

Does India's Sovereign Credit Rating reflect its fundamentals No!

চিৎ যেথা ভয়শূন্য, উচ্চ যেথা শির...
ভারতেরে সেই প্রর্গে করো জাগরিত।

**“Where the mind is without fear and the head is held high ...
Into that heaven of freedom, my Father, let my country awake”.**

— Rabindranath Thakur

Never in the history of sovereign credit ratings has the fifth largest economy in the world been rated as the lowest rung of the investment grade (BBB-/Baa3). Reflecting the economic size and thereby the ability to repay debt, the fifth largest economy has been predominantly rated AAA. China and India are the only exceptions to this rule – China was rated A/A2 in 2005 and now India is rated BBB-/Baa3. Do the fundamentals that supposedly drive sovereign credit ratings rationalise this historical anomaly? In this chapter, the Survey asks this important question and answers a resounding No!

Within its sovereign credit ratings cohort – countries rated between A+/A1 and BBB-/Baa3 for S&P/ Moody's – India is a clear outlier on several parameters, i.e. a sovereign whose rating is significantly lower than mandated by the effect on the sovereign rating of the parameter. These include GDP growth rate, inflation, general government debt (as per cent of GDP), cyclically adjusted primary balance (as per cent of potential GDP), current account balance (as per cent of GDP), political stability, rule of law, control of corruption, investor protection, ease of doing business, short-term external debt (as per cent of reserves), reserve adequacy ratio and sovereign default history. The outlier status remains true not only now but also during the last two decades.

Credit ratings map the probability of default and therefore reflect the willingness and ability of borrower to meet its obligations. India's willingness to pay is unquestionably demonstrated through its zero sovereign default history. India's ability to pay can be gauged not only by the extremely low foreign currency denominated debt of the sovereign but also by the comfortable size of its foreign exchange reserves that can pay for the short term debt of the private sector as well as the entire stock of India's external debt including that of the private sector. India's non-government short term-debt as per cent of forex reserves stood at 19 per cent as of September 2020. India's forex reserves can cover an additional 2.8 standard deviation negative event, i.e. an event that can be expected to manifest with a probability of less than 0.1 per cent after meeting all short-term debt. India's forex reserves stood at US\$ 584.24 as of January 15, 2021, greater than India's

total external debt (including that of the private sector) of US\$ 556.2 bn as of September 2020. In corporate finance parlance, therefore, India resembles a firm that has negative debt, whose probability of default is zero by definition. Despite this compelling statistic, India is an inexplicable outlier in its ratings cohort. The Survey's findings are consistent with a large academic literature that highlights bias and subjectivity in sovereign credit ratings, especially against countries with lower ratings.

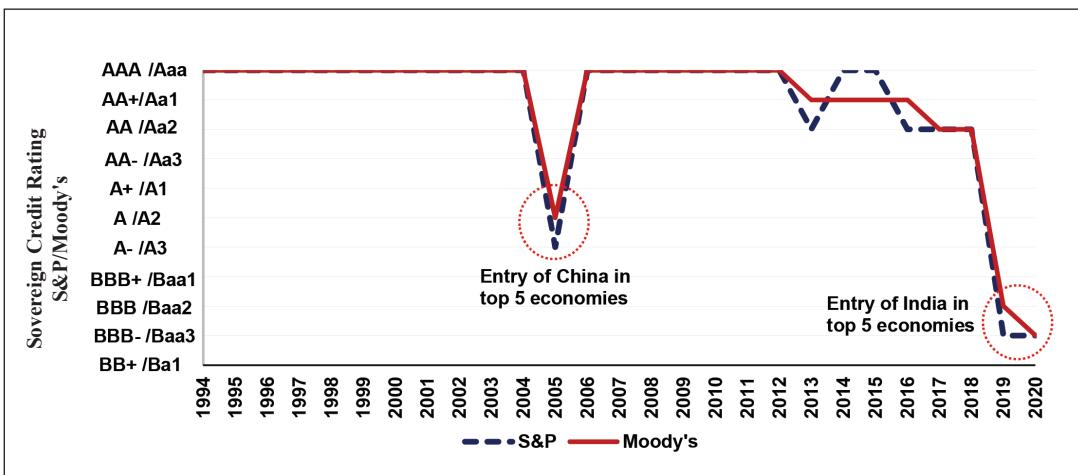
As ratings do not capture India's fundamentals, it comes as no surprise that past episodes of sovereign credit rating changes for India have not had major adverse impact on select indicators such as Sensex return, foreign exchange rate and yield on government securities. Past episodes of rating changes have no or weak correlation with macroeconomic indicators.

India's fiscal policy, therefore, must not remain beholden to a noisy/biased measure of India's fundamentals and should instead reflect Gurudev Rabindranath Thakur's sentiment of a mind without fear. Despite ratings not reflecting fundamentals, noisy, opaque and biased credit ratings damage FPI flows. It is therefore imperative that countries engage with CRAs to make the case that their methodology must be corrected to reflect economies' ability and willingness to pay their external obligations. Moreover, the pro-cyclical nature of credit ratings and its potential adverse impact on economies, especially low-rated developing economies must be expeditiously addressed. India has already raised the issue of pro-cyclicality of credit ratings in G20. In response, the Financial Stability Board (FSB) is now focusing on assessing the pro-cyclicality of credit rating downgrades.

THE BIAS AGAINST EMERGING GIANTS IN SOVEREIGN CREDIT RATINGS

3.1. Never in history has the fifth largest economy in the world been rated a BBB-. Since 1994, the only times that the sovereign credit ratings of the fifth largest economy in current US\$ terms has precipitously declined, has been when emerging giants China and India have come to occupy the position. Figure 1 shows that the sovereign credit rating of the fifth largest economy (current US\$) by two credit ratings agencies (CRAs) declined steeply in 2005 following China's entry into the top five economies. Similarly, the sovereign credit rating of the fifth largest economy (current US\$) by two CRAs declined steeply in 2019 following India's entry into the top five economies.

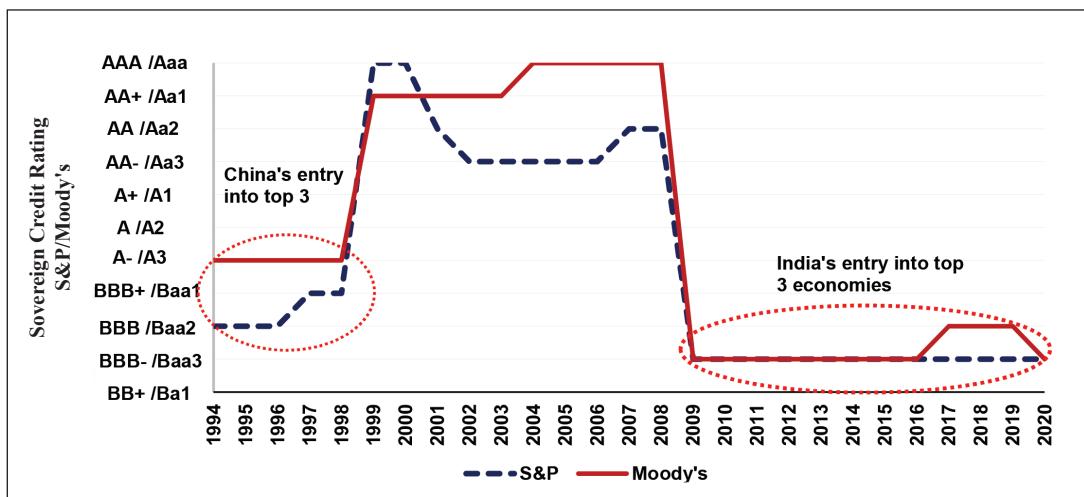
Figure 1: Sovereign Credit Rating of Fifth Largest Economy (Current US \$)



Source: Bloomberg and World Bank

3.2. A similar trend is seen in PPP current international \$ terms. Since 1994, the only times that the sovereign credit ratings of the third largest economy in PPP terms has steeply declined, has been when emerging giants China and India have become the third largest economy. Figure 2 shows that the sovereign credit rating of the third largest economy (PPP) declined sharply in 1994 by two CRAs, following China's entry into the top three economies. Similarly, the sovereign credit rating of the third largest economy (PPP) declined sharply in 2009 by two CRAs, following India's entry into the top three economies.

Figure 2: Sovereign Credit Rating of Third Largest Economy (PPP Current International \$)



Source: Bloomberg and World Bank

INDIA'S SOVEREIGN CREDIT RATINGS

3.3 This anomaly in sovereign credit ratings has continued for India. Currently, India is rated investment grade by three major CRAs – S&P, Moody's and Fitch. India's sovereign credit ratings during 1998-2020 are presented in Table 1. Rationale given for the same by these CRAs is depicted in Figure 3. India's sovereign credit rating downgrades during 1998-2018 are mainly confined to the 1990s on account of the post-Pokhran sanctions in 1998. India's sovereign credit ratings upgrades have mainly been witnessed in the second half of 2000s, in recognition of higher economic growth prospects and strengthened fundamentals of the Indian economy.

3.4 Further, during most of the 1990s and mid 2000s, India's sovereign credit rating was speculative grade. India's credit rating was upgraded to investment grade by Moody's in 2004, Fitch in 2006 and S&P in 2007 (Table 1). Notably, Indian economy grew at an average rate of over six per cent (Figure 4), and at approximately eight per cent in several years during this period. Hence, during most of the decade of 1990 and early 2000's, India's high rate of economic growth co-existed with a sovereign credit rating of "speculative grade".

Table 1: India's Sovereign Credit Rating (1998-2020)

Date	S&P	Moody's	Fitch
June 1998		Ba2*	
October 1998	BB*		
March 2000			BB+*
November 2001			BB*
February 2003		Ba1*	
January 2004			BB+*
January 2004		Baa3	
February 2005	BB+*		
August 2006			BBB-
January 2007	BBB-		
November 2017		Baa2	
June 2020		Baa3	

*Speculative Grade; Green highlights ratings upgrade; Red highlights ratings downgrade, Black indicates first rating
Source: Compiled from S&P Global, Fitch and Moody's

Box 1: What are Sovereign Credit Ratings?

Sovereign credit ratings seek to quantify issuers' ability to meet debt obligations. When favourable, these can facilitate countries access to global capital markets and foreign investment. Table below presents what three key CRAs – S&P, Moody's and Fitch, seek to measure.

What Credit Ratings Measure

Fitch	"Credit ratings express risk in relative rank order, which is to say they are ordinal measures of credit risk and are not predictive of a specific frequency of default or loss. Fitch Ratings' credit ratings do not directly address any risk other than credit risk, ratings do not deal with the risk of a market value loss on a rated security due to changes in interest rates, liquidity and other market considerations."
Moody's	"There is an expectation that rating will, on average, relate to subsequent default frequency, although they typically are not defined as precise default rate estimates. Moody's ratings are therefore intended to convey opinions of the relative creditworthiness of issues and obligations...Moody's rating process also involves forming views about the likelihood of plausible scenarios, or outcomes—not forecasting them, but instead placing some weight on their likely occurrence and on the potential credit consequences. Normal fluctuations in economic activity are generally included in these scenarios, and by incorporating our views about the likelihood of such scenarios, we give our ratings relative stability over economic cycles and a sense of horizon."
Standard & Poor's	"Standard & Poor's credit ratings are designed primarily to provide relative rankings among issues and obligations of overall creditworthiness; the ratings are not measures of absolute default probability. Creditworthiness encompasses likelihood of default and also includes payment priority, recovery, and credit stability."

