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Public debt in India: Moving towards a prudent level?

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Abstract/Résumé

Public debt in India: Moving towards a prudent level?

In relation to GDP, India's public debt and interest payments are high compared with most other emerging economies and rating agencies have put India's sovereign debt at the lowest investment grade. On the other hand, India benefits from strong economic growth and needs to increase spending on social and physical infrastructure to support economic growth and to meet the needs of its fast-growing population. This paper assesses recent fiscal developments in India, discusses the threshold beyond which debt has adverse effects on the economy, quantifies the uncertainties surrounding key macroeconomic variables and the risks of overshooting the debt threshold to define a "prudent" debt level. It also provides a debt sustainability analysis. It concludes that under a "no-policy change" scenario, the debt-to-GDP ratio will decline gradually to close to the "prudent" level by 2040. However, adverse shocks could derail this benign scenario.

Keywords: India, fiscal policy, prudent debt, public finance sustainability

JEL classification: H63; H68

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Dette publique en Inde: en marche vers un niveau prudent ?

Par rapport au PIB, la dette publique et les paiements d'intérêts de l'Inde sont élevés comparés à la plupart des autres économies émergentes et les agences de notation ont attribué à la dette souveraine de l'Inde la note la plus basse de la catégorie investissement. D'autre part, l'Inde bénéficie d'une forte croissance économique et doit augmenter les dépenses en infrastructures sociales et physiques pour soutenir la croissance économique et répondre aux besoins de sa population en forte croissance. Cet article évalue les développements budgétaires récents en Inde, discute du seuil au-delà duquel la dette a des effets néfastes sur l'économie, quantifie les incertitudes entourant les principales variables macroéconomiques et les risques de dépassement du seuil de dette afin de définir un niveau de dette "prudent". Il présente aussi une analyse de la soutenabilité de la dette. Il conclut que, dans le cadre d'un scénario "sans changement de politique", le ratio de la dette au PIB diminuera progressivement pour atteindre le niveau « prudent » d'ici 2040. Cependant, les chocs négatifs pourraient faire dérailler ce scénario favorable.

Mots clés : Inde, politique budgétaire, dette prudente, soutenabilité des finances publiques

Classification JEL : H63; H68

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PUBLIC DEBT IN INDIA: MOVING TOWARDS A PRUDENT LEVEL?

By Isabelle Joumard, Peter Hoeller, Jean-Marc Fournier and Hermes Morgavi[1]

1. The combined deficit and debt of India's central government and of the states are high in comparison with other emerging economies (Figure 1). Government spending remains relatively low but interest payments account for a relatively large share of it, leaving large unmet needs for social and physical infrastructure. This raises two questions. First, is India's public debt currently at a "prudent" level? Second, if not, is fiscal consolidation needed to bring it to a prudent level by 2040? After a snapshot of recent fiscal developments and a discussion of the prudent debt level for India, simulations presented in this paper show that, with the effective interest rate on government debt significantly below GDP growth in nominal terms, the debt-to-GDP ratio will decline gradually and be close to the prudent level by 2040.

