	39	59
Storage	0	0	0	0	0	0	0	0	0
Communications	4	5	6	7	8	6	10	15	23

(Contd...)

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17 12TH PLAN	FY18-FY22 13TH PLAN	FY23-FY27 14TH PLAN	FY28-FY32 15TH PLAN
Infrastructure - Private Sector	43	52	60	72	86	64	115	174	269
Electricity, Gas, Water Supply	8	9	12	15	18	12	26	39	59
Railways	0	0	1	1	2	1	3	9	17
Other Transport	12	15	16	19	22	19	32	48	74
Roads and Bridges	5	7	8	9	12	7	12	17	25
Storage	1	1	1	1	1	1	1	2	3
Communications	18	20	24	27	31	24	40	59	91

Sources: Central Statistical Office, National Account Statistics. Sectoral data for 2011-12 and for public sector 2010-11 and 2011-12 are NTDPC estimates.

In absolute terms, total investment in infrastructure is projected to rise from about Rs 25 trillion ($425 billion) in the 11th Plan to about Rs 40 trillion ($745 billion) in the 12th Plan. This is significantly lower than the $1 trillion that is generally discussed in the context of the 12th Plan. Even if we account for the difference in definitions between GDCF concept in National Accounts as used here, and the gross investment concept used by the Planning Commission, this estimate is not likely to be in a range much higher than about $850 billion. The corresponding estimates for total transport investment are projected to increase from about Rs 11 trillion ($200 billion) in the Eleventh Plan to about Rs19 trillion ($335 billion) in the 12th Plan. Once again, accounting for the difference in definitions, the actual projected investment could amount to about $400 billion. Investment in new roads or railway tracks would involve considerable land acquisition expenditures: this would not be included in the National Accounts GDCF estimates (Figure 3.1).

Going further than the 12th Plan, our total infrastructure investment projections amount to about Rs 70 trillion ($1.25 trillion), Rs 100 trillion ($1.9 trillion) and Rs 155 trillion ($2.9 trillion) in the 13th, 14th and 15th Plans. The corresponding transport investments would be about Rs 30 trillion($600 billion), Rs 45 trillion ($850 billion) and Rs 70 trillion ($1.30 trillion) in the 13th, 14th and 15th Plans respectively. (All estimates in 2012-13 prices).

COMPARISON OF MODEL PROJECTIONS WITH WORKING GROUP ESTIMATES

The NTDPC also made bottom-up estimates for requirements in each infrastructure sector. Each Working Group (Railways, Roads, Ports and Shipping, Civil Aviation and Urban Infrastructure) made its own estimates for the investment required over the next four Five Year Plan periods until 2031-32. These estimates are provided in Table 3.15 along with the projections based on our macro-modelling exercise. It may be seen that the Working Group estimates are lower than the model projections beyond the 12th Plan period, except for the Railways, where they are lower in the 14th and 15th Plan periods.

What this suggests is that from a macroeconomic and resource flow feasibility perspective, we can be more ambitious in our planning for transport sector improvements from the 13th Plan period onwards. The focus after the 12th Plan can be on improving the quality of our transport infrastructure across the board better urban transport infrastructure, better buses, better railway coaches, more modern railway rolling stock for freight, higher quality ports, more international quality airports, better all-weather rural roads, state and district roads and the like.

The lower Railways Working Group estimates in the 14th and 15th Plan indicate that the substantive recommendations for stepping up railways investments are quite realistic from the overall resource availability perspective. The need for reorganisation of the Railways in order to deliver this magnitude of capacity and quality enhancement therefore becomes even more important.

Interestingly, the Roads Working Group investment estimates are significantly lower from the 13th Plan onwards. As mentioned earlier, this suggests that we can be more ambitious in our quest for providing connectivity to all habitations in the country through the PMGSY. Once basic connectivity is achieved, more focus can be given

Table 3.14b

India: Investments in Infrastructure, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17	FY18-FY22	FY23-FY27	FY28-FY32
						12TH PLAN	13TH PLAN	14TH PLAN	15TH PLAN
(PER CENT OF GDP)									
Infrastructure - Total	5.8	6.2	6.8	7.4	7.9	7.0	8.1	8.1	8.1
Electricity, Gas, Water Supply	1.9	2.0	2.2	2.4	2.6	2.2	2.8	2.8	2.8
Railways	0.5	0.6	0.7	0.8	0.9	0.8	1.1	1.2	1.2
Other Transport	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.3
Roads and Bridges	1.3	1.4	1.5	1.6	1.6	1.3	1.3	1.2	1.2
Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	1.2	1.3	1.4	1.5	1.6	1.4	1.6	1.6	1.6
Infrastructure - Public Sector	3.5	3.6	3.9	4.2	4.4	4.0	4.5	4.4	4.3
Electricity, Gas, Water Supply	1.5	1.5	1.7	1.8	1.9	1.7	2.0	2.0	2.0
Railways	0.5	0.5	0.7	0.7	0.8	0.7	1.0	1.0	1.0
Other Transport	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Roads and Bridges	1.0	1.0	1.1	1.2	1.1	1.0	0.9	0.8	0.8
Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Infrastructure - Private Sector	2.3	2.6	2.8	3.2	3.5	3.0	3.7	3.8	3.8
Electricity, Gas, Water Supply	0.4	0.5	0.6	0.6	0.7	0.6	0.8	0.8	0.8
Railways	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
Other Transport	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.0
Roads and Bridges	0.3	0.3	0.4	0.4	0.5	0.3	0.4	0.4	0.4
Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	1.0	1.0	1.1	1.2	1.3	1.1	1.3	1.3	1.3
(PER CENT OF GDCF)									
Infrastructure - Total	16.4	17.3	18.5	19.7	20.9	19.0	20.9	19.8	18.8
Electricity, Gas, Water Supply	5.4	5.6	6.0	6.4	6.8	6.1	7.2	6.8	6.5
Railways	1.4	1.5	1.9	2.1	2.4	2.2	2.8	2.9	2.8
Other Transport	2.6	2.8	2.7	2.9	3.2	3.3	3.3	3.2	3.0
Roads and Bridges	3.5	3.8	4.0	4.1	4.2	3.5	3.3	2.9	2.8
Storage	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Communications	3.4	3.6	3.8	4.0	4.2	3.8	4.1	3.9	3.7
Infrastructure - Public Sector	9.8	10.0	10.7	11.2	11.6	10.8	11.5	10.7	10.0
Electricity, Gas, Water Supply	4.2	4.3	4.5	4.7	4.9	4.5	5.0	4.8	4.5
Railways	1.4	1.5	1.8	2.0	2.1	2.0	2.5	2.4	2.2
Other Transport	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.6	0.6
Roads and Bridges	2.8	2.8	3.0	3.1	2.9	2.6	2.3	2.0	1.9
Storage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Communications	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7

(Contd...)