Source: IMF (2010)

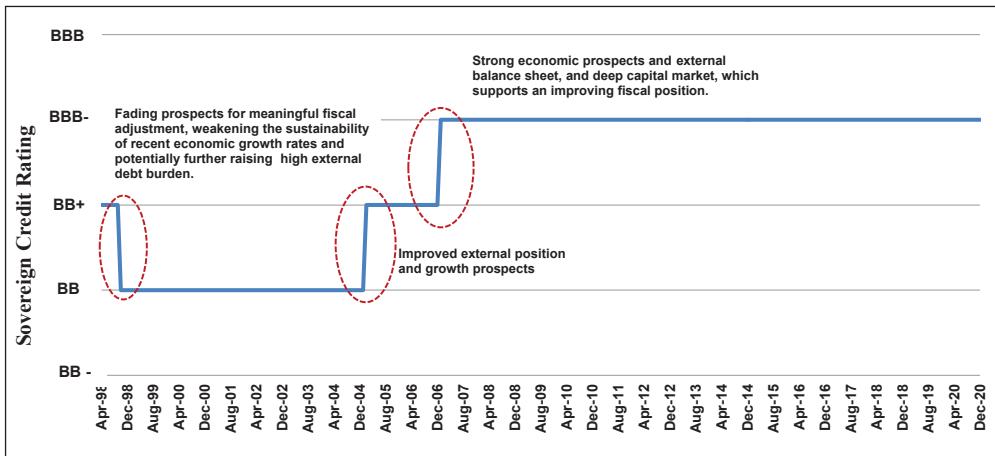
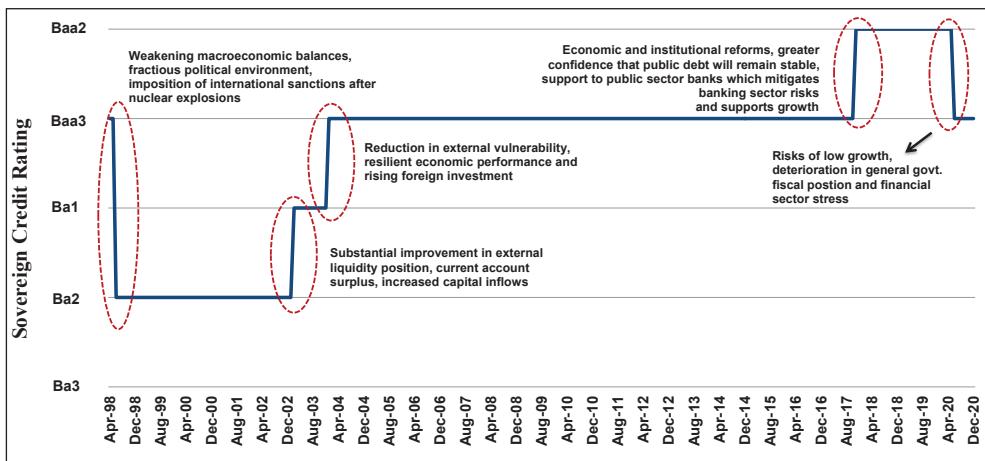
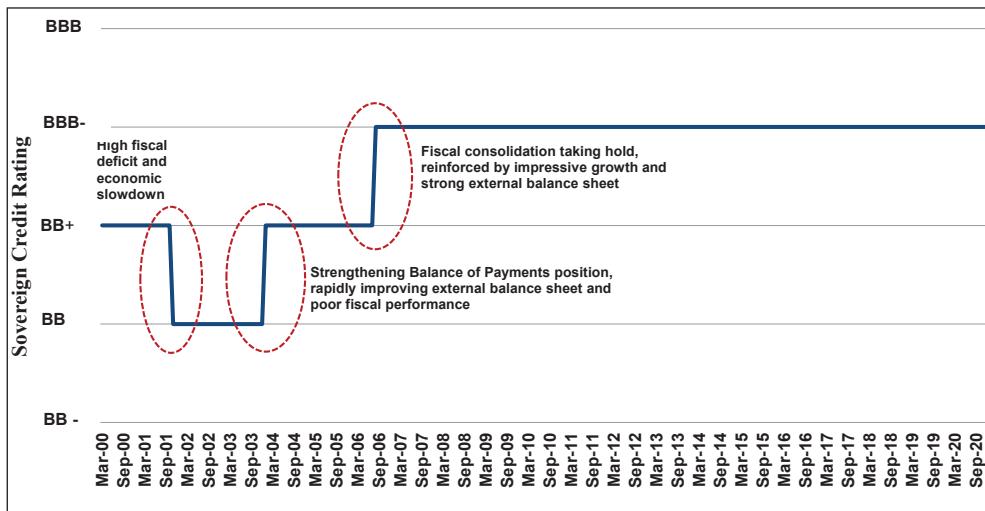
Sovereign credit ratings broadly rate countries as either investment grade or speculative grade, with the latter projected to have a higher likelihood of default on borrowings. The threshold of Investment grade is considered to be BBB- for S&P and Fitch and Baa3 for Moody's. Table below presents the rating scale comparison between S&P, Moody's and Fitch.

Credit Rating Scale Comparison between some major CRAs

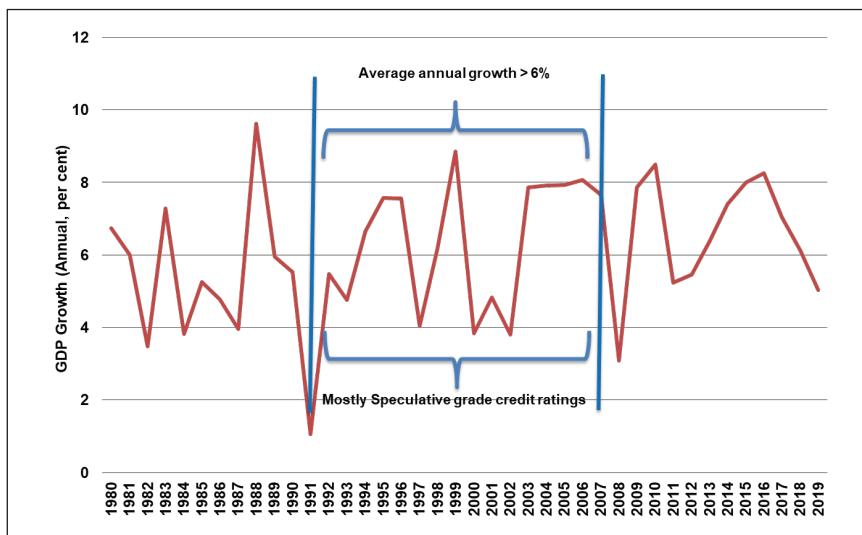
Interpretation	Fitch and S&P	Moody's
Highest quality	AAA	Aaa
High quality	AA+	Aa1
	AA	Aa2
	AA-	Aa3
Strong payment capacity	A+	A1
	A	A2
	A-	A3
Adequate payment capacity	BBB+	Baa1
	BBB	Baa2
	BBB-	Baa3
Likely to fulfill obligations, on going uncertainty	BB+	Ba1
	BB	Ba2
	BB-	Ba3
High-risk obligations	B+	B1
	B	B2
	B-	B3
Vulnerable to default	CCC+	Caa1
	CCC	Caa2
	CCC-	Caa3
Near or in bankruptcy or default	CC	Ca
	C	C
	D	D

Source: IMF (2010)

Examples of credit ratings methodologies employed by some CRAs may be seen in the Appendix, which presents the credit ratings methodology of Moody's and Fitch.

Figure 3: India's Sovereign Credit Rating by CRAs (1998-2020) and Rationale**(A) S&P****(B) Moody's****(C) Fitch**

Source: S&P Global, Moody's and Fitch

Figure 4: India's GDP Growth Annual (Per cent) (1990-2020)

Source: MoSPI and RBI

DOES INDIA'S SOVEREIGN CREDIT RATING REFLECT ITS FUNDAMENTALS? NO!

3.5 There is a large academic literature that highlights bias and subjectivity in sovereign credit ratings, especially against countries with lower ratings (see Box 2 for a select literature review). Do the fundamentals that supposedly drive sovereign credit ratings rationalise this historical anomaly of India's low ratings? In this chapter, the Survey asks this important question and answers a resounding No!

Box 2: Select Literature on Bias and Subjectivity in Sovereign Credit Ratings

Ferri, Liu, and Stiglitz (1999) suggested that CRAs aggravated the East Asian crisis by first failing to predict its emergence and thereafter becoming excessively conservative. CRAs downgraded East Asian crisis countries more than what would have been justified by these countries' worsening economic fundamentals. This adversely affected the supply of international capital to these countries. Ferri, Liu, and Stiglitz (1999) also proposed an endogenous rationale for CRAs becoming excessively conservative after making errors in predicting the crisis – that of recovering from the damage caused by these errors and rebuilding their own reputation.

Reinhart (2002) found evidence of procyclicality in ratings through her study of 62 economies over the period 1979-1999. She observed that sovereign credit ratings tend to be reactive, especially for emerging market economies, with significantly higher probability of downgrade as well as higher size of downgrade as compared to developed economies.

Kaminsky and Schmukler (2002) also found evidence of procyclicality of credit ratings and that rating agencies may be contributing to financial market instability in emerging economies. They observed that rating upgrades take place after market rallies while downgrades take place after downturns. Further, they suggested that even “*if rating agencies do not behave procyclically, their announcements may still trigger market jitters because many institutional investors can hold only investment-grade instruments. Downgrading (or upgrading) sovereign debt below (or above) investment grade may thus*

have a drastic impact on prices because these rating changes can affect the pool of investors. These effects are not confined to the pool of investors acquiring sovereign debt. When a credit rating agency downgrades a country's sovereign debt, all debt instruments in that country may have to be downgraded accordingly because of the sovereign ceiling doctrine. Commercial banks downgraded to subinvestment grade will find it costly to issue internationally recognized letters of credit for domestic exporters and importers, isolating the country from international capital markets. Downgrading corporate debt to subinvestment grade means that firms will face difficulties issuing debt on international capital markets".

Gültekin-Karakaş, Hisarcıklilar and Öztürk (2010) studied the sovereign credit ratings of 93 countries from 1999-2010 and found evidence that CRAs give higher ratings to developed countries regardless of their macroeconomic fundamentals. They suggested that macroeconomic fundamentals should be of core importance in assigning sovereign credit ratings since they indicate the ability and willingness to pay of countries.

Vernazza and Nielsen (2015) decomposed the sovereign credit ratings assigned by CRAs into objective and subjective components. They found that the objective component has explanatory power to predict defaults in the short and long run. However, they found that the "damaging bias" of sovereign credit ratings lies in its 'subjective' component, which biases default predictions in the wrong direction, with potentially dramatic consequences. Vernazza and Nielsen (2015) suggested that the "*biggest casualty of this was the Eurozone periphery, which was downgraded far too heavily during the 2009–2011 sovereign debt crisis as the rating committees repeatedly overruled the signal coming from fundamentals. In light of our findings, we suggest that credit rating agencies should be stripped of their regulatory powers and these transferred to an international body. Failing that, the ratings agencies should be forced to substantially increase transparency, including publishing a separate breakdown of the 'objective' and 'subjective' components of ratings, the minutes of the rating committees, and the voting records".*

De Moor, Luitel, Sercu and Vanpée (2018) found that the subjective component of S&P, Moody's and Fitch ratings tends to be large, especially for low-rated countries. Through their study of 23 developed and 80 emerging economies during 1995-2014, they observed that for the lowest-rated countries, the subjective component of sovereign credit ratings led to a downward adjustment of the objective rating by up to five notches while for the highest-rated countries, it led to an upward adjustment by one to four notches. They also found that this subjective component was uniform across credit rating agencies and varied mildly over time without following clear trends.

Tennant and Tracey (2016) observed scope for bias in sovereign credit ratings regarding choice of determinants and weights assigned to them, which is further enhanced given their opacity and subjectivity. Their study of 132 countries during 1997-2011 highlighted distinctions between ratings actions taken for high income and lower-middle and low income countries, as well as between regional grouping of poor countries. Their results provided clear empirical indications of bias – "*S&P, Moody's and Fitch all find it more difficult to upgrade poor countries relative to rich countries, for any given improvement in ability and willingness to repay debts. S&P and Fitch are further shown to find it more difficult to upgrade African countries relative to other developing countries, for any given improvement in ability and willingness to repay debts. These results are taken as a strong indication of bias, as they are highly significant even though we controlled for the key observed economic and*

institutional determinants of sovereign debt ratings, unobserved country-specific fixed effects and the CRA's desire for rating stability".