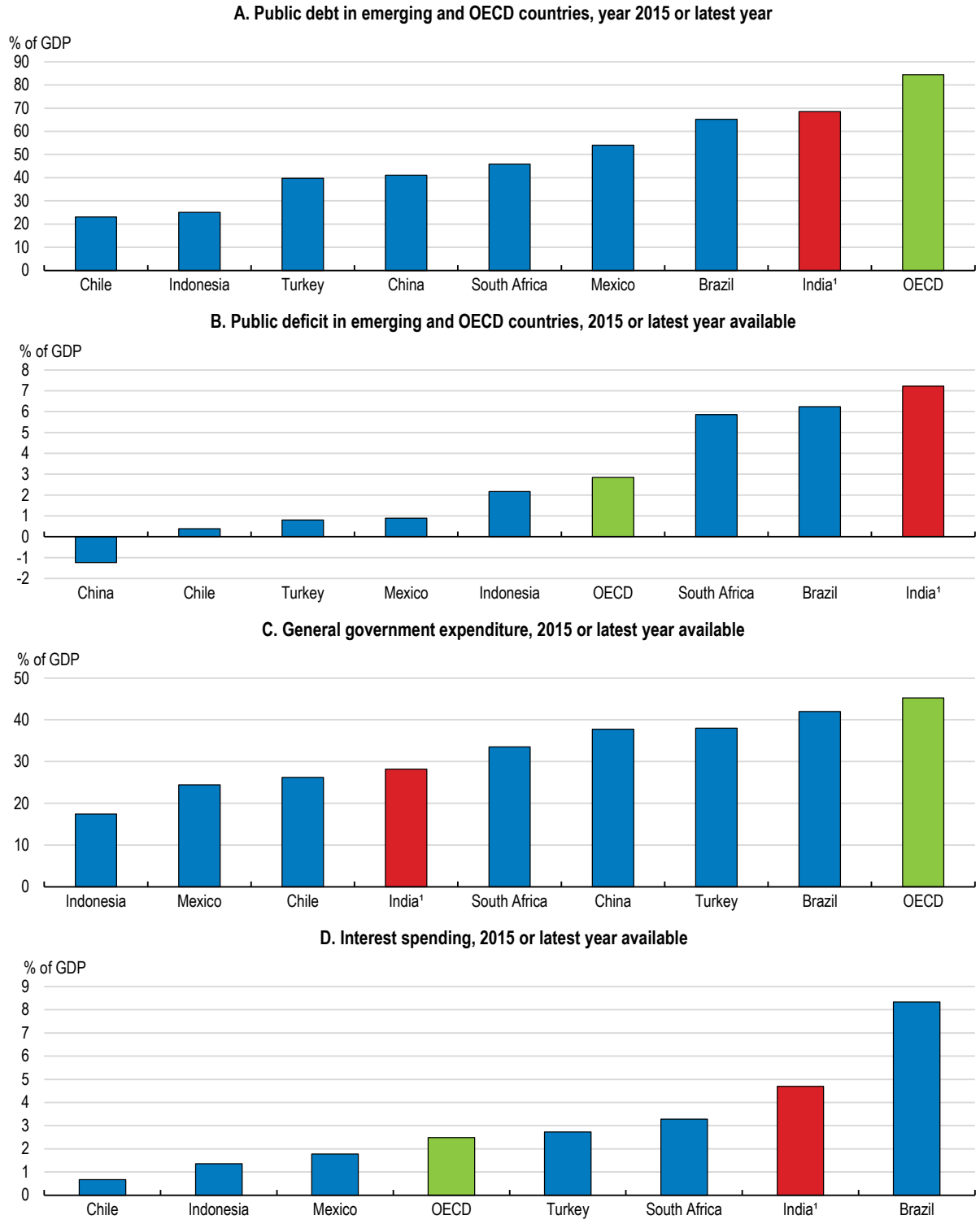
Recent fiscal developments

2. Fiscal consolidation has been pursued by central government since fiscal year (FY) 2012-13. The deficit of the central government declined from 4.9% in FY 2012-13 to 3.9% in FY 2015-16 and the budget for FY 2016-17 targeted a further reduction to 3.5% of GDP. The government took advantage of low oil prices to eliminate diesel subsidies, to better target other subsidies (in particular for cooking gas) and to raise excise duties on petrol, diesel and coal. The service tax rate was raised from 12 to 15% (including the new Clean India earmarked tax) and dividends paid by public enterprises increased. Efforts to move from largely cash to digital payments, including the 2016 demonetisation, have spurred tax compliance and been reflected in an increase in the number of taxpayers and tax receipts. The 16% increase in public wages and 23% in public employees' pensions from January 2016, following the recommendations of the 7th Pay Commission, is, however, putting additional pressures on government spending. A large share of public investment is being financed off-budget by public enterprises.

3. The deficit at the state level has risen, resulting in an increase in the combined deficit and debt to GDP ratio (Figure 2). Wage increases for state employees will likely follow those of central government employees. Combined with the takeover of 75% of the existing debt of state electricity companies (3.5% of GDP in total), spending pressures may make it difficult to keep the deficit in check without cutting investment spending.

1. Isabelle Joumard, Peter Hoeller, Jean-Marc Fournier and Hermes Morgavi are members of the OECD Economics Department. The authors would like to thank Indian officials as well as Economics Department colleagues, in particular Catherine Mann, Christian Kastrop, Alvaro Pereira, Robert Ford, Piritta Sorsa, Falilou Fall and Annabelle Mourougane for their valuable comments. Special thanks are due to Anthony Bolton and Celia Rutkoski for assistance publishing the working paper.

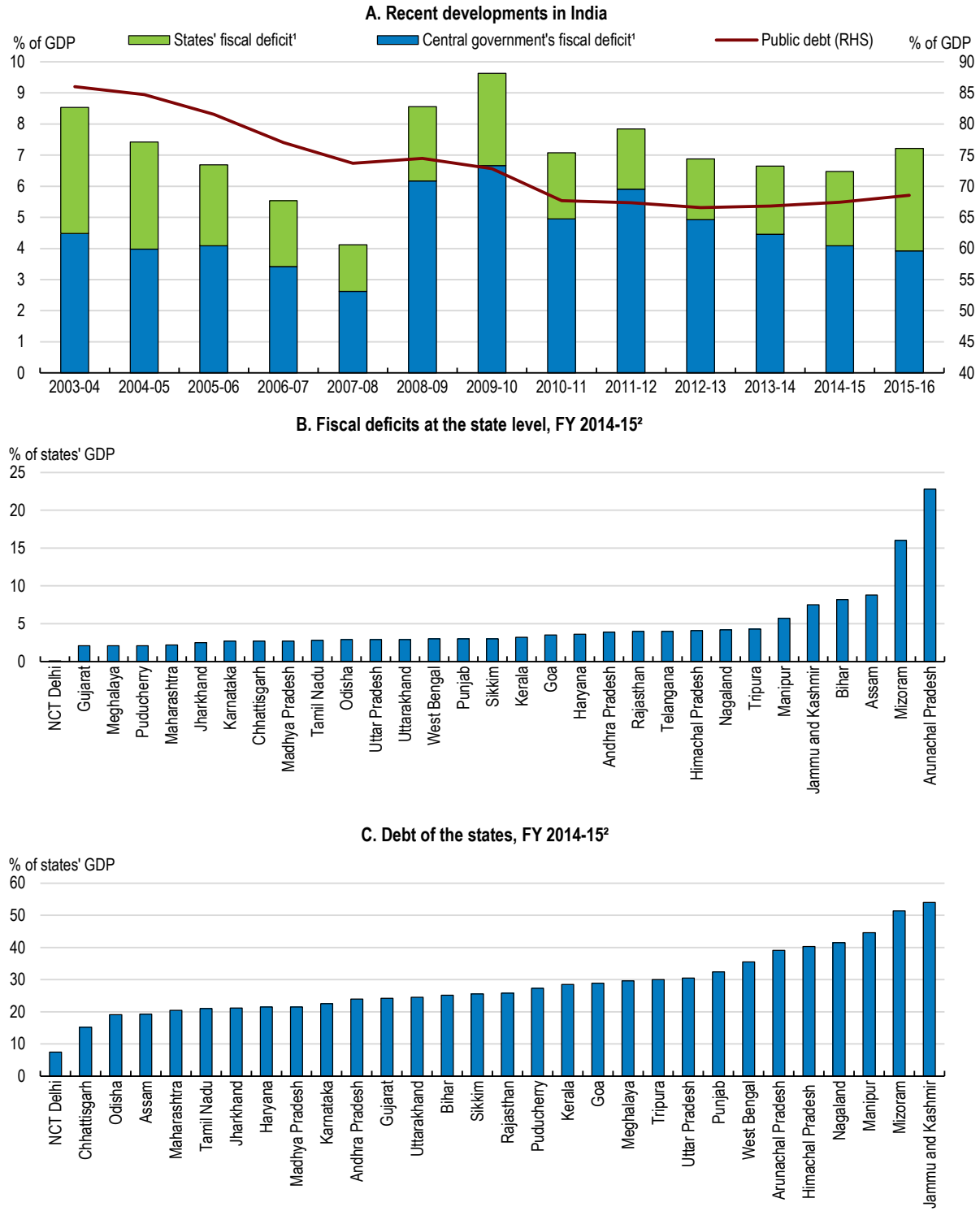
Figure 1. **International comparisons of fiscal outcomes**