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE)			
						FY13-FY17 12TH PLAN	FY18-FY22 13TH PLAN	FY23-FY27 14TH PLAN	FY28-FY32 15TH PLAN
Infrastructure - Private Sector	6.6	7.3	7.8	8.5	9.3	8.2	9.5	9.1	8.8
Electricity, Gas, Water Supply	1.2	1.3	1.5	1.7	1.9	1.6	2.2	2.0	1.9
Railways	0.0	0.1	0.1	0.2	0.2	0.1	0.3	0.5	0.6
Other Transport	1.9	2.1	2.0	2.2	2.4	2.4	2.6	2.5	2.4
Roads and Bridges	0.7	0.9	1.0	1.0	1.3	0.9	1.0	0.9	0.8
Storage	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Communications	2.7	2.9	3.1	3.2	3.4	3.1	3.3	3.1	3.0
(PUBLIC-PRIVATE SHARES (PER CENT) OF TOTAL INFRASTRUCTURE INVESTMENTS)									
Infrastructure - Public Sector	59.7	57.8	58.0	57.1	55.6	57.4	55.7	54.7	54.3
Electricity, Gas, Water Supply	78.0	77.0	75.0	73.0	72.0	74.5	70.0	70.0	70.0
Railways	97.0	96.0	95.0	92.0	90.0	93.2	90.0	83.5	80.0
Other Transport	27.0	26.0	25.0	24.0	24.0	25.0	21.1	20.0	20.0
Roads and Bridges	80.0	75.0	75.0	75.0	70.0	74.5	70.0	70.0	70.0
Storage	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Communications	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Infrastructure - Private Sector	40.3	42.2	42.0	42.9	44.4	42.6	44.3	45.3	45.7
Electricity, Gas, Water Supply	22.0	23.0	25.0	27.0	28.0	25.5	30.0	30.0	30.0
Railways	3.0	4.0	5.0	8.0	10.0	6.8	10.0	16.5	20.0
Other Transport	73.0	74.0	75.0	76.0	76.0	75.0	78.9	80.0	80.0
Roads and Bridges	20.0	25.0	25.0	25.0	30.0	25.5	30.0	30.0	30.0
Storage	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0
Communications	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Memo Items									
Gross Domestic Product at Market prices (Rs Billion)	100,262	107,221	114,951	123,774	133,481	115,938	169,153	252,143	384,748
Gross Domestic Capita Formation (Rs Billion)	35,373	38,600	42,172	46,401	50,738	42,657	65,725	103,700	166,526

Sources: Central Statistical Office, National Account Statistics.

to improvement in the quality of all rural roads, so that more widespread all-weather connectivity is achieved. Second, state and district roads have not received the attention they deserve so far: this can clearly be enhanced from the 13th Plan onwards. For achieving both of these objectives, there is great need for enhancing the capabilities of state governments' executing agencies, as proposed in the chapter on Research Human Resource Development (Chapter 11, Volume II).

Third, as the current plans for NHDP near completion, greater attention can be given to the improvement in quality of the four-lane highways, and construction of expressways from the 13th Plan onwards.

Our projections for 'Other Transport' provide room for higher investment than projected by the Working Groups in ports, urban infrastructure, civil aviation, etc. We have not made specific projections for investment in logistics parks, other aspects of modern logistics (Chapter 4, Volume II), information technology for transport (Chapter 10, Volume II), all aspects of safety (Chapter 12, Volume II), Research and Human Resource Development (Chapter 11, Volume II), international connectivity (Chapter 13, Volume II), and the proposals on enhancing connectivity with and in the North East (Chapter 6, Volume III).

Thus, our projections suggest that the recommendations given in this report on various aspects of transport sector development are quite realistic from the resource availability point of view. The more difficult issues relate to the organisational and institu-

Overall, we are projecting the share of private sector investment to increase from around 40 per cent in the 11th Plan to around 46 per cent in the 15th Plan (2027-32) with much of the increase taking place in the 12th and 13th Plans and then stabilising.

tional changes that are required to achieve the magnitude of investments projected.

We next look at how these projected investment estimates could be divided between the public and private sectors.

INCREASING PRIVATE SECTOR PARTICIPATION IN INFRASTRUCTURE AND TRANSPORT

Globally, throughout the 20th century, the bulk of investment in infrastructure in general and transport in particular, was carried out by the public sector: directly by governments at different levels, or indirectly through public sector enterprises. India was no different and, until the early 1990s, almost all investment in transport was done by the public sector except road transport services (eg. buses and trucks). This was essentially because transport services have been regarded as public goods and services and, moreover, transport infrastructure involves significant economies of scale and is also characterised by indivisibilities in provision.

As technologies changed in the 1990s, it became increasingly possible to introduce contestability, if not competition, in different infrastructure sectors, including various aspects of transport. In addition, as demands for transport have been rising and public fiscal resources have been strained, there have been growing incentives for governments in most countries to seek private sector investment in transport, and other aspects of infrastructure. Thus, beginning in the early to mid-1990s, public policy in India has increasingly encouraged private sector participation in infrastructure.

Taking infrastructure as a whole, the private sector share in infrastructure investment has grown from around 10-15 per cent in the late 1980s and early 1990s to almost 40 per cent in the last couple of years of the 12th Plan (i.e. during 2010-12) (Table 3.13c). As may be expected, the largest transformation is in the telecom sector, with the private sector increasing from zero in the early 1990s to almost 90 per cent in recent years. Within the transport sector, most projects under the NHDP are in the PPP mode thus increasing the share of private sector in the roads sector significantly. Much of the investment in ports is also increasingly in the private sector, as port terminals in Major Ports are given out to the private sector to invest, and state governments encourage investment in Non-Major Ports on a full ownership basis. Similarly, the major airports of Delhi, Mumbai, Hyderabad, Bangalore and Kochi have been privatised and the policy increasingly is for the Airports Authority of India to also make investments in the PPP mode. Although much of urban transport necessarily remains in the public sector, attempts are being made to introduce the PPP concept in major urban transport projects as well. Thus, the share of the private sector in 'Other Transport' has increased from around 40-60 per cent in the early to mid-1990s to 80-90 per cent in the 2000s. Within the transport sector, it is the railways where private sector participation remains low; and is likely to remain low even if a greater effort is made to invite private sector participation.

In making projections for the future, we have kept in mind recent trends, current policy prescriptions, as well as international experience in private sector investment in transport. Overall, we are projecting the share of private sector investment to increase from around 40 per cent in the 11th Plan to around 46 per cent in the 15th Plan (2027-32) with much of the increase taking place in the 12th and 13th Plans and then stabilising (Table 3.14c).

We have projected the private sector share in roads to increase from less than 15 per cent in the latter years of the 11th Plan to around 25 per cent in the 12th Plan and then stabilising at around 30 per cent in subsequent Plans. It should be noted that these shares are much higher than almost any other country in the world. In the Railways, we are projecting the private sector share to go up to around 6-7 per cent in the 12th Plan and increasing gradually to as much as 20 per cent in the 14th and 15th Plans. In 'Other Transport', we have kept the private sector share at around 75-80 per cent throughout the whole period, not too different from current trends. A good proportion of private investment in 'Other Transport' consists of private investment in buses and trucks and other vehicles: hence the high share of the private sector in this category in the National Accounts. It is possible that as share of urban transport infrastructure increases, the share of the public sector may be higher than in these projections (Table 3.14c).