Fuchs and Gehring (2017) examined the evidence of “home bias” in sovereign credit ratings by CRAs based on data of 143 sovereigns from nine agencies based in six countries. Their findings suggested that respective home country, countries with linguistic and cultural similarity, and countries with higher home-bank exposures received higher ratings than justified by their political and economic fundamentals.

Hadzi-Vaskov and Ricci (2019), in their study of 106 countries during 1998-2014, found further evidence of bias and subjectivity in sovereign credit ratings. They observed a non-linear negative relation between public debt and sovereign credit ratings, which further depends on the rating grade. This non-linear effect is strongest in the low investment grades, smallest in the non-investment grades, and intermediate for high investment grades. For instance, through an ordered probit and logit model, they found that a debt increase by ten per cent of GDP was associated with a five per cent higher probability of being downgraded within a window of five adjacent grades for countries rated in the low investment grades while it was almost zero for countries with the lowest ratings in the non-investment grade, and three percent for best rated countries in the higher investment grade. They found that this non-linear relationship between public debt and sovereign credit ratings of advanced and emerging market economies explained the varied effect of debt on sovereign credit ratings between these countries, even when controlling for income and other macroeconomic parameters.

Tennant, Tracey and King (2020), through a heterogeneous middle-inflated ordered model, found a statistical bias in sovereign credit ratings against poor countries whenever their fundamentals change, highlighting a cause of concern since such biases can have self-fulfilling consequences as suggested by second-generation crisis models.

3.6 Figure 1 and 2 suggest evidence of bias in sovereign credit ratings (see Box 2) against emerging giants. It may be seen that sovereign credit ratings of the fifth largest economy in current US\$ terms and that of the third largest economy in PPP \$, dip sharply with the entry of China and India in this category.

Box 3: Cohort for Examining whether Sovereign Credit Ratings reflects India's Fundamentals

A cohort of 33 countries (including India) is used for examining whether sovereign credit ratings reflect India's fundamentals across different dimensions. This cohort has sovereign credit ratings between A+/A1 to BBB-/Baa3 for S&P/ Moody's.

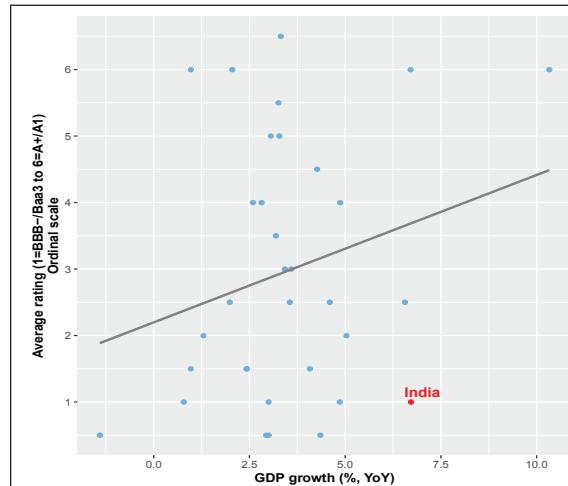
For purposes of graphical analysis, we use average sovereign credit rating across S&P and Moody's, where we set ratings below BBB-/Baa3 = 0, BBB-/Baa3 = 1, BBB/Baa2 = 2, BBB+/Baa1 = 3, A-/A3 = 4, A/A2 = 5, A+/A1 = 6 and ratings above A+/A1 = 7.

3.7 Figures 5-16 show correlations between sovereign credit ratings and different parameters for India's sovereign credit ratings cohort (see Box 3). Figure 5 shows a positive correlation between sovereign credit ratings and GDP growth rate across India's cohort. India is clearly a negative outlier i.e. it is currently rated much below expectation for its level of GDP growth.

3.8 A negative correlation is observed between sovereign credit ratings and Consumer Price

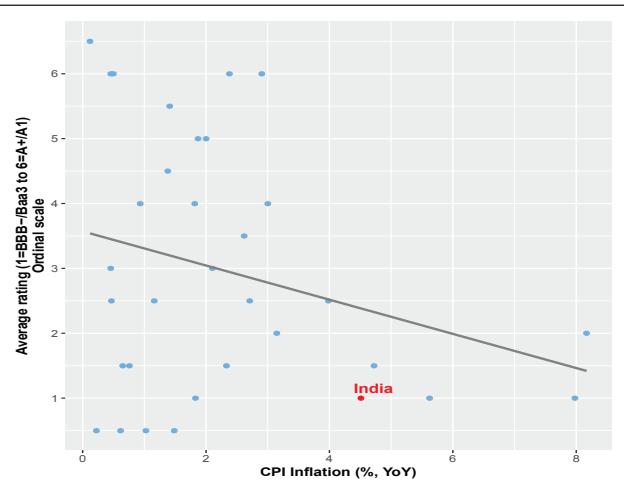
Index (CPI) inflation (Figure 6) across India's sovereign credit ratings cohort. It may be seen that India is a negative outlier, rated much below expectation for its level of CPI inflation.

Figure 5: Sovereign Credit Ratings and GDP Growth Annual (Per cent)



Source: Bloomberg and IMF

Figure 6: Sovereign Credit Ratings and CPI Inflation (Per cent)

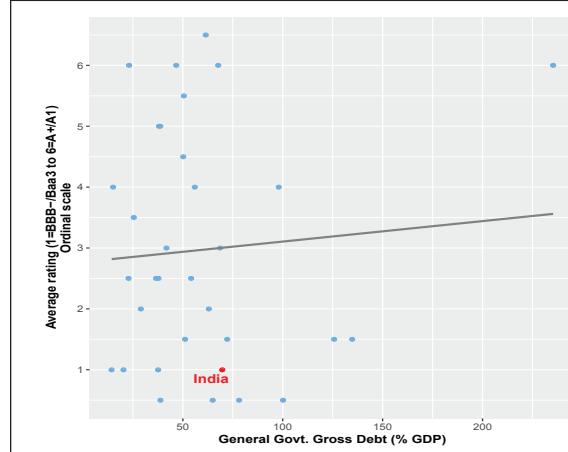


Source: Bloomberg and IMF

3.9 Figure 7 shows a negative correlation between sovereign credit ratings and general government gross debt (as per cent of GDP) across India's sovereign credit ratings cohort. India is a negative outlier and is currently rated much below expectation for its level of general government gross debt (as per cent of GDP).

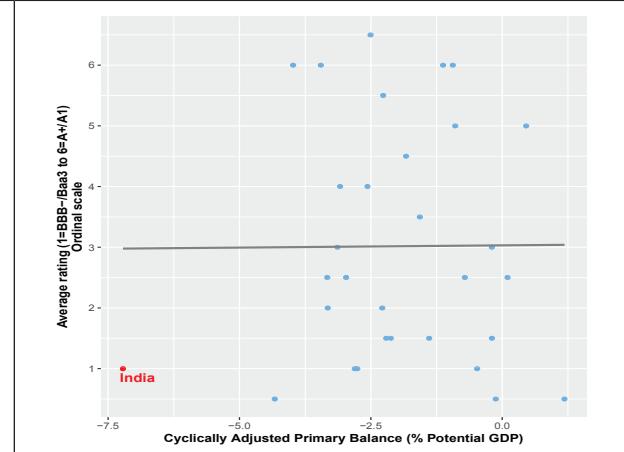
3.10 No clear correlation is observed between sovereign credit ratings and cyclically adjusted primary balance (per cent of potential GDP) across India's sovereign credit ratings cohort (Figure 8). India remains a negative outlier, currently rated much below expectation for its level of cyclically adjusted primary balance (per cent of potential GDP).

Figure 7: Sovereign Credit Ratings and General Government Gross Debt (per cent of GDP)



Source: Bloomberg and IMF

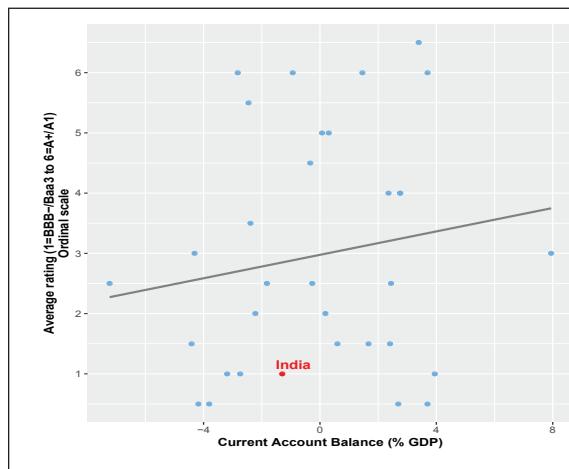
Figure 8: Sovereign Credit Ratings and Cyclically Adjusted Primary Balance (per cent of Potential GDP)



Source: Bloomberg and IMF

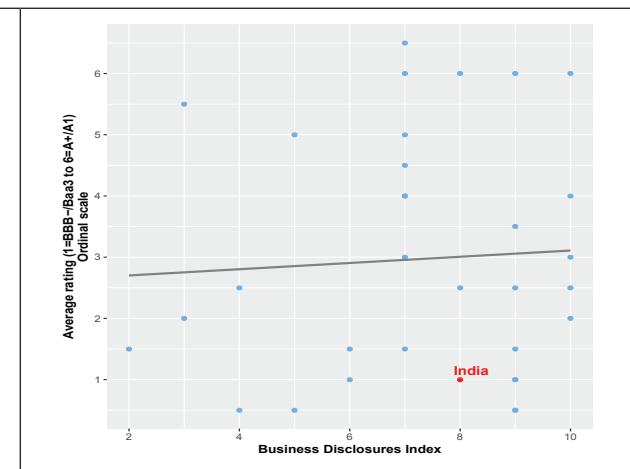
3.11 Figure 9 shows a positive correlation between sovereign credit ratings and current account balance (as per cent of GDP) across India's sovereign credit ratings cohort. However, India is a negative outlier, currently rated much below expectation for its level of current account balance (as per cent of GDP).

Figure 9: Sovereign Credit Ratings and Current Account Balance (per cent of GDP)



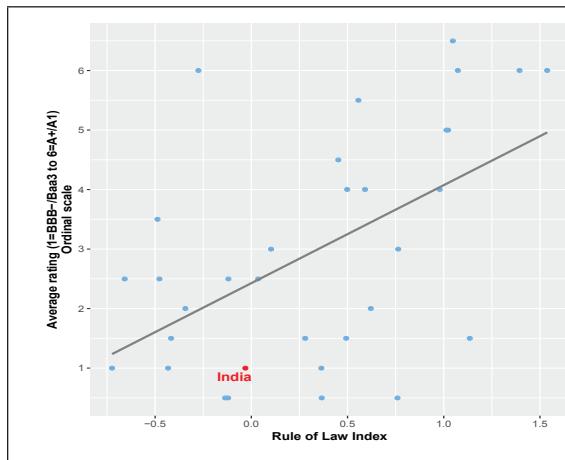
Source: Bloomberg and IMF

Figure 10: Sovereign Credit Ratings and Investor Protection (Business Extent of Disclosure Index)



3.14 A positive correlation is observed between sovereign credit ratings and government effectiveness (Figure 12) across India's sovereign credit ratings cohort. India remains a negative outlier, rated much below expectation for its level of government effectiveness.

Figure 13: Sovereign Credit Ratings and Rule of Law



credit ratings and short-term external debt (as per cent of reserves) across countries with partial capital account convertibility in India's sovereign credit ratings cohort. India continues to be a negative outlier and is currently rated much below expectation for its level of short-term external debt (as per cent of reserves).