1. Data for India are revised estimates by the Reserve Bank of India for the fiscal year 2015-16.

Source: OECD Economic Outlook 100 database; Reserve Bank of India; Brazilian ministry of economy; and World Bank World Development Indicators database.

Figure 2. **Fiscal outcomes for central government and the states**



1. Data for the fiscal year 2015-16 are revised estimates by the Reserve Bank of India.
2. Revised estimates by the Reserve Bank of India.

Source: Reserve Bank of India, September 2016 Monthly Bulletin; Controller General of Accounts; and Reserve Bank of India.

The rationale and framework for setting a prudent debt target

4. The sharp rise in general government debt experienced by most OECD countries in the wake of the global financial crisis has raised questions about the prudent government debt level countries should target (Fall et al., 2015). In India, large fiscal deficits in the early 2010s eroded investors' confidence. Although India's public debt to GDP ratio remained below the levels during the 1991 currency crisis, in October 2012 a rating agency threatened to downgrade the status of India's debt to "junk" in the absence of fiscal consolidation. A key concern was that slower economic growth in the early 2010s combined with large primary deficits had a negative impact on government debt dynamics (Box 1). The government then put forward a fiscal consolidation roadmap which helped restore investors' confidence. At the end of 2016, India's sovereign debt was still rated at the lowest investment grade, with a stable outlook, underlining persisting public finance risks at least as seen by rating agencies.

Box 1. Government debt dynamics

To assess fiscal sustainability, it is useful to relate public debt to nominal GDP. The larger the economy, the more tax revenue is available and hence the ability to repay debt is greater. If public debt grows as fast as the economy, then the government can roll over debt and the public debt to GDP ratio remains stable. By contrast, public debt can become a problem when it grows much faster than the economy.

The debt to GDP ratio D_t in year t depends on the previous year's debt to GDP ratio D_{t-1}, which needs to be discounted with the nominal growth rate of the economy g, and on the fiscal balance (measured as a share of GDP):

$$D_t \approx (1-g)* D_{t-1} - \text{fiscal balance} \quad \text{or} \quad D_t - D_{t-1} \approx -g* D_{t-1} - \text{fiscal balance}$$

The debt ratio is stable when the growth effect offsets the fiscal deficit. For instance, if nominal GDP grows at 10% and the debt ratio is at 70% of GDP, a deficit of 7% of GDP implies a stable debt-to-GDP ratio (7% = 10%*70/100).

The fiscal balance can be decomposed into two components: interest payments, which depend on the past debt level and on the nominal effective interest rate on government debt r, and on the primary balance which excludes interest payments:

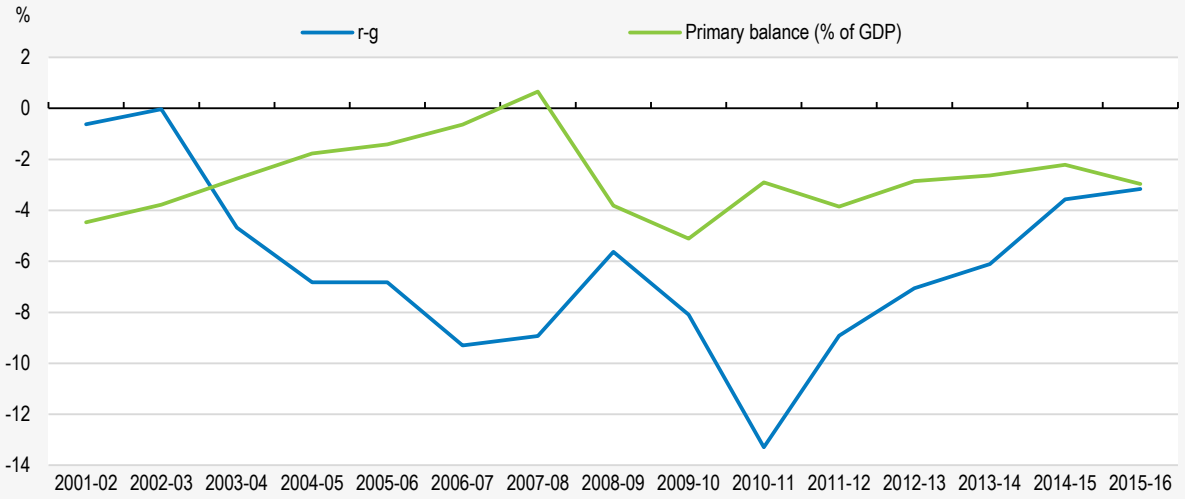
$$D_t - D_{t-1} \approx (r-g)* D_{t-1} - \text{primary balance}$$

This decomposition is useful because the government can act on the primary balance, but not on interest payments. This decomposition also helps to understand the debt dynamic. The gap between the nominal growth rate and the nominal interest rate is an important determinant of this dynamic. When the interest rate is above the growth rate, there is a snowball effect: interest payments generate extra debt at a pace that exceeds economic growth, and the government has to generate a primary surplus to compensate. By contrast, when the interest rate is below the growth rate, the government can run primary deficits: primary government spending can exceed government revenues.