We may note parenthetically that these shares are relatively high by international standards. Except for the United States, most railway systems in the world are in the public sector, though there is often private sector investment in rolling stock. Similarly, private sector investment in roads is an exception rather than the rule in most countries. Most ports and airports are in the public sector, structured as landlord ports or airports, though much of terminal investment is done by private sector operators. Almost all road transport is, of course, in the private sector in most places. In view of such

Table 3.14c
India: Investments in Infrastructure, 2012-13 to 2031-32

	2012-13	2013-14	2014-15	2015-16	2016-17	FIVE YEAR PLANS (ANNUAL AVERAGE) FY13-FY17 12TH PLAN	FY18-FY22 13TH PLAN	FY23-FY27 14TH PLAN	FY28-FY32 15TH PLAN
(Public-Private Shares (Per cent) of Total Infrastructure Investments)									
Infrastructure - Public Sector	59.7	57.8	58.0	57.1	55.6	56.8	54.7	53.8	53.3
Electricity, Gas, Water Supply	78.0	77.0	75.0	73.0	72.0	74.5	70.0	70.0	70.0
Railways	97.0	96.0	95.0	92.0	90.0	93.2	90.0	83.5	80.0
Other Transport	27.0	26.0	25.0	24.0	24.0	25.0	21.1	20.0	20.0
Roads and Bridges	80.0	75.0	75.0	75.0	70.0	74.5	70.0	70.0	70.0
Storage	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Communications	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Infrastructure - Private Sector	40.3	42.2	42.0	42.9	44.4	43.2	45.3	46.2	46.7
Electricity, Gas, Water Supply	22.0	23.0	25.0	27.0	28.0	25.5	30.0	30.0	30.0
Railways	3.0	4.0	5.0	8.0	10.0	6.8	10.0	16.5	20.0
Other Transport	73.0	74.0	75.0	76.0	76.0	75.0	78.9	80.0	80.0
Roads and Bridges	20.0	25.0	25.0	25.0	30.0	25.5	30.0	30.0	30.0
Storage	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0
Communications	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Memo Items									
Gross Domestic Product at Market Prices(Rs Billion)	100,262	107,221	114,951	123,774	133,481	115,938	169,153	252,143	384,748
Gross Domestic Capital Formation (Rs Billion)	35,373	38,600	42,172	46,401	50,738	42,657	65,725	103,700	166,526

Sources: Central Statistical Office, National Account Statistics.

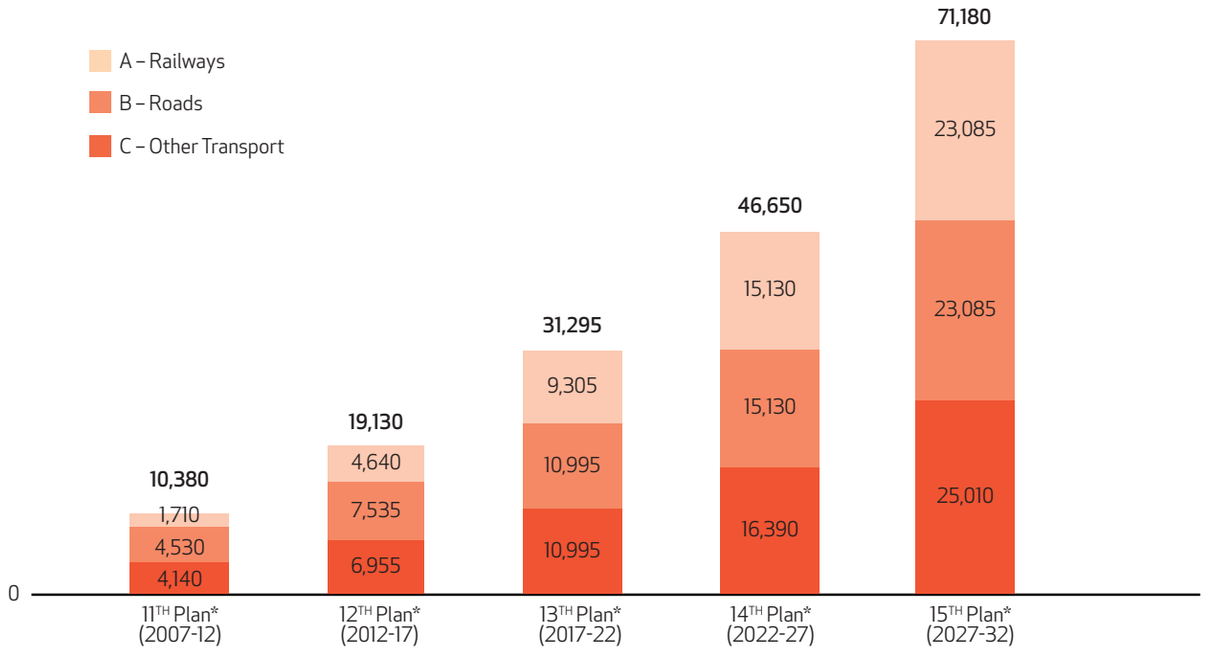
global experience and trends, the Indian thrust on private sector participation in transport is at the leading edge in the world. Consequently, there should be adequate awareness of the difficulties inherent in private sector participation, and there is likely to be need for vigilance at the policy, planning and project execution level on a consistent basis. Moreover, it is also likely that there will be need for innovation in each of these areas continuously, along with substantial capacity development at all levels in both the private and public sectors, as this report is emphasising.

As noted earlier, the projections of private sector investment in infrastructure as a whole, and in transport in particular, is at relatively optimistic proportions and levels. For this to be achieved, the regulatory environment governing all transport sectors will have to be such as to reduce perceived risk for private investors. In particular, the processes governing public private partnerships in transport infrastructure will have to be transparent and credible so that greater investment can flow through PPP arrangements.

TRANSPORT INVESTMENT REQUIREMENTS: 2012-32

What are the overall implications of these projections for infrastructure and transport investment? First, as a proportion of GDP, total investment in infrastructure (on a National Accounts basis) is set to increase from an average of 5.5 to 6 per cent during the 11th Plan (2007-12) to about 7 per cent in the 12th Plan and then stabilising at around 8 per cent in subsequent periods until the 15th Plan (2027-32). About 1 to 1.5 per cent of GDP can be added to make these projections comparable with

Figure 3.1
Projection of Infrastructure and Transport Investments Required, 2012-13 Prices
[RS Billion]



	11TH PLAN* (2007-12)	12TH PLAN (2012-17)	13TH PLAN (2017-22)	14TH PLAN (2022-27)	15TH PLAN (2027-32)
TOTAL INFRASTRUCTURE (Rs. Billion)	22,500	40,535	68,800	1,03,000	1,56,600
US $ Billion	413	745	1,270	1,890	2,880
Per cent of GDP	5.8	7.0	8.1	8.1	8.1

* Actual

the Planning Commission definitions of infrastructure investment.