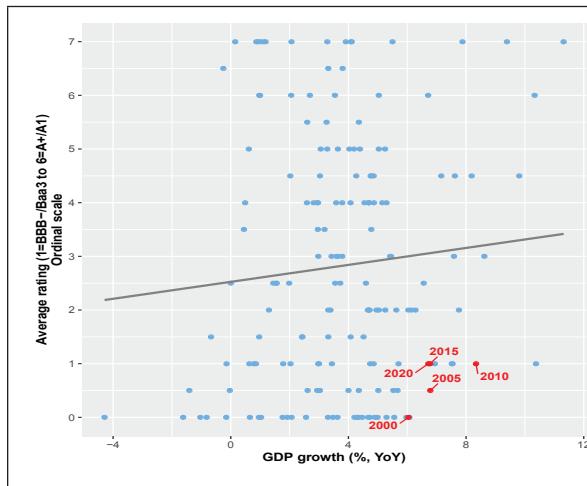
3.18 A negative correlation is observed between sovereign credit ratings and reserves adequacy ratio (Figure 16) across India's sovereign credit ratings cohort. India is a negative outlier and is rated much below expectation for its level of reserves adequacy ratio.

HAVE INDIA'S SOVEREIGN CREDIT RATINGS REFLECTED ITS FUNDAMENTALS IN THE PAST? NO!

3.19 India's negative outlier status w.r.t. its sovereign credit ratings vis-à-vis performance on several parameters remains true not only now but also during the last two decades. India has consistently been rated below expectation as compared to its performance on various parameters during the period 2000-20. Figure 17 shows that within its sovereign credit ratings cohort, India has consistently been rated much below expectation for its level of GDP growth rate during the period 2000-20.

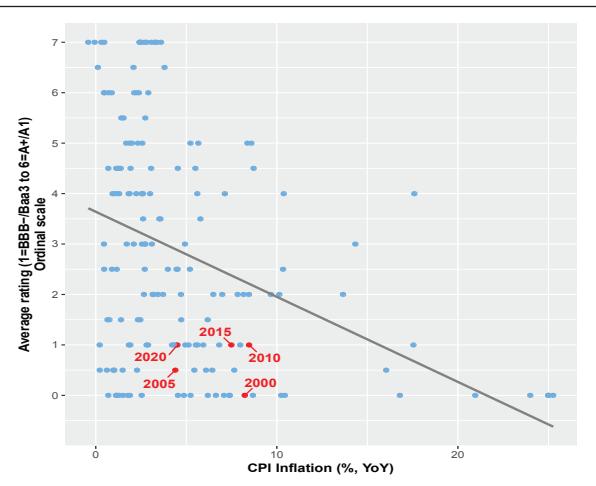
3.20 Figure 18 shows that during 2000-20, India has consistently been a negative outlier, rated much below expectation for its level of inflation within its sovereign credit ratings cohort.

Figure 17: Sovereign Credit Ratings and GDP Growth Annual (Per cent)



Source: Bloomberg, Datastream and IMF
Note: Red shows India's rating during 2000-20

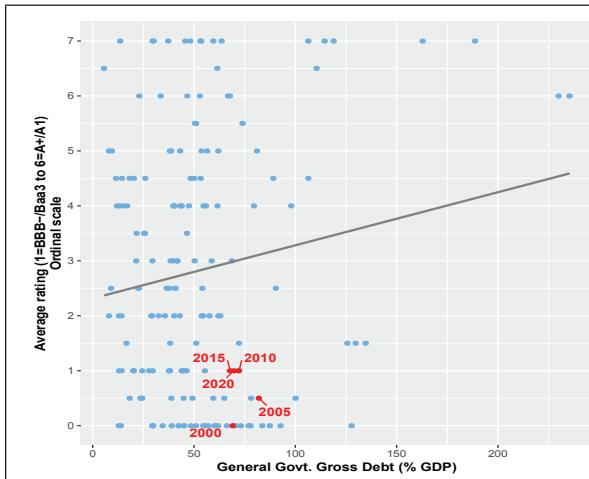
Figure 18: Sovereign Credit Ratings and CPI Inflation



Source: Bloomberg, Datastream and IMF
Note: Red shows India's rating during 2000-20

3.21 Figure 19 shows that within its sovereign credit ratings cohort, India has been a negative outlier and has consistently been rated much below expectation for its level of general government gross debt (per cent of GDP) during the period 2000-20.

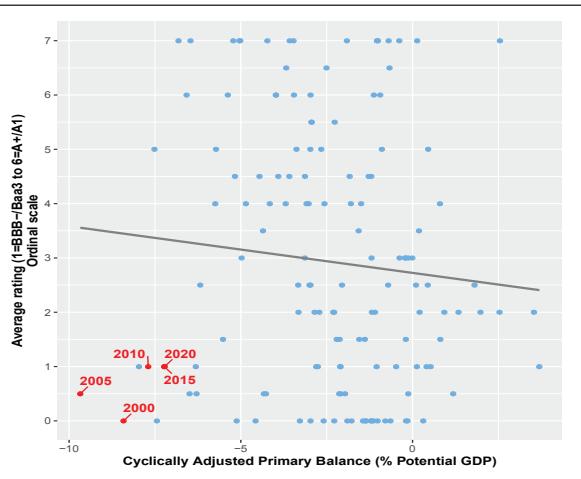
Figure 19: Sovereign Credit Ratings and General Government Gross Debt (per cent of GDP)



Source: Bloomberg, Datastream and IMF

Note: Red shows India's rating during 2000-20

Figure 20: Sovereign Credit Ratings and Cyclically Adjusted Primary Balance (per cent of Potential GDP)



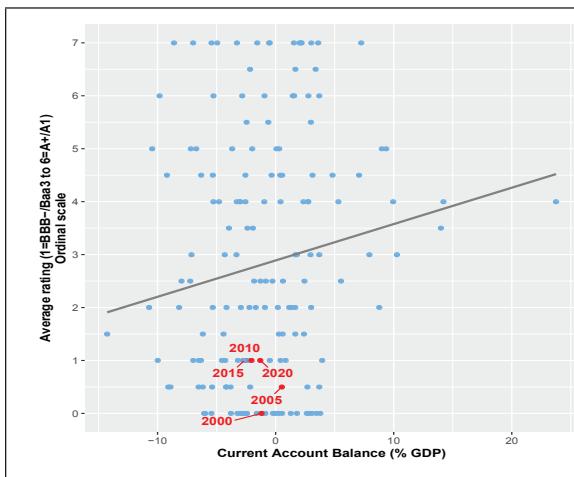
Source: Bloomberg, Datastream and IMF

Note: Red shows India's rating during 2000-20

3.22 Figure 20 shows that within its sovereign credit ratings cohort, India has consistently been rated much below expectation for its level of cyclically adjusted primary balance (per cent of potential GDP) and has been a negative outlier throughout the period 2000-20.

3.23 During 2000-20, India has consistently been a negative outlier, rated much below expectation for its level of current account balance (per cent of GDP) within its sovereign credit ratings cohort (Figure 21).

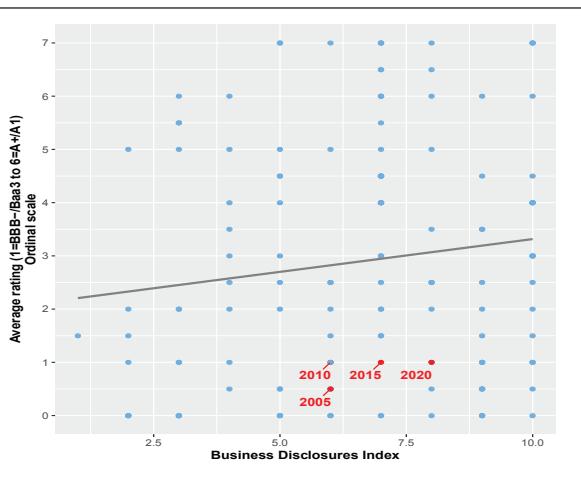
Figure 21: Sovereign Credit Ratings and Current Account Balance (per cent of GDP)



Source: Bloomberg, Datastream and IMF

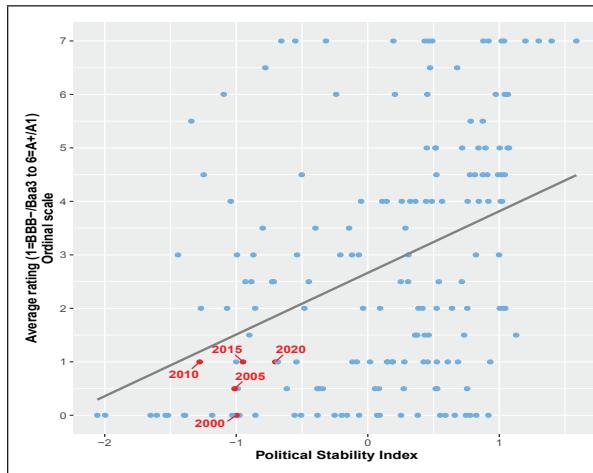
Note: Red shows India's rating during 2000-20

Figure 22: Sovereign Credit Ratings and Investor Protection (Business Extent of Disclosure Index)



the Business Extent of Disclosure Index and has been a negative outlier throughout the period 2005-20.

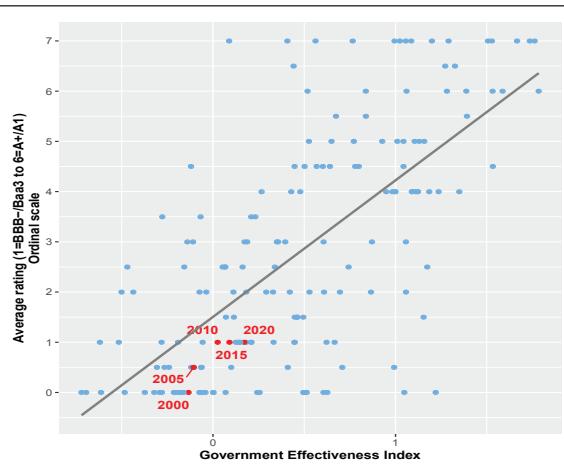
Figure 23: Sovereign Credit Ratings and Political Stability



Source: Bloomberg, Datastream and World Bank

Note: Red shows India's rating during 2000-20

Figure 24: Sovereign Credit Ratings and Government Effectiveness



Source: Bloomberg, Datastream and World Bank

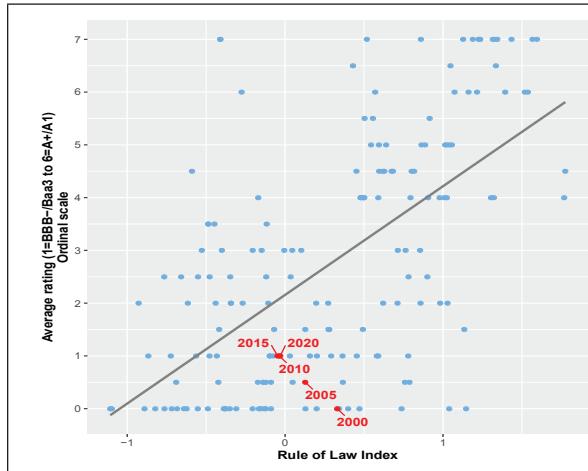
Note: Red shows India's rating during 2000-20

3.25 Figure 23 shows that within its sovereign credit ratings cohort, India has consistently been a negative outlier, rated below expectation for its level of political stability during the period 2000-20.

3.26 During 2000-20, India has consistently been rated below expectation for its level of government effectiveness within its sovereign credit ratings cohort and has been a negative outlier (Figure 24).

3.27 Figure 25 shows that within its sovereign credit ratings cohort, India has consistently been a negative outlier, rated much below expectation for its level of rule of law during the period 2000-20.