For India, Figure 3 shows that the gap between the nominal interest rate and the GDP growth rate in nominal terms has helped pull down the public debt-to-GDP ratio since 2003. This gap has narrowed, however.

Box 1. Government debt dynamics *(cont.)*

Figure 3. Sources of changes in the government debt-to-GDP ratio



Note: The interest rate (r) is defined as the ratio of interest payments on debt to gross government liabilities of the previous year; and the economic growth rate (g) is the year-on-year percentage change of nominal GDP.

Source: Reserve Bank of India and Central Statistics Office.

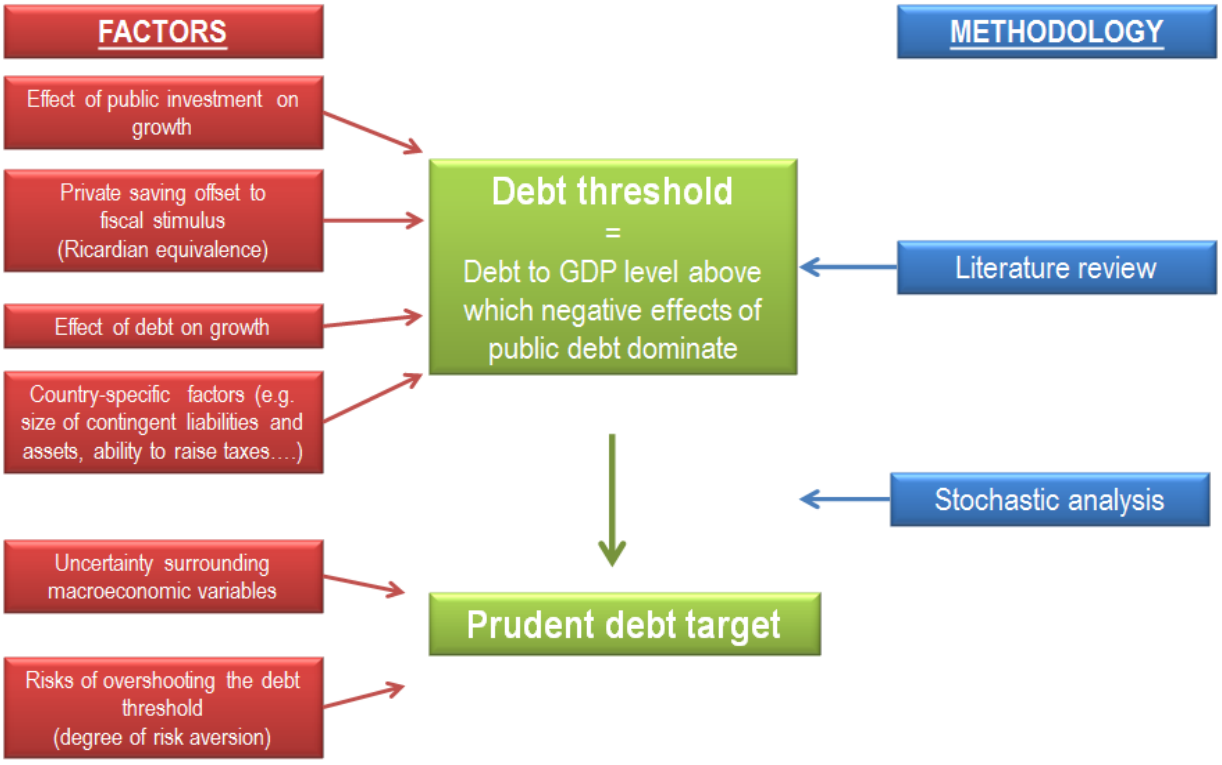
The merits of a prudent debt target

5. Prudent debt targets can serve as a fiscal policy anchor to ensure fiscal sustainability and that there is sufficient policy room to cope with adverse shocks. Prudent debt targets provide the commitment tool that re-assures markets and thereby diminishes risk premia for government debt, which in turn lowers the cost of capital for the whole economy. For instance, Hatchondo et al. (2012) showed that governments benefit from committing to a fiscal rule as this commitment implies that the government is able to borrow at a lower interest rate, and Bocola (2016) showed theoretically and empirically the effect of sovereign risk on the borrowing costs of firms. In India, the Fiscal Responsibility and Budget Management (FRBM) Review Committee recommended in 2017 that a sustainable debt path must be the principal macroeconomic anchor of fiscal policy.

6. To define a prudent debt target, it is necessary to first establish a threshold beyond which debt has adverse effects on economic activity.[2] Figure 4 shows the key concepts used, driving forces and methodology employed. The prudent debt target is set below the debt threshold as it includes a buffer to absorb macroeconomic shocks.

2. The threshold is established *via* a literature review. For brevity, only a few studies are mentioned below. More detail can be found in Fall et al. (2015).

Figure 4. **Key concepts, driving forces and methodology**



Source: OECD Secretariat.

Establishing the threshold beyond which adverse effects of debt dominate

The public capital stock that maximises growth

7. In a study covering 22 OECD countries, Checherita-Westphal et al. (2014) estimated a growth model, in which government debt is financing public infrastructure. They find a positive, but limited, "optimal" government debt ratio of 50-65% of GDP. In a sample of 30 OECD countries, Fournier (2016) also finds decreasing returns to public investment, with a threshold beyond which public investment does not increase growth at about a public capital stock of 80 to 90% of GDP. Currently public capital stock is considerably below the 80-90% of GDP threshold in all these countries, except Japan. Though the results should be interpreted with caution, they suggest that there is a limit beyond which public investment has decreasing returns. According to the IMF public capital stock database, the public capital stock is at about 60% of GDP in India, suggesting that there is room for increasing public investment beyond the level that corresponds to India's growth rate.