Total investment in transport is projected to increase from about 2.6 per cent average in the 11th Plan to 3.3 per cent in the 12th Plan, and stabilising at 3.7 per cent of GDP in the 13th, 14th and 15th Plans (2017-32). Here again, 0.5 to 0.7 per cent of GDP can be added to be comparable with the Planning Commission investment concepts.

In absolute terms, this implies an increase in total transport sector investment from about Rs 10.4 trillion (US $190 billion) in the 11th Plan to about Rs 19 trillion ($350 billion) in the 12th Plan, Rs 30, 45 and 70 trillion ($575, 850 and 1,300 billion) respectively in the 13th, 14th and 15th Plans (Figure 3.1) (all in 2012-13 prices). In this scenario, both public and private sector investments in transport as a proportion of GDP will need to increase significantly.

PUBLIC SECTOR

Figure 3.2 exhibits our assumptions regarding increasing private sector participation in railways and roads, while keeping it at around 75-80 per cent in 'Other Transport'. With these assumptions, and our strategy of increasing investment in the Railways, public sector investment in transport is envisaged to increase from an average of 1.8 per cent of GDP in the 11th Plan to around 2.0 per cent in the 12th Plan and then remaining stable at 2.1 to 2.2 per cent till the 15th Plan. In absolute numbers, this implies an increase in public sector investments in transport from an annual average of around Rs 1.3 trillion ($27-30 billion) in the latter years of the 11th Plan to Rs 2.3 trillion ($43 billion) in the 12th Plan, Rs 3.7 trillion ($70 billion) in the 13th Plan and rising to Rs 7.9 trillion ($145 billion) by the 15th Plan, all at constant 2012-13 prices (Table 3.14a).

PRIVATE SECTOR

Consistent with current government policy, we have made relatively optimistic assumptions on increasing private sector participation in transport infrastructure. At 13 per cent, the National Accounts may underestimate the private sector contribution to investment in roads during the latter years of the 11th Plan. In fact, for the first three years (2007-10), it is estimated at zero. We have assumed it to be about 25 per cent for the 12th Plan and rising to

Table 3.15

Comparison of Model and Working Group Projections for Transport Investment

[Rs Billion – 2012-13 Prices]

	11TH PLAN* (2007-12)	12TH PLAN (2012-17)	13TH PLAN (2017-22)	14TH PLAN (2022-27)	15TH PLAN (2027-32)
I. RAILWAYS					
Working Group		5,190	9,190	12,040	8,900
Model	1,710	4,640	9,305	15,130	23,085
II. ROADS					
Working Group**		9,570	8,560	13,250	13,890
Model	4,530	7,535	10,995	15,130	23,085
III. OTHER TRANSPORT					
Working Group**					
Road Transport		53	61	70	81
Ports		574	613	848	1,181
Inland Water Transport		45	185	185	223
Civil Aviation		675	942	1,776	2,838
Urban Transport		2,340	3,340	4,360	7,200
TOTAL		3,687	5,141	7,239	11,523
Model	4,140	6,955	10,995	16,390	25,010
GRAND TOTAL					
Working Group		18,447	22,891	32,529	34,313
Model	10,380	19,130	31,295	46,650	71,180

*Actual from National Accounts
** Set up by NTDPC

30 per cent in the following three Plan periods. In the Railways, private sector contribution was effectively zero in the 11th Plan: we have assumed around 7 per cent for the 12th Plan, and then rising slowly to 20 per cent by the 15th Plan. 'Other Transport' includes all organised and unorganised private sector investment in buses, trucks etc: its share has been around 75-80 per cent for some years. We have assumed it to be 75 per cent in the 12th Plan, and then around 80 per cent for the following three Plan periods. Since urban infrastructure investment will rise in the coming years, which may inevitably be largely in the public sector, it is possible that this may be overestimating the private sector contribution in 'Other Transport'.

With these assumptions, we project private sector investment to rise from less than 1 per cent of GDP in the 11th Plan period to around 1.3 per cent in the 12th Plan and around 1.5 to 1.6 per cent in the following three Plan periods. In absolute terms, this implies an increase from an annual average of about Rs 700-900 billion ($16-18 billion) in the latter years of the 11th Plan to around an annual average of Rs 1.5 trillion ($27 billion) in the 12th Plan, rising to Rs 2.6 trillion ($50 billion) in the 13th Plan and as much as Rs 6.3 trillion ($110 billion) in the 15th Plan (all numbers in 2012-13 prices).

How do we evaluate these numbers from the point of view of broad feasibility? In the last two years of the 11th Plan (2010-12), the private sector was estimated to have invested an annual average of around Rs 700-900 billion (2012-13 prices) in transport. Our projection is for an average of Rs 1.5 trillion per year in the 12th Plan, about double that during 2010-12. An addition of about Rs 700-800 billion per year would therefore seem to be within the realms of possibility. Total resource flow to the private sector as a

Our expectations from the private sector are ambitious, and if they do not fructify, the government needs to put in place contingency plans, so that public sector resource mobilisation and execution can substitute for any shortfalls in private sector investment

whole was about Rs 14-15 trillion in 2012-13[17]. These estimates therefore imply that about 5-7 per cent of the total flow of resources to the organised private sector should be utilised for transport investment, These are clearly very large numbers, even if we look at the more immediate future of the next 5-10 years. Broadly speaking, a major step up in transport investment is required in the current 12th Plan and further in the 13th Plan ending in 2022, in both the public and private sectors. The expectations from the private sector are ambitious, and if they do not fructify, the government needs to put contingent plans in place, so that public sector resource mobilisation and execution can substitute for any shortfalls in private sector investment.

In any case, public sector investment in infrastructure cannot be expected to be reduced even as a proportion of GDP; if anything, it needs to be increased marginally. If such resources are to be available to the public sector for transport, these investments need to be commercially viable with the consistent application of user charges, transport taxes, and the like at all levels.

SOURCES OF FINANCING FOR TRANSPORT INVESTMENT

Having made the projections for the kind of transport investments that are required to fulfill the vision for transport envisioned in this report, it is now useful to get some sense of what the sources of such financing could be. This is not easy to do since there are no reliable estimates available of the pattern of financing in the transport sector overall. The sectors covered by transport are very varied, ranging from investments in trucks to those in aircraft, and from rural roads to airports. During the last five to 10 years, moreover, with the increasing share of private sector investment in infrastructure, and in different sectors in transport in particular, information on the financing pattern is even more difficult to compile since it involves analysis of all the different private firms involved in different areas of transport. Hence, this section provides only a very broad idea of what the sources of financing for transport investment could be. The projections made in this section indicate broadly where resources can come from, as between foreign and domestic sources; between budgetary and non-budgetary sources for the public sector; and between debt and equity for the private sector, both foreign and domestic.