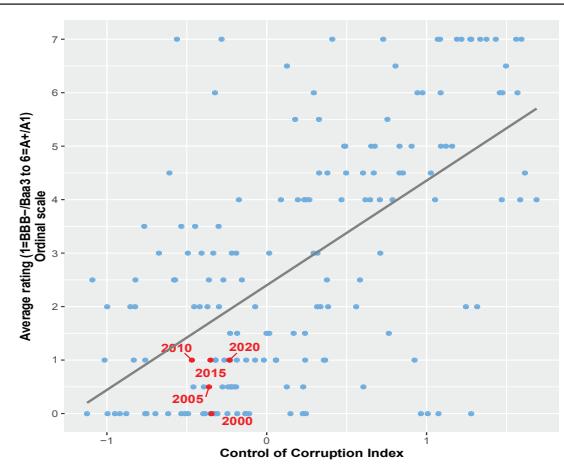
Figure 25: Sovereign Credit Ratings and Rule of Law



Source: Bloomberg, Datastream and World Bank

Note: Red shows India's rating during 2000-20

Figure 26: Sovereign Credit Ratings and Control of Corruption

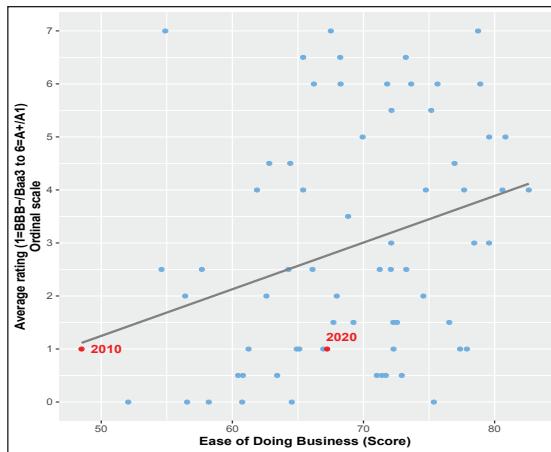


Source: Bloomberg, Datastream and World Bank

Note: Red shows India's rating during 2000-20

3.28 During 2000-20, India has consistently been rated below expectation for its level of control of corruption within its sovereign credit ratings cohort and been a negative outlier (Figure 26).

Figure 27: Sovereign Credit Ratings and Ease of Doing Business



Source: Bloomberg, Datastream and World Bank

Note: Red shows India's rating during 2010-20

3.29 Figure 27 shows that India has consistently been a negative outlier, rated below expectation for its level of ease of doing business within its sovereign credit ratings cohort during 2010-20.

DOES INDIA'S SOVEREIGN CREDIT RATING REFLECT ITS WILLINGNESS AND ABILITY TO PAY? NO!

3.30 Credit ratings map the probability of default and therefore reflect the willingness and ability of borrower to meet its obligations. India's willingness to pay is unquestionably demonstrated through its zero sovereign default history. Yet as Figure 28 shows, within India's sovereign credit ratings cohort, India is rated much below expectation for its number of sovereign defaults since 1990 (which is zero for India), making it a negative outlier.

Figure 28: Sovereign Credit Ratings and Number of Sovereign Defaults

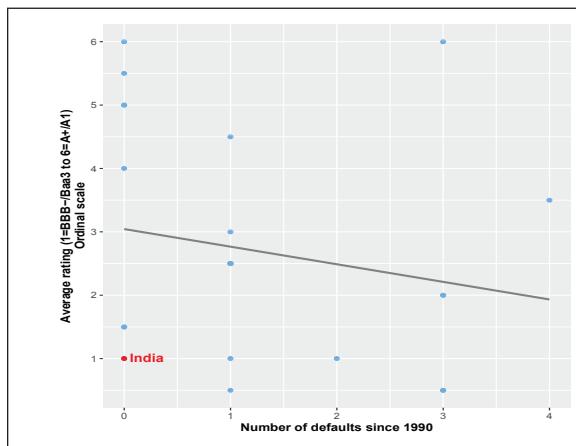
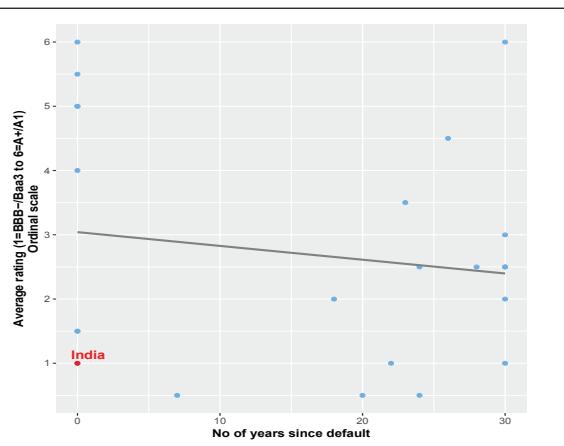


Figure 29: Sovereign Credit Ratings and Number of Years Since Last Sovereign Default



Source: Bloomberg; Datastream; S&P; Reinhart and Rogoff (2009)

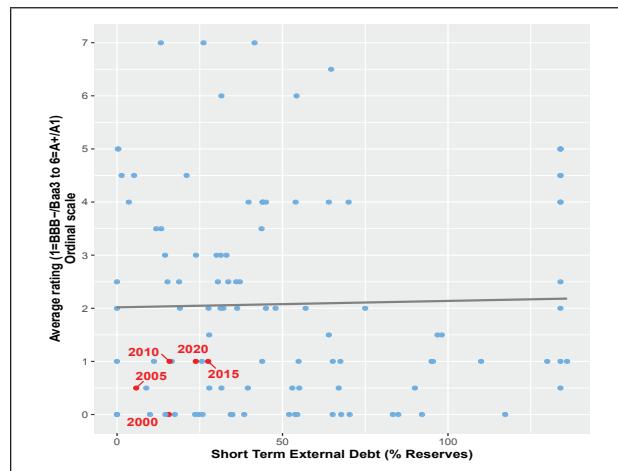
Source: Bloomberg; Datastream; S&P; Reinhart and Rogoff (2009)

3.31 India is again a negative outlier, rated below expectation for the numbers of years since last sovereign default (which is zero for India) within its sovereign credit ratings cohort (Figure 29). Unlike several of its cohort countries, India has never defaulted during the period.

3.32 India's ability to pay can be gauged not only by the extremely low foreign currency denominated debt of the sovereign but also by the comfortable size of its foreign exchange reserves that can pay for the short term debt of the private sector as well as the entire stock of India's sovereign and non-sovereign external debt. India's sovereign external debt as per cent of GDP stood at a mere four per cent as of September 2020 (DEA). Moreover, 54 per cent of India's sovereign external foreign currency denominated debt was owed to multilaterals and IMF as of end-March 2020 (DEA), which is not expected to impact credit rating assessments. Since India does not have full capital account convertibility, the private sector has to repay its foreign currency denominated debt by exchanging rupees through the forex reserves. India's non-government short term-debt as per cent of forex reserves stood at 19 per cent as of September 2020 (DEA). India's forex reserves stood at US\$ 584.24 as of January 15, 2021 (RBI), greater than India's total external debt (sovereign and non-sovereign) of US\$ 556.2 bn as of September 2020 (DEA). In corporate finance parlance, therefore, India resembles a firm that has negative debt, whose probability of default is zero by definition. Despite this compelling statistic, India is an inexplicable negative outlier in its ratings cohort. Figure 30 shows that within countries with partial capital account convertibility in India's sovereign credit ratings cohort, India has consistently been rated much below expectation for its level of short-term external debt (per cent of reserves) during the period 2000-20, emerging as a negative outlier.

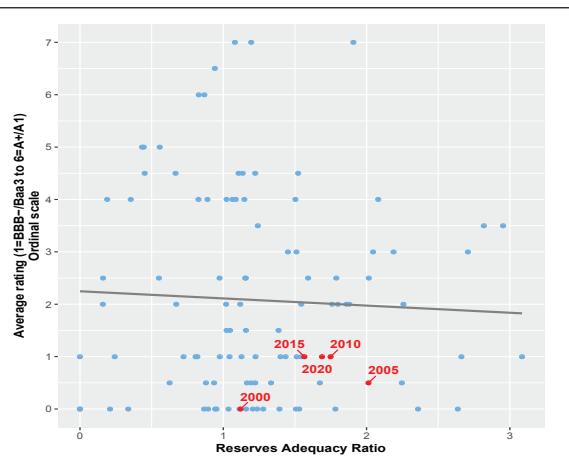
3.33 Similarly, India has consistently been a negative outlier, rated below expectation for its level of reserves adequacy ratio within its sovereign credit ratings cohort during 2000-20, (Figure 31).

Figure 30: Sovereign Credit Ratings and Short Term External Debt (per cent of reserves)



Source: Bloomberg, Datastream and World Bank
Note: Red shows India's rating during 2000-20

Figure 31: Sovereign Credit Ratings and Reserves Adequacy Ratio



Source: Bloomberg, Datastream and IMF
Note: Red shows India's rating during 2000-20

Box 4: Methodology for Stress Test

We conducted a stress test on forex reserves amongst countries which have partial capital account convertibility and availability of data in India's sovereign credit ratings cohort.

Firstly, we calculated the country-wise coefficient of variation (CoV) of month-end forex reserves across the period February 2008 – November 2020. Secondly, we calculated the standard deviation (SD) of forex reserves for these countries by multiplying the CoV with current foreign exchange reserves (end-November 2020). Thirdly, we calculated forex reserves net of short term debt. Finally, we divided the forex reserves net of short term debt by SD to arrive at a stress test estimate.

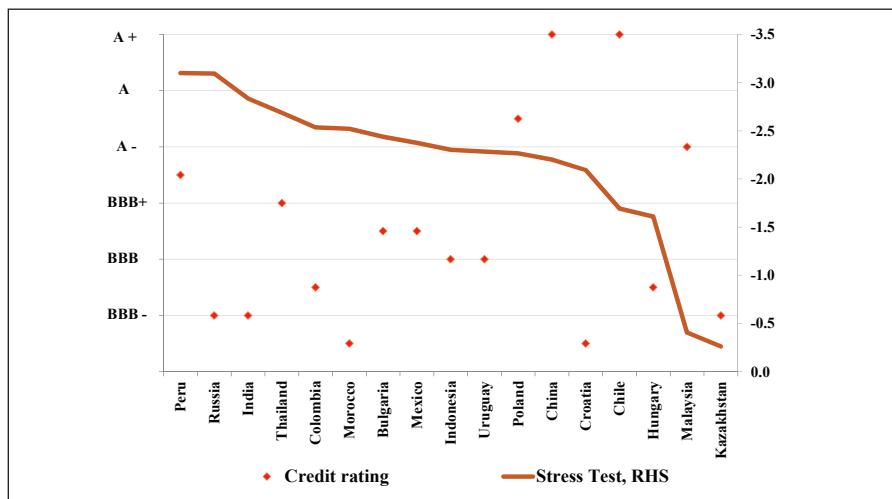
$$\text{Stress Test estimate} = (-) \frac{\text{Forex Reserves Net of Short Term Debt}}{\text{Standard Deviation of Forex Reserves}}$$

Countries with more comfortable forex reserves can withstand larger negative standard deviation shocks. Hence larger negative value of stress test estimate suggests better forex reserve position.

This stress test estimate is reported in Figure 32 for select countries in India's sovereign credit ratings cohort with partial capital account convertibility and where forex reserves net of short term debt is positive.

3.34 India's sovereign foreign denominated debt is met through India's forex reserves. Since India has partial capital account convertibility, this implies that private foreign denominated debt also needs to be met by either private export earnings or India's forex reserves. Figure 32 shows a negative correlation between sovereign credit rating and the stress test (see Box 4) amongst selected countries with partial capital account convertibility in India's sovereign credit ratings cohort. India is rated much lower as compared to its stress test estimate of -2.8, which is third highest in its cohort. This implies that India's forex reserves can withstand a negative 2.8 standard deviation shock even after meeting its short-term debt obligations, including those of the private sector, validating its ability to pay debt obligations. Given private export earnings, India's large forex reserves are in fact an underestimation of its ability to repay its short-term obligations. Yet India's sovereign credit rating is BBB-/Baa3, failing to capture this high ability to pay debt obligations!