Government debt and the effectiveness of fiscal policy in stabilising the economy

8. The impact of fiscal policy on the economy has been often analysed through the effects of changes in the fiscal stance on output, gauged by fiscal multipliers. The empirical evidence on the size of the multipliers is not conclusive, as they depend on fiscal instruments, economic conditions and the timing of policies. However, the level of debt can matter for fiscal policy effectiveness. The Ricardian equivalence theorem suggests that fiscal policy changes can be offset by changes in private savings, having thus no overall economic effect. Röhn (2010), for instance, finds that, at a level of around 75% of GDP,

debt impedes the effectiveness of fiscal stimulus through higher private savings in OECD countries. Pradhan (2015) found little evidence for Ricardian equivalence to hold in India.

Is high debt detrimental to growth?

9. A high level of debt not only lessens the effectiveness of fiscal stimulus, it can also reduce growth, for instance, by driving up interest rates and thereby crowding out private investment. Work by the OECD indicates that a universal relationship between debt and growth is not robust (Égert, 2015). There is also good reason to believe that causation between higher debt and lower growth runs both ways and the empirical literature has not come to a strong conclusion on causality. Leaving aside these limitations, the general government debt threshold beyond which negative growth effects kick in is at about 50% for OECD countries (Égert, 2015). However, country-specific estimates provide a wide range between 20% and 100%. Focusing on India, Kaur and Mukherjee (2012) put the debt threshold, above which an inverse relationship between debt and growth is observed, at just above 61% of GDP.

Considerations specific to emerging economies

10. In developing and emerging countries, external debt (public and private) is often used as an important indicator of government debt sustainability (Reinhart and Rogoff, 2009 and 2011). This is because, historically, much of government debt was external and that more data on external rather than government debt are available. These countries tend to default at a relatively low level of external debt. Among default episodes between 1970-2008 reported by Reinhart and Rogoff (2009), more than half of all defaults occurred at external debt levels below 60% of GDP. A striking feature of these defaults was that liabilities represented on average 230% of exports and a sizeable portion of government revenues. This points to two vulnerabilities: first, borrowing was no longer in line with the exports needed to generate foreign currency with which to service foreign currency debt; second, governments had limited capacity to collect revenues signalling institutional weaknesses.

11. Thresholds at which countries tend to default also depend on a country's record of default. The better the repayment history of a country is, the greater is its capacity to tolerate debt. India has not defaulted on its debt either *de jure* or *de facto* (through long periods of high inflation). India is thus different from many other emerging economies, which have defaulted on their payment obligations (Chapter 5 of Government of India, 2017).

12. Vulnerabilities are also due to global factors. As noted by Reinhart and Rogoff (2009), peaks and troughs in commodity price cycles appear to be leading indicators of peaks and troughs in the capital flow cycle, with troughs typically resulting in multiple defaults. One lesson is that countries experiencing sudden large capital inflows are at high risk of experiencing a sovereign debt crisis.[3]

13. Major financial crises are often key ingredients in sovereign defaults. The combination of bank failures and recessions can trigger sovereign crises. Arellano and Kocherlakota (2008) find that domestic private sector default risks are positively correlated with sovereign default risk. And a large number of domestic defaults, such as bank insolvencies, often precede sovereign defaults. Reinhart and Rogoff (2011) also confirm the link between domestic financial sector problems and sovereign debt crises.

14. Since the financial and debt crises of the 1990s, the fiscal performance of the emerging and lower-income OECD economies has improved. Thanks to these improvements and stronger growth, they fared better during the recent crisis and were less affected in terms of sovereign debt problems. Indeed,

3. Aguiar and Amador (2013) provide a survey of the channels that lead to sovereign debt defaults.

most of the emerging economies have a low level of public debt. However, the debt-to-GDP ratio for Brazil and India still stands above 60%. The government finances are less vulnerable now to external developments thanks to low external borrowing (on average less than 10% of GDP) and higher foreign currency reserves, which are matching or even higher than external government indebtedness for most of them (Table 1).

Table 1. **Fiscal performance and risk indicators for emerging and lower income economies[1]**

Indicator	CHL	COL	MEX	TUR	BRA	RUS	IND	IDN	CHN	ZAF
Fiscal performance indicators										
General government financial balance (% of GDP), 2015	-2.3	-2.8	-4.1	-1.0	-10.3	-3.5	-6.9	-2.6	-2.7	-3.9
Primary balance (% of GDP), 2015	-1.9	-0.3	-1.2	1.2	-1.9	-3.2	-2.3	-1.2	-2.1	-0.6
Interest payments (% of GDP), 2015[2]	0.7	3.6	2.8	2.7	8.3	0.8	4.8	1.4	0.6	3.3
General government debt (% of GDP), 2015	17.5	50.6	54.0	32.9	73.7	16.4	68.1	27.3	42.9	49.8
External debt of the general government (% of GDP), 2015	3.6	9.6	11.9	5.2	5.6	1.1	3.0	11.5	1.1	9.0
Fiscal risk indicators										
Public ownership of enterprises (PMR indicator), 2013	2.2	2.3	2.6	3.6	2.7	3.9	4.5	n.a.	4.2	3.4
Terms of trade quarterly volatility,[3] 2016	5.5	6.5	2.0	4.0	4.1	7.4	3.5	3.6	3.3	2.7
Non-performing loans (to total gross loans (%)), 2016Q3[2]	1.9	3.1	2.3	3.2	3.8	9.6	8.8	3.0	1.7	3.2
Bank capital-to-assets (%), 2016Q3[2]	7.8	16.3	10.6	11.1	9.3	10.0	7.4	15.0	8.1	7.9
Bank regulatory capital to risk-weighted assets (%), 2016Q3[2]	12.9	17.5	14.7	15.5	16.5	12.7	13.1	20.6	13.1	15.5
Projected interest rate–growth differential (%)[4]	-1.8	0.2	0.4	-0.6	4.1	1.0	-4.3	-3.2	-4.7	0.2
Foreign currency reserves (% of GDP), 2016	15.8	15.6	17.8	12.3	18.6	21.8	15.5	12.0	28.1	12.7
Exchange rate monthly volatility[5]	2.8	3.5	2.8	3.1	3.8	4.3	2.4	2.0	0.6	3.6
External debt (% of GDP), 2015	65.6	37.8	31.0	64.4	116.2	45.5	36.1	31.3	77.2	45.6