FOREIGN FINANCING

It is first useful to see the possible extent of foreign financing of transport. We assume arbitrarily that about 40 per cent of total net capital flows to the country can flow to the infrastructure sector as a whole. Further, of total foreign capital flows to infrastructure, about 40 per cent could be invested in transport projects, which then amount to about 15-16 per cent of total capital flows. Table 3.9d exhibits detailed projections for the capital account, the key features of which are reproduced in Table 3.16. With the projected total equity and debt flows, the feasible foreign flows to the transport sector amount to about 0.65 to 0.70 per cent of GDP through the whole period 2012-2032. If we assume that a similar 15-16 per cent of both debt and equity flows are applied to the transport sector, equity flows amount to about 0.40 per cent to GDP throughout the period, and net foreign debt flows to about 0.25 to 0.30 per cent. Thus, in the 12th Plan period, these should amount to an average of about $8.5 billion of annual equity flows and about $6.5 billion in debt flows for investment in the transport sector. Table 3.16 projects the comparable figures in the 13th, 14th and 15th Plans on a consistent basis.

We may note that a more detailed calculation of these flows would need a better appreciation of the magnitudes of resources commanded by the various infrastructure companies in different transport sectors in the country, and then projecting them on a realistic basis. Particular account would need to be taken of the sustainability of foreign debt for these companies. Furthermore, we have provided approximate projections of net debt flows, but these would depend on the pattern of disbursements and repayments. The figures here therefore may be seen for illustrative purposes only, in terms of broad possible magnitudes.

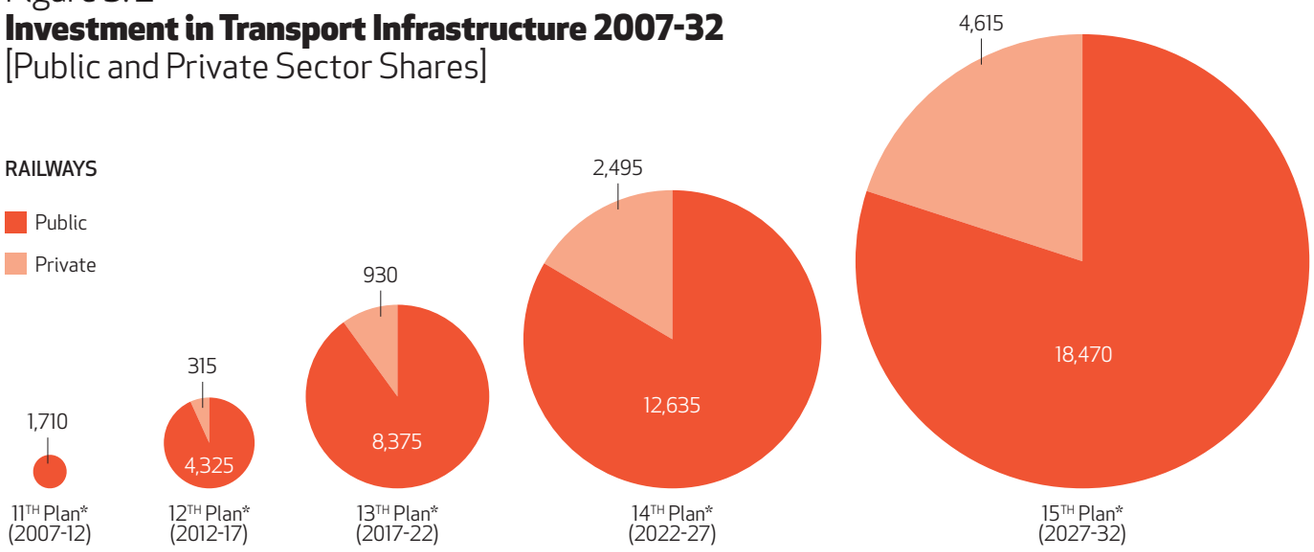
PUBLIC SECTOR

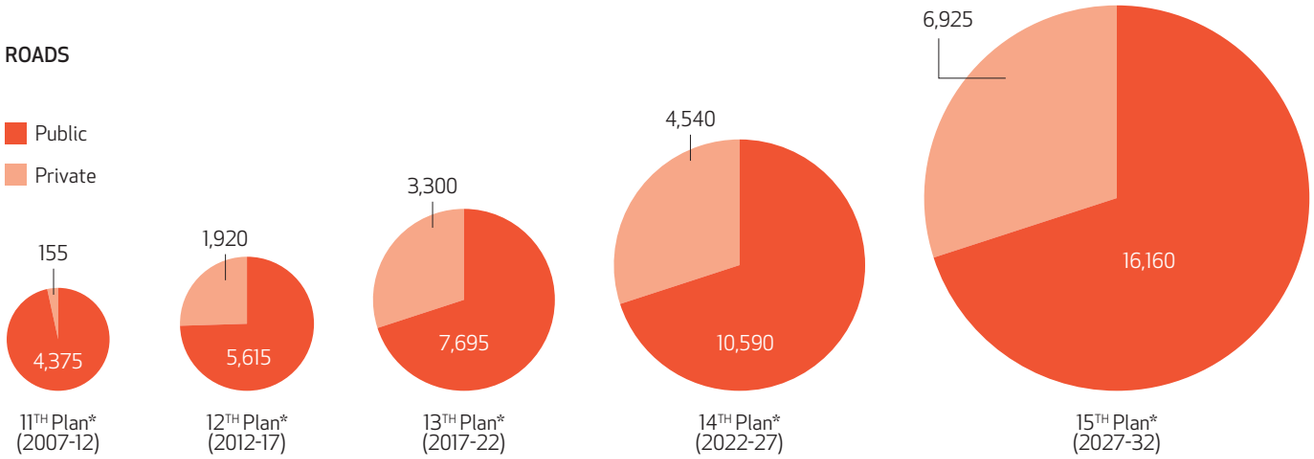
We now look at the possible financing patterns for public and private sectors. An examination of the 11th and 12th Plan financing patterns for investment by the public sector in transport sector exhibit the following trends:

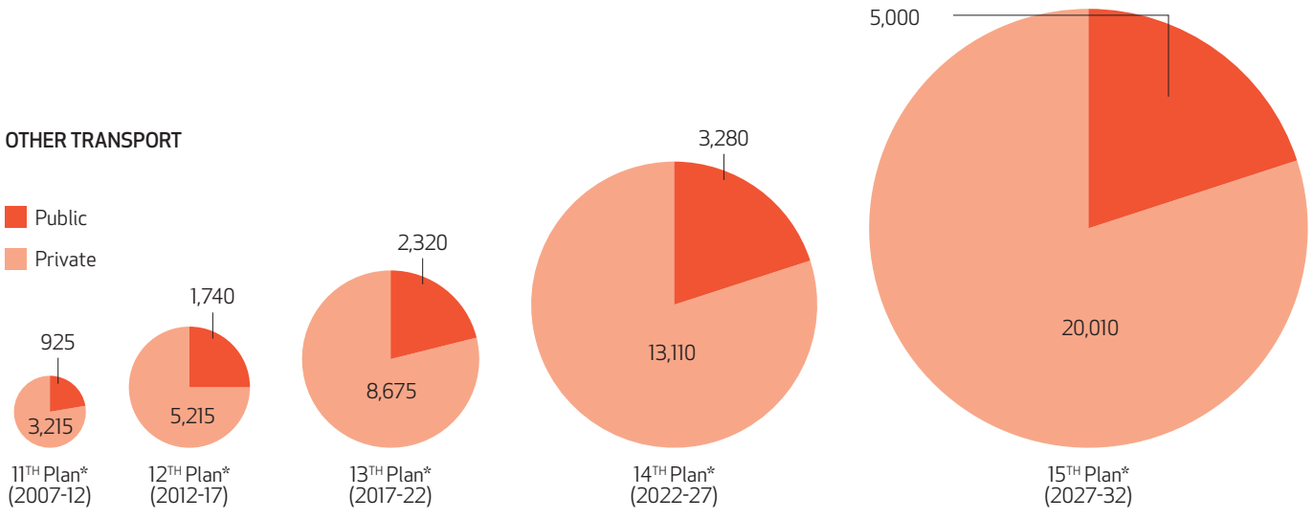
Central Government	
Budgetary support	40 per cent
Internal and Extra Budgetary Resource (IEBR)	30 per cent
State governments	
Budgetary support	30 per cent
Total 100 per cent	

17. Reserve Bank of India (2013).

Figure 3. 2
Investment in Transport Infrastructure 2007-32
[Public and Private Sector Shares]







	11TH PLAN* (2007-12)	12TH PLAN (2012-17)	13TH PLAN (2017-22)	14TH PLAN (2022-27)	15TH PLAN (2027-32)
TOTAL TRANSPORT (Rs Billion)	10,380	19,130	31,295	46,650	71,180
US $ Billion	190	350	575	850	1,308

*Actual from National Accounts

Table 3.16
Financing of Transport Investment: A Possible Projection
[Per cent of GDP]

	12TH PLAN (2012-17)	13TH PLAN (2017-22)	14TH PLAN (2022-27)	15TH PLAN (2027-32)
	I. INVESTMENT PROJECTIONS			
TOTAL INFRASTRUCTURE	**7.0**	**8.2**	**8.2**	**8.1**
As Per cent of GDCF	19.0	21.1	20.0	18.7
Public	4.0	4.5	4.5	4.3
Private	3.0	3.7	3.7	3.8
TRANSPORT INVESTMENT	3.3	3.7	3.7	3.7
Public	2.0	2.2	2.1	2.1
Private	1.3	1.5	1.6	1.6
	II. FINANCING			
A. FOREIGN				
Total Capital Flows	**4.6** (495)	**4.3** (670)	**4.3** (1005)	**4.6** (1640)
Equity	2.7 (275)	2.8 (415)	2.7 (620)	2.8 (1015)
Debt	1.9 (220)	1.5 (255)	1.6 (385)	1.8 (625)
FOREIGN FLOWS FOR TRANSPORT (APPROXIMATELY 15 PER CENT OF TOTAL FLOWS)	**0.70** (75)	**0.65** (100)	**0.65** (150)	**0.70** (235)
Equity	0.40 (42)	0.40 (60)	0.40 (90)	0.40 (140)
Debt	0.30 (33)	0.25 (40)	0.25 (60)	0.30 (95)
B. DOMESTIC	**2.60** (275)	**3.05** (475)	**3.05** (700)	**3.00** (1050)

Note: Figures in paranthesis are in US$ billion

We have therefore assumed that, overall, 70 per cent of total public sector transport investments will be expected to come from the Budget. And about 30 per cent from Internal and Extra Budgetary Resources (IEBR) including public sector borrowing, which includes foreign borrowings by public sector enterprises. Thus, of the 2.2 per cent of GDP projected for public sector investment in transport in the next four Plan periods, resources amounting to around 1.40 to 1.55 per cent of GDP would need to come from budgetary sources and about 0.70 per cent to 0.75 per cent of GDP from IEBR, including foreign borrowings. After examining the flows of official lending, we have made a rough estimation of about 0.10 per cent of GDP as foreign borrowing flowing to the public sector (Table 3.17).

PRIVATE SECTOR

Coming to private sector investments in transport, it is found that a substantial proportion of total funding could indeed come from foreign sources, if these projections are broadly reasonable. Thus, of the 1.3 to 1.6 per cent of GDP expected to be invested by the private sector in transport over the next 20 years, about 0.55 to 0.60 per cent, or about a third, could come from foreign sources. The proportion is somewhat higher in the 12th Plan because of the higher current account deficit that has already taken place. The implication of these projections are that the share of foreign equity financing of private sector transport investments could be comparable to that by the domestic private sector. Further, domestic debt financing would have to be significantly higher than sustainable foreign debt financing. This is reasonable since most cash flows in the domestic transport sector are in the domestic currency. In sectors such as ports and airports, however, foreign borrowings could be naturally hedged since a substantial part of their earnings are in foreign currency.

Consequently, of the domestic financing projected for transport investments in the private sector, the

Table 3.17
Financing of Transport Investment: Public and Private Sectors
[Per cent of GDP]

	12TH PLAN (2012-17)	13TH PLAN (2017-22)	14TH PLAN (2022-27)	15TH PLAN (2027-32)
PUBLIC SECTOR	**2.0**	**2.2**	**2.1**	**2.1**
Budget (70 Per cent)	1.40	1.55	1.50	1.50
IEBR (30 Per cent)	0.60	0.65	0.60	0.60
Foreign Debt	0.10	0.10	0.10	0.10
Private Sector				
FOREIGN	**0.60**	**0.55**	**0.55**	**0.60**
Equity	0.40	0.40	0.40	0.40
Debt	0.20	0.15	0.15	0.20
DOMESTIC	0.70	0.95	1.05	1.00
Equity	0.25	0.35	0.40	0.40
Debt	0.45	0.60	0.65	0.60
TOTAL	**1.30**	**1.50**	**1.60**	**1.60**
Equity	0.65	0.75	0.80	0.80
Debt	0.65	0.75	0.80	0.80
TOTAL TRANSPORT	**3.3**	**3.7**	**3.7**	**3.7**

debt equity ratio turns out to be in a range from about 2:1 to about 3:2 over the four Plan periods projected. What these projections illustrate is that if we account for the sustainability of the Indian balance of payments over the long term, the extent of external borrowing for the transport sector would be somewhat limited to about 0.25 to 0.30 per cent of GDP overall, leaving the rest of debt required to be raised in domestic markets. As emphasised earlier, it is of the utmost importance that much greater efforts are made to invigorate the pension and insurance sectors for greater long-term savings to flow into these funds. It is only if such long-term funds are available, can this kind of domestic borrowing become possible for investment by the private sector in transport.