Figure 32: Sovereign Credit Ratings and Stress Test



Source: Bloomberg, Datastream, World Bank and Survey Calculations

EFFECT OF SOVEREIGN CREDIT RATING CHANGES ON SELECT INDICATORS

3.35 Changes in sovereign credit ratings can affect economies (see Box 5 for a select review of literature). From 1998 till date, India has witnessed four instances of a sovereign credit ratings downgrade and seven instances of a sovereign credit ratings upgrade. As ratings do not capture India's fundamentals, it comes as no surprise that past episodes of sovereign credit rating changes for India have not had major adverse impact on select indicators such as Sensex return, foreign exchange rate and yield on government securities.

Box 5: Select Review of Literature on Effect of Sovereign Credit Ratings

Jaramillo and Tejada (2011) used a panel of 35 emerging market economies for the period 1997-2010 and observed that investment grade status reduced spreads by 36 per cent over and above that implied by macroeconomic fundamentals. They found that upgrades within the investment grade reduced spreads by five-ten per cent while there was no impact of changes within the speculative grade.

Kaminsky and Schmukler (2002), through their study of 16 emerging market economies during 1990-2000, found that changes in sovereign credit ratings significantly affect bond and stock markets, with average yield spreads increasing two percentage points and average stock returns decreasing one percentage point after downgrade. They observed that rating changes had stronger effects during crises in both domestic and foreign financial markets.

Afonso, Furceri and Gomes (2011) observed significant changes in government bond yields to changes in ratings and outlook, especially negative announcements. They found evidence of spill over of rating announcement from lower rated countries to higher rated countries.

Norden and Webber (2004) examined the response of stock markets to rating announcements made by credit agencies during 2000-02, and found that markets anticipate ratings downgrades and reviews for ratings downgrades. Li, Jeon, Cho and Chiang (2008) found sovereign rating changes to affect both, domestic as well as cross-country stock market returns, in five Asian countries during January 1990 to March 2003. Martell (2005) examined the effect of sovereign credit rating changes on emerging stock markets and found that local stock markets react to news of credit rating downgrades. They observed that in more developed emerging economies, firms experienced smaller stock price declines post a sovereign credit rating downgrade.

Cai, Gan and Kim (2018) examined foreign direct investment (FDI) from 31 OECD donors to 72 recipient economies during 1985-2012, and found that donors' as well as recipients' credit ratings impact FDI flows. They observed that countries in high rated regions receive more FDI and that lower rated non-OECD and higher rated OECD recipients received more FDI. De, Mohapatra and Ratha (2020) studied sovereign credit ratings and private capital flows to emerging market economies during 1998-2017, and found that post the 2008 global financial crisis, relative ratings affect portfolio flows.

Alsakka and ap Gwilym (2012) studied the impact of sovereign credit ratings on foreign exchange spot markets during 1994-2010 and found that ratings affect own-country exchange rates as well as have strong regional spill over effect on exchange rates.

Box 6: Methodology for Examining Effect of Changes in India's Sovereign Credit Ratings on Select Indicators

We examine the effect of changes in India's sovereign credit ratings during 1998-2018 on select indicators – stock market return, foreign exchange rate, yield on government securities and foreign portfolio investment flows.

We use Sensex return as change in stock market indicator; changes in INR/USD exchange rate as the foreign exchange rate indicator; 5 Year G-Sec yield, 10 Year G-Sec yield and Spread (RHS) as the government securities indicators; and FPI Equity and FPI Debt flows as FPI indicators. Sensex return and changes in exchange rate (INR/USD), G-Sec yields and spread (difference between 10 year and 5 year yield) and FPI (Equity and Debt) are defined as change over previous period.

The potential effects of credit ratings changes are examined over three time periods:

(i) Short Term: This analysis is based on the occurrence of a ratings change (downgrade/upgrade) on day “T=0”, and examines the average change in select indicators during a period of ten working days preceding and succeeding the event. In other words, assuming that a credit ratings change takes place on day “T”, we examine the average change in indicators during “T-10” and “T+10” days.

(ii) Medium Term: This analysis is based on the occurrence of a ratings change (downgrade/upgrade) in month “T=0”, and examines the average change in select indicators during a period of six months preceding and succeeding the event. In other words, assuming that a credit ratings change takes place in month “T”, this section examines the average change in indicators during “T-6” and “T+6” months.

(iii) Long Term: This analysis is based on the occurrence of a ratings change (downgrade/upgrade) in year “T=0”, and examines the average change in select indicators during a period of one year preceding and succeeding the event. In other words, assuming that a credit ratings change takes place in year “T”, this section examines the average change in indicators during “T-1” and “T+1” years.

We also examine the effect of India's threshold sovereign credit ratings changes on select indicators. **Threshold changes** are defined as sovereign rating changes from investment grade to speculative grade and vice versa.

Daily, monthly and annual data for Sensex return is available for the entire period of analysis (1998-2018). Daily exchange rate data is available from August 1998 onwards while monthly and annual exchange rate data is available for the entire period 1998-2018. Monthly data for G-Sec yields (5 year and 10 year) and annual data for FPI Equity and FPI Debt (₹ Crore) is available for the entire period of analysis (1998-2018).

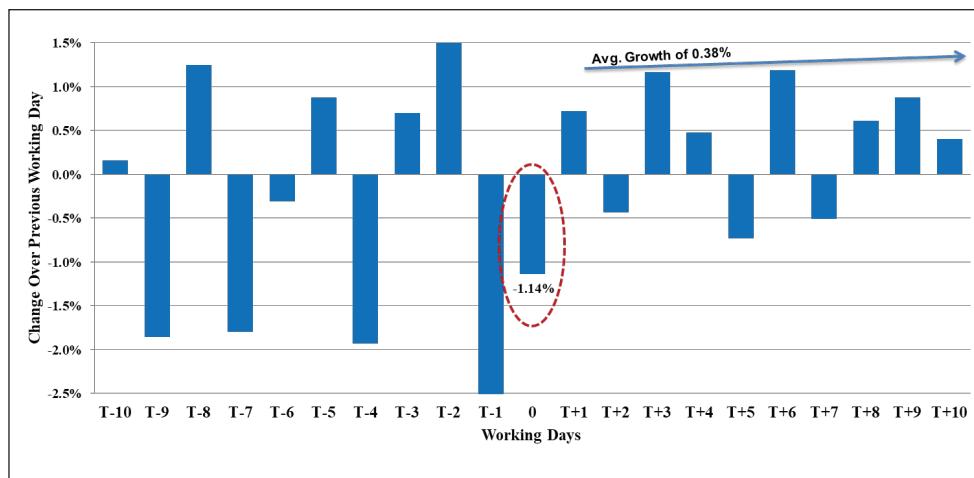
Short-Term Effect of India's Sovereign Credit Rating Downgrades

3.36 Figure 33 shows the correlations between a credit ratings downgrade and Sensex return as well as exchange rate (INR/USD), averaged across downgrade episodes from 1998-2018. It may be seen in Figure 33 (i), that during the rating downgrade, Sensex return, on average, fell by

around one per cent over the previous day, and recovered to grow at 0.38 per cent over the next two weeks. Figure 33 (ii) shows that during the rating downgrade, exchange rate (INR/USD), on average, appreciated by around 0.01 per cent over the previous day, and appreciated by 0.01 per cent over the next two weeks.

Figure 33: Short-Term Average Change in Select Indicators during and after India's Sovereign Credit Ratings Downgrade (1998-2018)

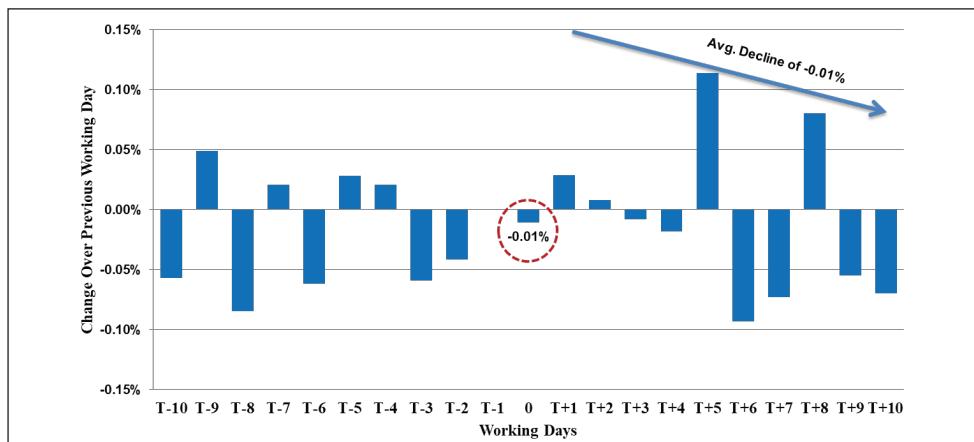
(i) Sensex Return



Note: 0 signifies day of change in credit ratings

Source: BSE and Survey calculations

(ii) Exchange Rate (INR/USD)



Note: 0 signifies day of change in credit ratings

Source: RBI and Survey calculations

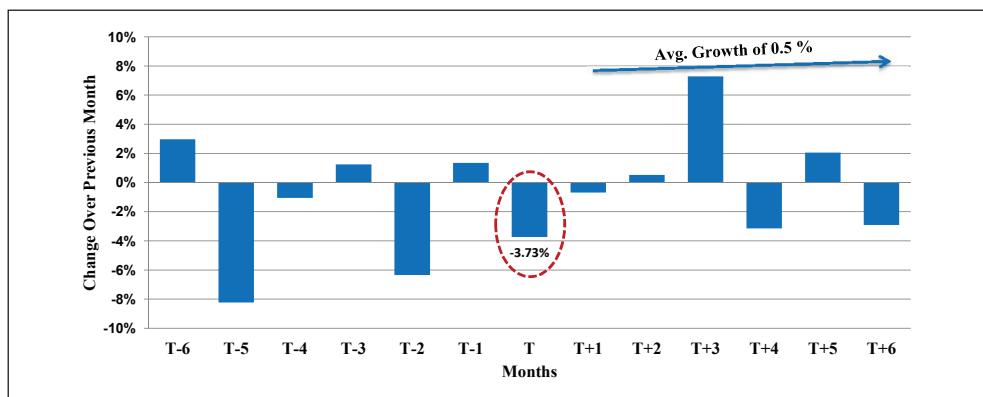
Medium-Term Effect of India's Sovereign Credit Rating Downgrades

3.37 Figure 34 shows the correlations between a credit ratings downgrade and Sensex return, exchange rate (INR/USD) and G-Sec yields (5 year and 10 year) and spread in the medium term, averaged across downgrade episodes from 1998-2018. It may be seen in Figure 34 (i), that during ratings downgrade, Sensex return, on average, fell by around four per cent over

the previous month, and recovered to grow at 0.5 per cent over the next six months. Figure 34 (ii) shows that during ratings downgrade, exchange rate (INR/USD), on average, depreciated by around one per cent over the previous month and depreciated by 0.2 per cent over the next six months. Figure 34 (iii) shows that during ratings downgrade, yield on G-Sec (5 year), on average, fell by 1.4 per cent over the previous month, and grew at 0.1 per cent over the next six months. Yield on G-Sec (10 year), on average, fell by 3.3 per cent over the previous month, and declined by 0.29 per cent over the next six months. Spread (RHS), on average, fell by 22 per cent over the previous month, and grew at one per cent over the next six months.