Note: For better comparability, for each indicator the same source is used for all the countries. The data may therefore be different from those shown in in other parts of the document where national sources are often preferred.

1. Data refer to general government accounts.
2. Or latest available year.
3. Terms of trade volatility is calculated as the standard deviation of the quarter-on-quarter percentage changes from 2006 to 2016.
4. IMF projections 2016-21 - Fiscal Monitor 2016.
5. Exchange rate volatility is calculated as the standard deviation of the month-on-month percentage changes from 2006 to 2016.

Source: IMF; World Bank World Development Indicators database; WB Quarterly External Debt Statistics database; OECD Product Market Regulation database; OECD Economic Outlook 100 database; and OECD calculations.

15. However, some risks to the public finances appear high in some countries. The budgets in several countries (Colombia, Mexico and Russia) are heavily exposed to adverse commodity price shocks. India's government appears exposed to public enterprise risks and the banking sector suffers from large non-performing and restructured loans (about 11% of total loans in FY 2015-16).

16. The financial sector and the exchange rate of most emerging economies appear to be highly sensitive to monetary policy changes in advanced countries, especially non-conventional policies of the United States and its impact on the dollar. The volatility of capital flows remains high indicating that, despite their better fiscal performance, there are still vulnerabilities.

17. Social policies may generate public finance pressures in emerging economies, although their nature and room for manoeuvre differ across countries. Some have already a relatively mature education, social insurance and assistance system. Brazil is one of them but it is heavily exposed to future public spending on pensions due to the indexation of pension benefits to a fast rising minimum wage while the population is aging rapidly. Other emerging economies still have embryonic education, social insurance

and assistance systems. Extending their coverage and/or depth may put significant pressure on public spending. The Indian health care system aspires to provide a comprehensive array of services to all and at no cost to patients. However, with public spending on health care at less than 1½ per cent of GDP, it struggles to do so in practice (Joumard and Kumar, 2015). A small portion of the workforce is covered by a contributory pension scheme, reflecting the large incidence of informal employment. Although the official retirement age is 55 to 58, depending on the scheme, only one in 10 people aged 60 or more receives a pension (Crisil, 2015), with women and rural citizens faring particularly poorly. On the positive side, the dependency ratio is projected to decline up to 2040. India also has room to raise more revenue from personal income and property taxes to finance the increase in social and physical infrastructure (Joumard et al., 2017).

18. Emerging economies remain exposed to the debt intolerance phenomenon. Reinhart and Rogoff (2011) find that when external debt of emerging markets is above 30-35 % of GDP, the likelihood of a government default starts to increase significantly. This implies that fiscal space is much more limited than in the advanced economies, although the need for infrastructure investment is high. Taking into account the various risk factors and especially external debt, the quantity of foreign reserves, the expected interest rate and growth differential and the maturing of health and pension schemes, Fall et al. (2015) suggested that the government debt threshold for emerging economies is probably in a range of 30 to 50% debt to GDP ratio.[4]

Government debt scenarios for India

The prudent debt level scenario

19. Although India's public deficit and debt are high compared with other emerging economies, risks and costs seem relatively low. Public debt is largely denominated in rupees, reducing external vulnerabilities. India also benefits from a long debt maturity (which reduces rollover risks) and high currency reserves; it has a high revenue potential from asset sales, as the government owns many public enterprises. The on-going reform of price subsidies is also helping contain public spending pressures. Overall, these factors justify setting a debt threshold at 60% of GDP for India, i.e. somewhat above the 30 to 50% range suggested by Fall et al. (2015) for emerging economies, and is in line with the sustainable debt-to-GDP level recommended by the FRBM Review Committee in 2017.[5]

20. To reduce the risk of going beyond the 60% of GDP debt threshold, a prudent debt target needs to be set. A stochastic debt analysis was developed to quantify the uncertainties surrounding key macroeconomic variables and the risk of overshooting the debt threshold, and to calculate the cushion that is needed to stay below the debt threshold in the case of adverse shocks (Box 2) (Fall and Fournier, 2015). Equations for output, inflation, the short-term and long-term interest rate and the primary balance were estimated for OECD countries and shocks jointly drawn from the estimated co-variance of the residuals of

4. For the advanced economies, the empirical estimates suggest a gross government debt threshold range, where negative effects of debt start to dominate, of about 70 to 90% of GDP. For the euro area countries, recent events suggest that debt thresholds are lower than for the other advanced OECD economies, because they are constrained by the absence of a country-level monetary policy. Capital flows or circulation is free in the euro area, leading to contagion risks, while labour and goods markets are less well integrated, making adjustment to shocks tougher and more long-lasting than in mature federations. These considerations would suggest that the debt threshold for euro area countries is in a range of about 50 to 70% debt to GDP.