OVERALL ASSESSMENT

Are these projections reasonable if translated into absolute amounts? (Table 3.18) During the 12th Plan, about Rs 8.2 trillion would need to be made available from the Budget, supplemented by about Rs 3.5 trillion from IEBR for public sector transport investment. This implies an average of about Rs 1.6 trillion per year from budgetary resources and about Rs 700 billion from IEBR per year during the 12th Plan. Looking at the private sector, there would need to be total investment of about Rs 7.45 trillion over the 12th Plan of which about Rs 4.1 trillion would come from domestic sources and about Rs 3.5 trillion from foreign sources. Domestic equity of about Rs 1.4 trillion would need to be raised during the 12th Plan period to be supplemented by about Rs 2.7 trillion in debt from domestic sources. Translated into annual average numbers, this comes to about Rs 280 billion per year in terms of equity and Rs 540 billion per year in terms of debt raised. Total bank credit disbursed to the transport sector over the last three years has been of the order of 0.5 per cent of GDP annually. If account is taken of other sources of borrowing, projections made for debt financing of the private sector would appear to be within the realms of feasibility. The comparable numbers for following Plans are provided in Tables 3.17 and 3.18.

The magnitudes of these numbers would seem to be reasonable. However, for such an investment programme to be successful, there is a great need for appropriate transport sector policies that can indeed attract such levels of both foreign and

Since a good deal of equity investment in most private sector companies arises from retained earnings, the business climate would have to be such that private investment in the infrastructure sector is adequately profitable on a consistent basis

domestic private investment. Since a good deal of equity investment in most private sector companies arises from retained earnings, the business climate would have to be such that private investment in infrastructure is adequately profitable on a consistent basis.

In summary, our projections suggest that with appropriate policies, it should be feasible to raise adequate financing for the transport investment projected from both domestic and foreign sources. Public sector investment will remain important, and around 70 per cent of public sector investment would need to come from Central and state budgetary sources. For success in raising adequate Internal and Extra Budgetary Resources (IEBR), it will be essential to follow consistent and appropriate policies for user charges wherever feasible in the transport sector. Innovative sources of budgetary financing will also need to be considered such as those proposed for Urban Transport (Volume III, Chapter 5). In the projections made in this section, it is probable that the expectation of foreign investment may be somewhat higher. So far, foreign firms have not yet shown much interest in such investments even though India has the largest PPP programme in roads; however, significant interest is available for investment in other transport infrastructure areas such as ports and airports. Potentially, foreign interest could also come in investment in rolling stock in the railways as and when permitted.

SUMMARY

This chapter has provided macroeconomic projections that could fulfill the infrastructure and transport requirements needed over the next two decades, taking into consideration assumptions about expected growth of the Indian economy. In addition, we provided a bottom-up approach to look at each sectoral investment need.

As stated at the beginning, there is a close relationship between economic growth and infrastructure investment, of which transport investment is a very significant component. When talking about economic growth, it is not possible to accelerate growth if transport investment is not accelerating correspondingly. Conversely, it will not be possible to find the resources required for infrastructure unless the country's economic growth accelerates.

The projections made in this chapter should be considered as indicators of the plausible magnitudes that can be invested in infrastructure and transport over the next two decades. Such investments could take place if the policy framework in each sector is made investor-friendly and transparent. We are aware that there will be leads and lags between different sectors over time. For instance, it is plausible that the power and telecommunications sectors could receive greater investment than suggested by our projections.

ACCELERATING GROWTH

The Indian economy has been projected to accelerate its growth from the 11th Plan average of 8.0 per cent and the lower 12th Plan annual growth envisaged at around 7 per cent to 9.0 per cent subsequently upto 2031-32. To achieve such GDP growth, the investment rate would need to increase from the current 35 per cent of GDP to about 42 per cent in 2031-32. The economy would have to become more efficient to fulfill these expectations: the Incremental Capital Output Ratio (ICOR) would have to be around 4.2. Also, the rate of industrial growth would have to accelerate from an average of 7 per cent during the 11th Plan to approach 10 per cent per year over the next twenty years.

WHY TRADE NEEDS TO EXPAND

The implication of such growth for the external sector of the economy is a high degree of continuing trade expansion over the next twenty years. This is because achieving the desired investment level would need significant mobilisation of external capital inflows to finance industrial and infrastructure investment requirements, and the equipment imports implied by such expansion. The sustainability of such economic growth would require continuing high growth in exports of goods and services, though declining from around 20-25 per cent recorded in the 11th Plan to about 10 per cent by 2016, and then growing at 10-11 per cent per year over the next 15 years. If this takes place, total exports should reach around $3 trillion by 2031-32. At these levels, exports would comprise about 38 per cent by 2031-32, up from the current level of 24 per cent. With such consistent growth in exports, it would be feasible for India to sustain a current account deficit of about 2.5 per cent of GDP as assumed in our projections, which is required for the non-inflationary absorption of external capital inflows.

In order to keep the debt-service requirements at a sustainable level, the debt-equity ratio of net capital inflows would have to be less than one. Therefore, the implied net annual debt flows would increase from the current level of about $20-40 billion to $130 billion during 2027-32. As debt repayments also rise, this implies that annual gross debt flows will have to increase from around $40-60 billion now to $120 billion in the 13th Plan period and rising to $300 billion by the 15th Plan. The annual net foreign investment inflow,

Table 3. 18
Financing of Transport Investment: Public and Private Sectors
[Rs Billion, 2012-13 Prices]

	12TH PLAN (2012-17)	13TH PLAN (2017-22)	14TH PLAN (2022-27)	15TH PLAN (2027-32)
PUBLIC SECTOR	**11,680**	**18,390**	**26,505**	**39,630**
Budget (70 Per cent)	8,176	12,957	18,932	28,307
IEBR (30 Per cent)	3,504	5,433	7,573	11,323
Foreign Debt	584	836	1,262	1,887
PRIVATE SECTOR				
FOREIGN	3,438	4,732	6,925	11,831
Equity	2,292	3,441	5,036	7,888
Debt	1,146	1,291	1,889	3,944
DOMESTIC	4,012	8,173	13,220	19,719
Equity	1,433	3,011	5,036	7,888
Debt	2,579	5,162	8,184	11,831
TOTAL	**7,450**	**12,905**	**20,145**	**31,550**
Equity	3,725	6,453	10,073	15,775
Debt	3,725	6,453	10,073	15,775
TOTAL TRANSPORT	19,130	31,295	46,650	71,180

including both foreign direct and portfolio inflows will represent an increase from the current $45 billion to $200 billion by 2027-32.

Such inflow of external capital requires an open foreign investment regime. On the debt side, there is a negative expectation about the official net debt flows: hence, most of the new debt flows would have to be commercial, which would be highly reliant on the maintenance of high credit ratings for India and its borrowing entities.

THE INVESTMENTS REQUIRED

The macro-economic exercise suggests that it is feasible for total investments in infrastructure to increase from the current level of 5.8 per cent of GDP to 8.0 per cent after the 12th Plan period, up to 2031-32. In absolute terms, this implies that the annual level of investment could increase from the current Rs 6 trillion ($100 billion) to about Rs 30 trillion ($570 billion) by 2031-32. If we can manage to steerabout 30-40 per centof the total capital inflows into the financing of infrastructure, we could expect about 15-25 per cent of the of the total requirements for infrastructure to be externally financed. The rest as much as 75-85 per cent will have to be domestically financed.