Figure 34: Medium-Term Average Change in Select Indicators during and after India's Sovereign Credit Ratings Downgrade (1998-2018)

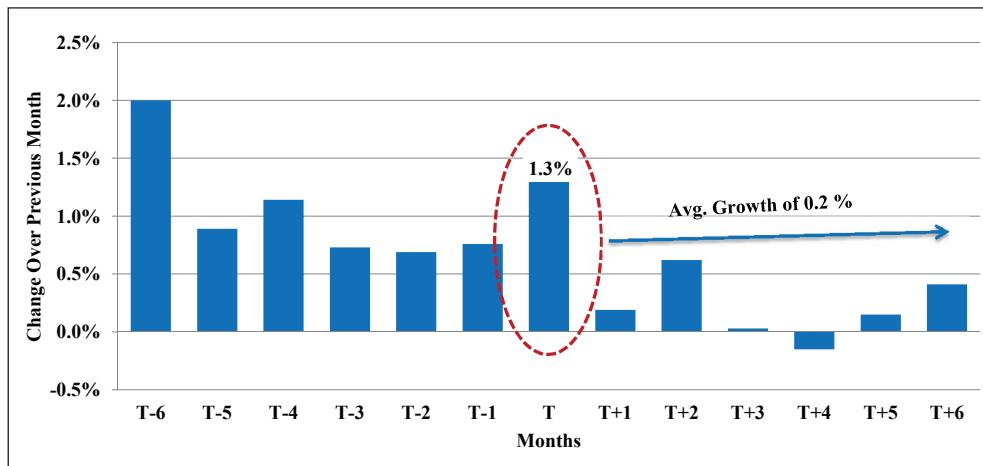
(i) Sensex Return



Note: 0 signifies month of change in credit ratings

Source: BSE and Survey calculations

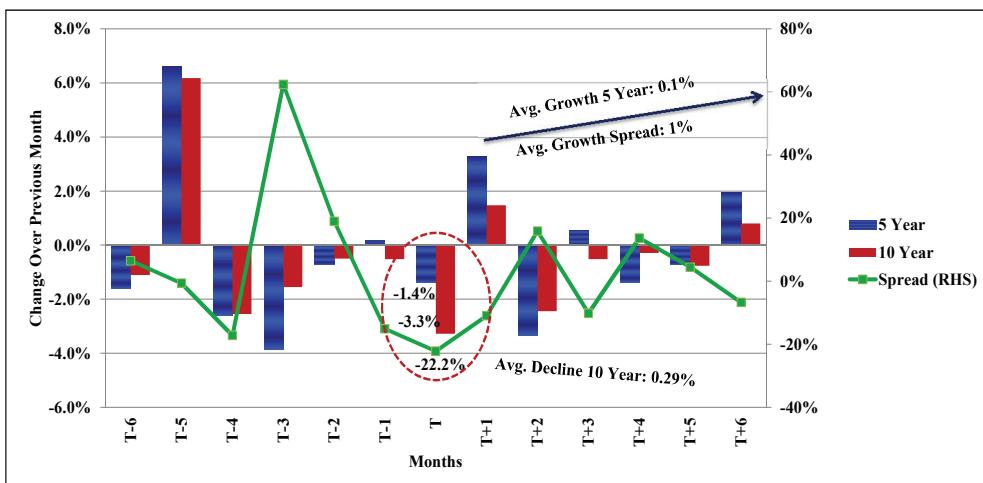
(ii) Exchange Rate (INR/USD)



Note: 0 signifies month of change in credit ratings

Source: RBI and Survey calculations

(iii) G-Sec Yield and Spread



Note: 0 signifies month of change in credit ratings

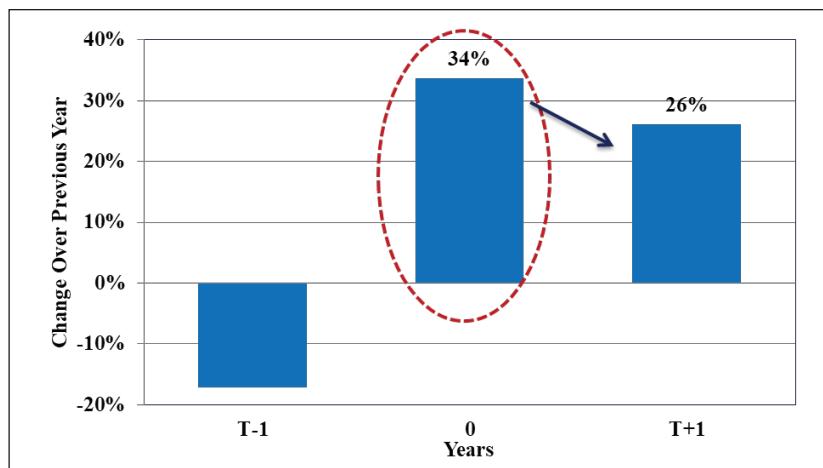
Source: RBI and Survey calculations

Long-Term Effect of India's Sovereign Credit Rating Downgrades

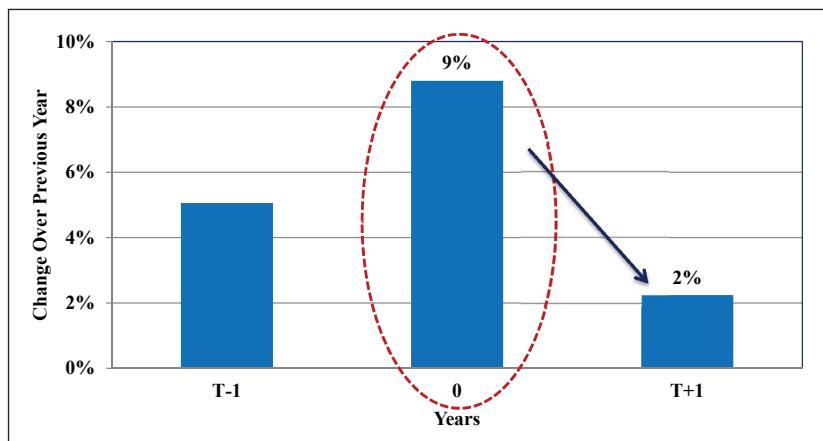
3.38 Figure 35 shows the correlations between a credit ratings downgrade and Sensex return, exchange rate (INR/USD) and FPI (Equity and Debt) in the long term, averaged across downgrade episodes from 1998-2018. It may be seen in Figure 35 (i) that during the year of ratings downgrade, on average, Sensex return rose by around 34 per cent over the previous year, and grew at 26 per cent the next year. Figure 35 (ii) shows that during the year of ratings downgrade, on average, exchange rate (INR/USD) depreciated by around nine per cent over the previous year, and depreciated by two per cent the next year. Figure 35 (iii) shows that during the year of the rating downgrade, on average, FPI Equity fell by 67 per cent over the previous year, and fell by 759 per cent in the next year. Average FPI Debt too followed a similar pattern, declining by 289 per cent, on average, during the year of rating downgrades, and declining by 114 per cent in the next year.

Figure 35: Long-Term Average Change in Select Indicators during and after India's Sovereign Credit Ratings Downgrade (1998-2018)

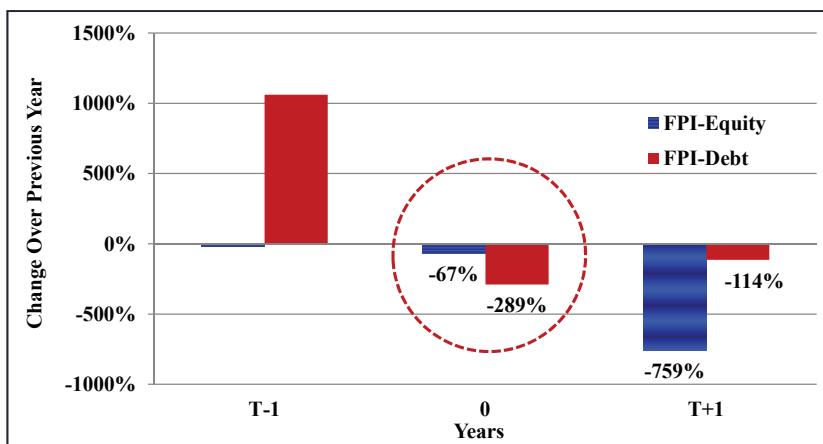
(i) Sensex Return



(ii) Exchange Rate (INR/USD)



(iii) FPI (Equity & Debt)



Note: 0 signifies year of change in credit ratings

Source: BSE, RBI, NSDL and Survey calculations

Summary of Average Changes in Select Indicators during Credit Ratings Downgrades

3.39 Table 2 summarises the average changes observed in selected indicators during and after episodes of sovereign ratings downgrades between 1998-2018. It may be seen that ratings downgrade, on average, do not appear to have strong negative correlation with Sensex return and exchange rate (INR/USD) in the short, medium and long term. G-Sec yields and spread, on average, do not appear to be negatively correlated with ratings downgrades in the medium term. Rating downgrades, on average, appear to have a negative correlation with FPI (Equity and Debt) in the long term.

Table 2: Summary of Average Changes in Select Indicators during India's Sovereign Credit Rating Downgrades (1998-2018)

Indicator	During/Post event	Short Term			Medium Term			Long Term		
Sensex return	During event	-1.14%			-3.73%			34%		
	Post event	0.38%			0.5%			26%		
Exchange Rate	During event	-0.01%			1.3%			9%		
	Post event	-0.01%			0.2%			2%		
G Sec Yield		5 yr	10 yr	Spread	5 yr	10 yr	Spread	5 yr	10 yr	Spread
	During event	-	-	-	-1.4%	-3.3%	-22%	-	-	-
	Post event	-	-	-	0.1%	-0.3%	1%	-	-	-
		Equity	Debt		Equity	Debt		Equity	Debt	
FPI Flows	During event	-	-	-	-	-	-	-67%	-289%	
	Post event	-	-	-	-	-	-	-759%	-114%	

Note: Green indicates positive economic outcome, Red indicates negative economic outcome

Effect of India's Sovereign Credit Rating Upgrades

3.40 Table 3 summarises the average changes in select indicators during and after India's sovereign credit ratings upgrade between 1998-2018. In the short run, during India's sovereign credit rating upgrades, Sensex return on average fell by around 0.7 per cent over the previous day, and grew at 0.2 per cent over the next two weeks. Exchange rate (INR/USD), on average, appreciated by around 0.05 per cent over the previous day during the rating upgrade, and appreciated by 0.03 per cent over the next two weeks.

3.41 Over the medium term, during India's sovereign credit ratings upgrade, Sensex return on average rose by around two per cent over the previous month and grew at an average rate of 1.8 per cent over the next six months. Exchange rate (INR/USD), on average, appreciated by around 0.3 per cent over the previous month during the rating upgrade, and appreciated by 0.4 per cent over the next 6 months. During ratings upgrade, yield on G-Sec (5 year), on average, increased by 0.2 per cent over the previous month, and grew at 0.6 per cent over the next six months. Yield on G-Sec (10 year), on average, fell by 0.5 per cent over the previous month, and grew at an average rate of 0.7 per cent over the next six months. Spread (RHS), on average, declined by five per cent over the previous month, and grew at an average rate of five per cent over the next six months (Table 3).

Table 3: Summary of Average Changes in Select Indicators during India's Sovereign Credit Rating Upgrades (1998-2018)

Indicator	During/Post event	Short Term			Medium Term			Long Term		
Sensex return	During event	-0.7%			2%			36%		
	Post event	0.2%			1.8%			13%		
Exchange Rate	During event	-0.05%			-0.29%			-1.5%		
	Post event	-0.03%			-0.36%			-2.3%		
G Sec Yield		5 yr	10 yr	Spread	5 yr	10 yr	Spread	5 yr	10 yr	Spread
	During event	-	-	-	0.2%	-0.5%	-5%	-	-	-
	Post event	-	-	-	0.6%	0.7%	5%	-	-	-
FPI Flows		Equity	Debt		Equity	Debt		Equity	Debt	
	During event	-	-	-	-	-	-	264%	286%	
	Post event	-	-	-	-	-	-	303%	578%	

Note: Green indicates positive economic outcome, Red indicates negative economic outcome

3.42 In the long term, during India's sovereign credit ratings upgrade, Sensex return on average rose by around 36 per cent over the previous year and grew at an average rate of 13 per cent in the next year. Exchange rate (INR/USD), on average, appreciated by around 1.5 per cent over the previous year during the rating upgrade, and appreciated by two per cent in the next year. FPI Equity, on average, increased by 264 per cent over the previous year during the rating upgrade, and grew by 303 per cent the next year. Average FPI Debt too followed a similar pattern, increasing by 286 per cent, on average, during the rating upgrades, and grew at an average rate of 578 per cent the next year (Table 3).