5. A shift of the debt threshold can be translated into a similar shift of the prudent debt ratio in a first order approximation. For instance, should the debt threshold be set at 50% instead of 60%, than the prudent debt ratio should be decreased by about 10 percentage points.

these equations. As the data for estimating the equations are not readily available for emerging economies, the coefficients estimated for the OECD countries are used to extract India's residuals and to simulate debt trajectories.[6] The moderate size of the residuals suggests that the equations estimated by Fall and Fournier (2015) fit reasonably well for India. The prudent debt target is defined as the median debt by 2040 such that there is less than a 25% risk to go beyond the debt threshold of 60% of GDP.

Box 2. Simulating the effect of shocks on public debt

A set of seven equations is used to simulate jointly six variables and public debt dynamics. The six variables are the growth rate g_{it} of country *i* at year *t*, the inflation rate measured by the GDP deflator π_{it}, the overnight nominal interest rate r_{it}^{s}, the long-term nominal interest rate r_{it}^{l}, the primary balance PB_{it}, and the structural primary balance PB_{it}^{st}.

The framework includes three deterministic equations and four estimated stochastic equations, which provide the main coefficients for the simulations. The first deterministic equation is the fiscal reaction function, reflecting past behaviour of the government, as estimated in the baseline estimate of Fall and Fournier (2015). The debt accumulation dynamic is calculated with an equation that takes into account the share of debt that needs to be rolled over each year. The structural balance is defined as the primary balance minus about 0.4 times the output gap, consistent with the estimates of the impact of the business cycle on the primary balance reported in Sorbe (2012). Four estimated stochastic equations capture short-term shocks on growth, inflation, monetary policy and on long-term interest rates:

(1) $g_{it} = \beta_{1,1}GAP_{it-1} + \beta_{1,2}\left(r_{it-1}^{l} - \pi_{it-1}\right) + \beta_{1,3}\Delta PB_{it}^{st} + \beta_{1,4}\Delta PB_{it}^{st}1_{t\geq 2009} + \beta_{1,5}\Delta PB_{it}^{st}1_{t\geq 2009} + \beta_{1,6}emu_{it}1_{t\geq 2009} + \beta_{1,7}\Delta PB_{it}^{st}GAP_{it-1} + \beta_{1,8}GAP_{it-1}1_{t\geq 2009} + u_{1,i} + \alpha_{1,t} + \varepsilon_{1,it}$

(2) $\pi_{it} = \beta_{2,1}\pi_{it-1} + \beta_{2,2}\pi_{it-2} + \beta_{2,3}\pi_{it-3} + \beta_{2,4}GAP_{it-1} + u_{2,i} + \alpha_{2,t} + \varepsilon_{2,it}$

(3) $r_{it}^{s} = \beta_{3,1}GAP_{it-1} + \beta_{3,2}(\pi_{it-1} - \pi_{tar}) + u_{3,i} + \alpha_{3,t} + \varepsilon_{3,it}$

(4) $r_{it}^{l} = \beta_{4,1}r_{it}^{s} + \beta_{4,2}g_{it-1} + \beta_{4,3}\pi_{it-1}^{c} + \beta_{4,4}D_{it-1} + \beta_{3,5}emu_{it}D_{it-1} + u_{4,i} + \varepsilon_{4,it}$

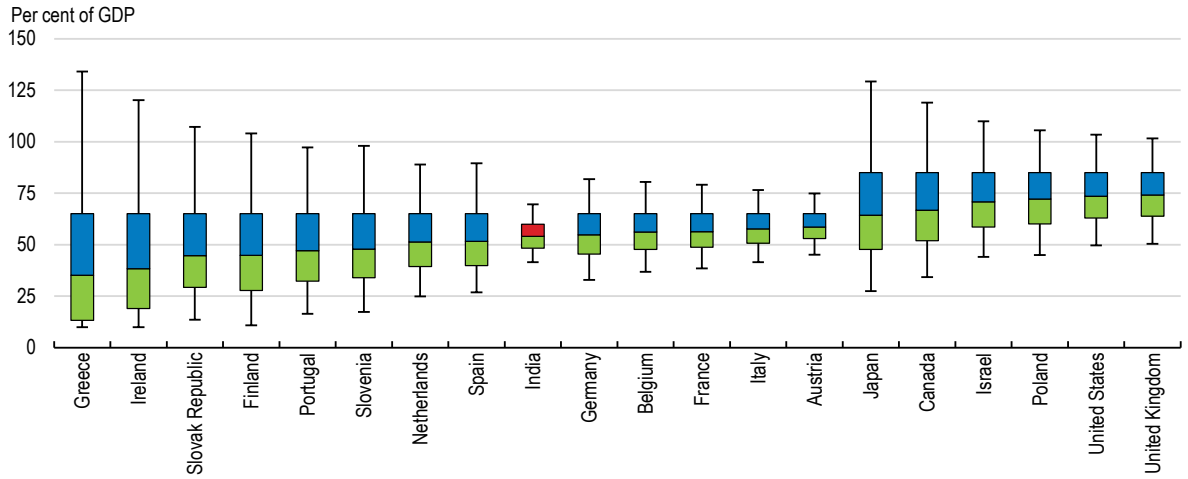
where emu_{it} is a dummy equal to one for the countries that are a member of the euro area, π_{tar} is the inflation target of the central bank assumed to be equal to two, and π_{it}^{c} denotes core inflation. u_i and α_t are country and year fixed effects, $\varepsilon_{1,it}$, $\varepsilon_{3,it}$ and $\varepsilon_{4,it}$ follow an AR(1) process and $\varepsilon_{2,it}$ is a white noise error term.