For investments in transport, the annual level of investment in railways, roads and bridges, and other transport, will increase from Rs 2.2 trillion ($45 billion) in 2011-12 to Rs 3.8 trillion ($70 billion) during the 12th Plan, Rs 6.3 trillion ($110 billion) in the 13th Plan and rising to about Rs 14 trillion ($250 billion) in the 15th Plan period. Of this, investments in Railways by itself will increase from Rs 300 billion ($6.5 billion) in 2011-12 to Rs 900 billion ($17 billion) during the 12th Plan, Rs 1.9 trillion ($ 33billion) in the 13th Plan, and rising to Rs 4.6 trillion ($85 billion) in the 15th Plan period, all in constant 2012-13 prices.

Public sector investment in infrastructure cannot be reduced from the current levels as a proportion of GDP. It should actually rise marginally: the projections for the next two decades show public sector investment in infrastructure should go up marginally

On the external capital front, there is a negative expectation about official net debt flows; hence, most of the new debt flows would have to be commercial, and thus, highly reliant on the maintenance of high credit ratings for India and the borrowing entities.

from 4 per cent of GDP during the 12th Plan period to 4.3 to 4.5 per cent of GDP in the next three Plans. This increase in public sector investment is primarily due to the increased investment proposed in the railways. Depending on private sector investment trends, there could also be a shift in sectoral composition of public sector infrastructure investments. Private sector investment is complementary to public sector investment rather than a substitute. This implies that public sector infrastructure investment will have to be increasingly commercially viable if public resources invested in infrastructure increase somewhat faster than GDP growth.

Thus, a greater effort will need to be made to strengthen and commercialise all public sector entities that invest in and manage public transport infrastructure at both the central and state levels. The Railways, in particular, need very significant organisational and accounting change (as detailed in Chapter 1, Volume III) if the kind of capacity and quality expansion envisaged is to be achieved. Similarly, urban transport entities ranging from bus transport companies, BRT (Bus Rapid Transit) and other MRT (Mass Rapid Transit) entities will have to be increasingly commercially viable. For this to happen, significant resources will have to be invested in capacity development across the board.

Most of the external capital inflow related to infrastructure, in terms of both equity and debt, is going into telecommunications and the power sector: The flow of external capital into the transport sector is, so far, not very large. Thus, the proportion of transport investments that can be expected to be externally financed is unlikely to be higher than 15 per cent: it could well be lower.

Thus, an important upshot of our exercise is that:

- Expectations of foreign financing of transport investment need to be realistic in terms of the attractiveness of this sector for foreign investment, in terms of both equity and debt.
- Special efforts will have to be made to influence the flow of domestic savings into the transport sectors.

Finally, high growth in trade and a stable domestic macroeconomic and financial environment is critical to India in order to attract the external capital inflows needed on a sustainable basis. Further, expecting a higher level of external capital inflows than those projected might be unrealistic and also destabilising. Therefore, the bulk of resources for overall infrastructure investment will have to originate from domestic savings.

The NTDPC also made bottom-up estimates for investment requirements in each infrastructure sector. The aggregate and sectoral estimates provided by the Working Groups, consisting of the relevant government ministry representatives and sectoral experts, turn out to be lower than the macroeconomic consistent model projections of availability of resource flows for transport infrastructure. We have not attempted to reconcile the two sets of estimates. But these projections suggest that we can be more ambitious in our transport planning in the 13th Plan and beyond. This outcome also suggests that the many proposals in this report that relate to the following have a high probability of being financed.

- Capacity development
- Safety enhancement in all sectors
- Use of information technology
- Environmental projection through more stringent fuel standards, etc
- Connectivity with and within the North East; and
- International connectivity

REFERENCES

Datt, Gaurav and Ravallion, Martin (2011) 'Has India's Economic Growth Become More Pro-Poor in the Wake of Economic Reforms?', *The World Bank Economic Review*, 24(2), pp. 157-189.

Estache, Antonio and Munoz, Rafael (2007) 'Building Sector concerns into Macroeconomic Financial Programme: Lessons from Senegal and Uganda', World Bank Africa Region Working Paper Series No.108, December.

Chatterjee, S. (2005) 'Poverty reduction strategies Lessons from the Asian and Pacific region on inclusive development', *Asian Development Review,* 22, pp. 12-44.

Commonwealth Business Council (2007) 'Business Environment Survey', London.

Ferreira, Pedro Cavalcanti, Leandro Goncalves do Nascimento (2006) 'Welfare and Growth Effects of Alternative Fiscal Rules for Infrastructure Investment in Brazil', Graduate School of Economics, Getulio Vargas Foundation (Brazil).

Government of India (2011) 'National Manufacturing Policy', Department of Industrial Policy & Promotion, http://dipp.nic.in/English/Policies/National_Manufacturing_Policy_25 October 2011.pdf (accessed 25 October 2011).

Mohan, Rakesh (2012) Growth with Financial Stablity: Central Banking in an Emerging Market. New Delhi: Oxford University Press.

Pravakar Sahoo and Ranjan Kumar Dash (2012) 'Economic growth in South Asia: Role of infrastructure', *The Journal of International Trade & Economic Development: An International and Comparative Review*, 21(2), pp. 217-252.

Planning Commission, India (2013) 'Press Note on Poverty Estimates 2011-12', July.

Planning Commission, India (2012) 'Interim Report of the High level Committee on Financing Infrastructure', August. (http://infrastructure.gov.in/pdf/Interim_Report.pdf.) (accessed 15 September 2013).

Planning Commission, India (2011a) 'Investment in Infrastructure during 11th Five Year Plan', Secretariat for Infrastructure.

Planning Commission, India (2011b) 'Report of the Sub Group on Inflow of Foreign Savings: 12th Five Year Plan (2012-13 to 2016-17).

Planning Commission, India (2011c) 'Report of the Sub-Group on Household Sector Saving during the 12th Five Year Plan (2012-13 to 2016-17).

Reserve Bank of India (2013) 'Macroeconomic and Monetary Developments, First Quarter Review 2013-14'.

Reserve Bank of India (2012) Database on Indian Economy, Reserve Bank of India. http://dbie.rbi.org.in/DBIE/dbie.rbi?site=home (accessed 18 March 2014).

Rioja, Felix K. (2001) 'Growth, Welfare, and Public Infrastructure: A General Equilibrium Analysis of Latin American Economies', *Journal of Economic Development*, 26(2).

Straub, S., C. Vellutini, and M. Warlters (2008) 'Infrastructure and economic growth in East Asia',World Bank Policy Research Working Paper, No. 4589, Washington DC.

Walsh, James P., Park, Chanho, Yu, Jiangyan (2011) 'Financing Infrastructure in India: Macroeconomic Lessons and Emerging Markets Case Studies',IMF Working Paper, No.11/181, August, Washington DC.

World Bank (2013) 'Urbanisation beyond Municipal Boundaries: Nurturing Metropolitan Economies and Connecting Peri-Urban Areas in India'.