Country-specific residuals of each of these equations are combined with output gap revisions and the time fixed effect of the first equation to capture four country specific short-term shocks, a country-specific potential output shock and a common growth shock. Shocks are jointly-drawn from the estimated co-variance of the residuals of these equations. Countries differ in terms of initial positions, the size of shocks, long-term growth potential, and heterogeneous structural features are captured by country-specific fixed effects.

21. Uncertainties surrounding key macroeconomic variables, in particular GDP growth and inflation, and their impact on debt are relatively limited in India. As a result, the "prudent" debt target is estimated at 54% of GDP, i.e. relatively close to the 60% of GDP debt threshold (Figure 5). Were the Indian society to have a higher risk aversion, the prudent debt target would be lower (e.g. at 49% of GDP when the probability to breach the debt threshold is set at below 10% instead of 25%).

6. Future research could investigate whether a similar framework could be estimated for emerging economies, considering shocks that matter more for these economies.

Figure 5. **Public debt range under a prudent scenario**



Note: The thick horizontal lines show the median debt level, boxes show the interquartile range, and extreme values are the 5th and the 95th percentiles. Only those OECD countries that need to generate a primary surplus and India are shown.

Source: Fall et al. (2015) and OECD calculations.

Scenarios for future debt developments

22. General government debt declined from 86% of GDP in FY 2003-04 to 68% in FY 2015-16, despite relatively large primary deficits. The effective interest rate on public debt is relatively low – public bonds face a captive market as the statutory liquidity ratio (SLR) forces banks to hold government securities – and the average maturity is high. This, combined with robust economic growth rate, has contributed to the favourable debt dynamics.

23. For the future, the sustainability of India's general government debt can be assessed based on stylised assumptions for growth, inflation, interest rates and fiscal policy up to 2040 (Figure 6). The scenarios reveal that:

- Under the baseline scenario of unchanged policies, the primary deficit to GDP ratio is assumed to be 2.5% GDP (i.e. its level in FY 2015/16), inflation at 4%, the long-term interest rate in real terms at 2¾% (i.e. the average level over 2015 and the first half of 2016), and economic growth is assumed to remain high at 7.5%.[7] The debt to GDP ratio declines to 55% of GDP in 2040, i.e. to about the "prudent" debt level.

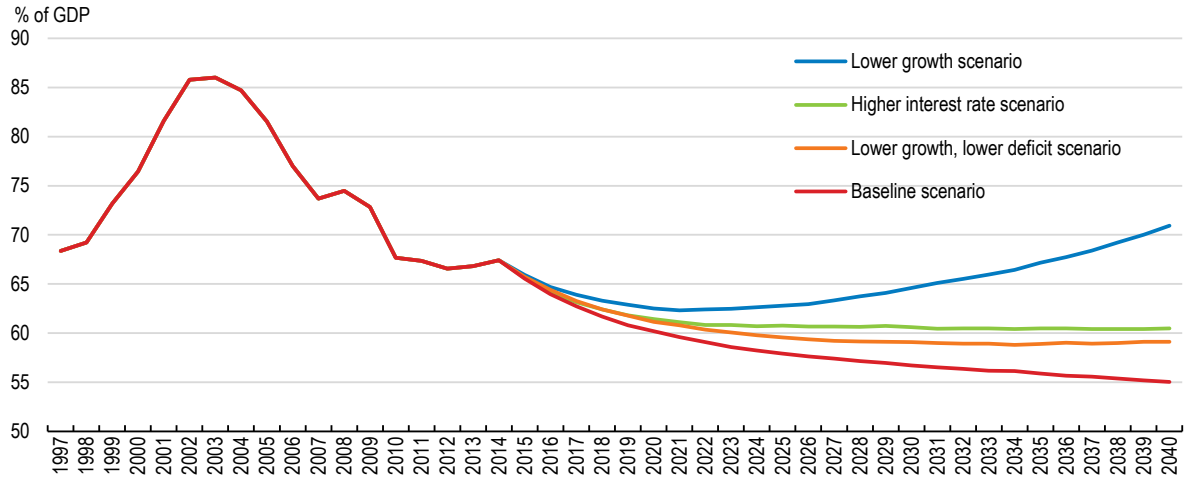
- If nominal interest rates were to rise gradually by one percentage point by 2025, the debt to GDP ratio would still decline to 60% of GDP in 2040.

7. In recent years, inflation measured by the consumer price index has been consistently higher than measured by the GDP deflator. In FY 2015-16, CPI inflation stood at 4.9% while the GDP deflator suggested inflation at 1%. The simulation exercise uses CPI inflation and may thus overestimate nominal GDP growth if the gap between CPI and GDP inflation were to persist. In this event, the debt dynamic may be less favourable than shown.

- With economic growth gradually declining towards 5%, and no policy changes, the debt-to-GDP ratio would be on a rising trajectory and be above 70% of GDP in 2040.

- Even in a lower growth scenario, the public debt to GDP ratio can stabilize at slightly below 60% if the primary deficit is gradually reduced by one percentage point.

Figure 6. **Public debt to GDP ratio under four stylized scenarios**



Source: OECD calculations.

24. A number of risks surround the scenario whereby the public debt to GDP ratio declines gradually in the absence of a policy change. First: the government faces contingent liabilities, reflecting large financial losses in public enterprises and non-performing loans in public banks. According to the government's Indradhanush plan, banks will need INR 1.8 trillion (1.4% of FY 2014-15 GDP) by end-March 2019 for this purpose. Second: a reversal in commodity and food prices would raise the cost of subsidies, undermining fiscal health. Third, financial repression – in particular the obligation for banks to hold public bonds – keeps public debt costs low, but can raise the cost of capital for other borrowers, and crowd out private investment and reduces medium-term income growth (Government of India, 2015). Some tensions may also appear should growth be lower over the medium term as this would require a tighter fiscal policy.

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