Effect of India's Threshold Sovereign Credit Rating Changes

3.43 India witnessed one instance of credit rating downgrade from the investment grade to speculative grade during the period 1998-2018. This coincided with the period of international sanctions following the Pokhran nuclear tests in 1998. India witnessed three instances of credit ratings upgrade from the speculative grade to the investment grade. These were in mid 2000s, as testament to India's higher economic growth prospects and strong fundamentals.

3.44 Table 4 presents a summary of average change in indicators during India's threshold sovereign credit rating downgrade (investment grade to speculative grade) between 1998-2018. In the short term, this downgrade was negatively correlated with Sensex return, which declined by five per cent during the downgrade and declined by 0.2 per cent over the next two weeks. In the medium term, Sensex return declined by 12 per cent during the event and declined by 0.8 per cent over the next six months. Exchange rate depreciated by four per cent during the downgrade and depreciated by 0.1 per cent over the next six months. Yield on 5-year government securities increased by 0.7 per cent during the downgrade and 0.1 per cent over the next six months. Yield on 10-year government securities fell by 0.2 per cent during the downgrade and increased by 0.2 per cent over the next six months. Spread (RHS) fell by 21 per cent during the downgrade and increased by 2.5 per cent over the next six months. In the long term, exchange rate depreciated by 13 per cent during the downgrade and depreciated by three per cent next year. Sensex return

increased by 64 per cent during the downgrade and fell by 21 per cent next year. Equity and Debt FPI fell sharply during the downgrade and the next year.

Table 4: Summary of Average Changes in Select Indicators during India's Threshold Sovereign Credit Rating Downgrades (Investment Grade to Speculative Grade) (1998-2018)

Indicator	During/Post event	Short Term			Medium Term			Long Term		
Sensex return	During event	-4.53%			-12%			64%		
	Post event	-0.15%			-0.8%			-21%		
Exchange Rate	During event	-			4.4%			13%		
	Post event	-			0.12%			3%		
G Sec Yield		5 yr	10 yr	Spread	5 yr	10 yr	Spread	5 yr	10 yr	Spread
	During event	-	-	-	0.7%	-0.2%	-21%	-	-	-
	Post event	-	-	-	0.1%	0.2%	2.5%	-	-	-
FPI Flows		Equity	Debt		Equity		Debt	Equity		Debt
	During event	-	-	-	-	-	-	-114%		-225%
	Post event	-	-	-	-	-	-	-1449%		-152%

Note: Green indicates positive economic outcome, Red indicates negative economic outcome

3.45 Table 5 presents a summary of average changes in select indicators during India's threshold credit rating upgrades (speculative grade to investment grade) between 1998-2018. Threshold upgrades were correlated with increase in Sensex returns in the medium term and with FPI (Equity and Debt) in the long term.

Table 5: Summary of Average Changes in Select Indicators during India's Threshold Credit Rating Upgrades (Speculative Grade to Investment Grade) (1998-2018)

Indicator	During/Post event	Short Term			Medium Term			Long Term		
Sensex return	During event	-1.2%			2.88%			30%		
	Post event	0.4%			0.76%			-5.1%		
Exchange Rate	During event	0.03%			-0.3%			-1.4%		
	Post event	-0.02%			-0.7%			-6.6%		
G Sec Yield		5 yr	10 yr	Spread	5 yr	10 yr	Spread	5 yr	10 yr	Spread
	During event	-	-	-	0.4%	-0.3%	6%	-	-	-
	Post event	-	-	-	1.2%	1.2%	8%	-	-	-
FPI Flows**		Equity	Debt		Equity		Debt	Equity		Debt
	During event	-	-	-	-	-	-	717%		1654%
	Post event	-	-	-	-	-	-	61%		29%

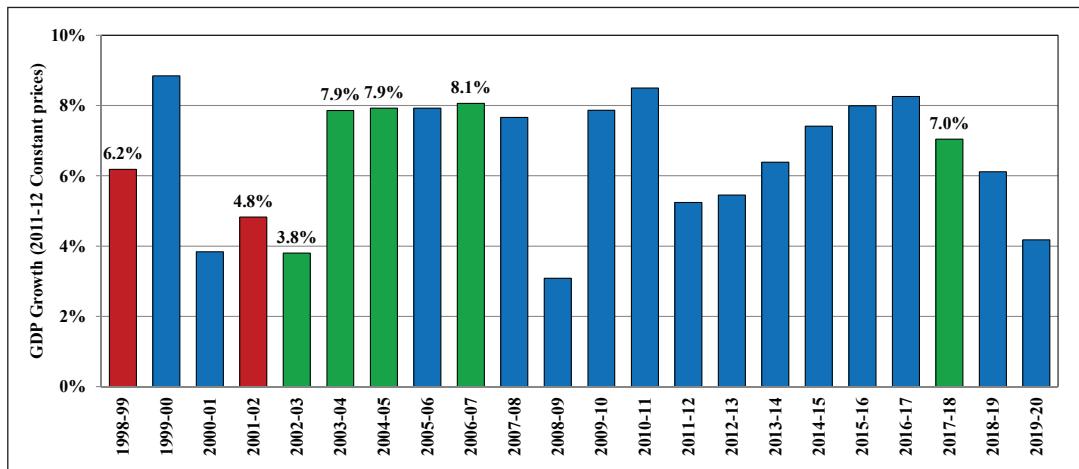
Note: Green indicates positive economic outcome, Red indicates negative economic outcome

MACROECONOMIC INDICATORS AS DETERMINANTS OF SOVEREIGN CREDIT RATING CHANGES

3.46 We further examine the correlation between select fiscal and macro-economic indicators of India and episodes of sovereign credit ratings changes. Past episodes of rating changes have

no or weak correlation with macroeconomic indicators. Figure 36 shows India's GDP Growth (at constant 2011-12 prices) in relation to sovereign credit rating changes during 1998-2020. There is no clear pattern between changes in GDP growth and sovereign credit rating changes.

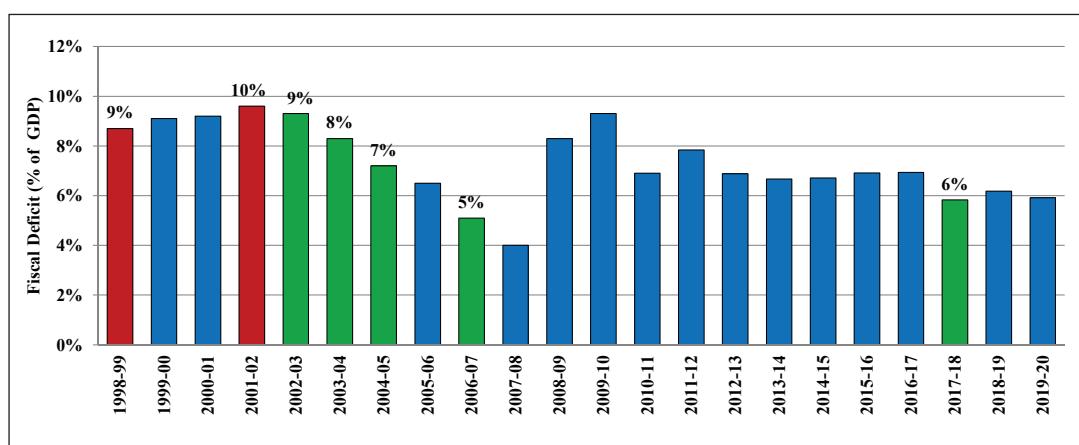
Figure 36: India's GDP Growth (2011-12 Constant Prices) and Sovereign Credit Rating Changes



Note: Red signifies year of rating downgrade. Green signifies year of rating upgrade.

Source: MoSPI and RBI

Figure 37: India's Fiscal Deficit (as per cent of GDP) and Sovereign Credit Rating Changes



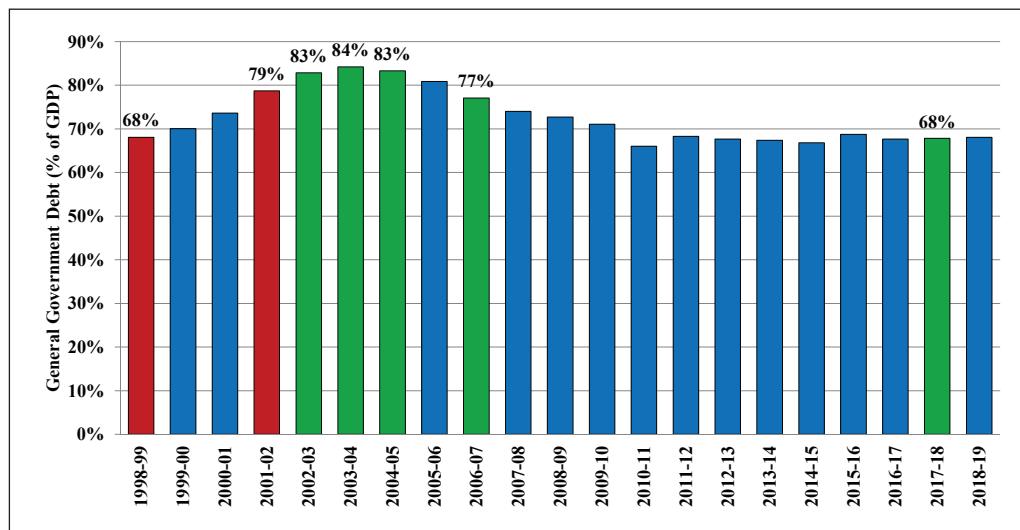
Note: Red signifies year of rating downgrade. Green signifies year of rating upgrade.

Source: RBI

3.47 Figure 37 shows India's Fiscal Deficit (as per cent of GDP) for Central and State Governments in relation to sovereign credit ratings changes during 1998-2020. All sovereign credit ratings upgrades occurred in years that witnessed lower fiscal deficit as compared to the previous year.

3.48 Figure 38 shows India's general government debt (as per cent of GDP) in relation to sovereign credit ratings changes during 1998-2019. Most sovereign credit rating upgrades occurred in years that witnessed higher or similar level of general government debt (as per cent of GDP) as the previous year.

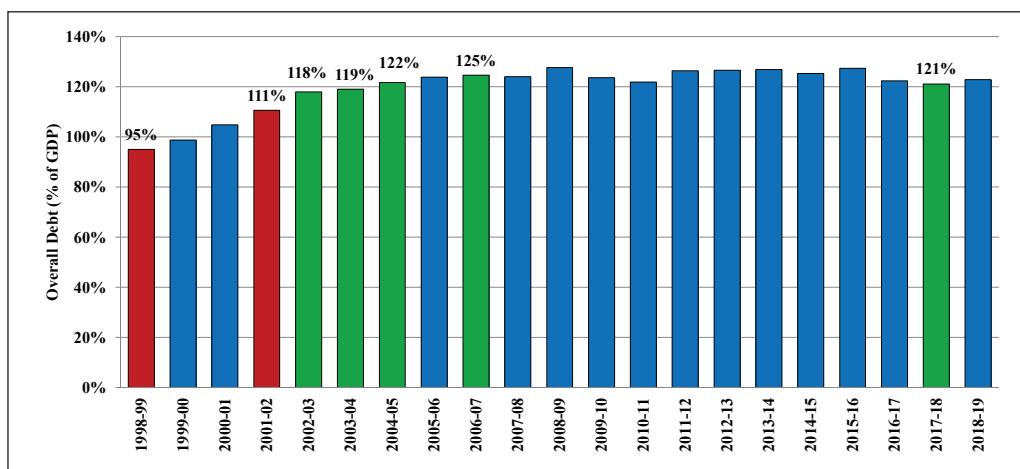
Figure 38: India's General Government Debt (as % of GDP) and Sovereign Credit Rating Changes



Note: Red signifies year of rating downgrade. Green signifies year of rating upgrade.

Source: IMF

Figure 39: India's Overall Debt (as per cent of GDP) and Sovereign Credit Rating Changes



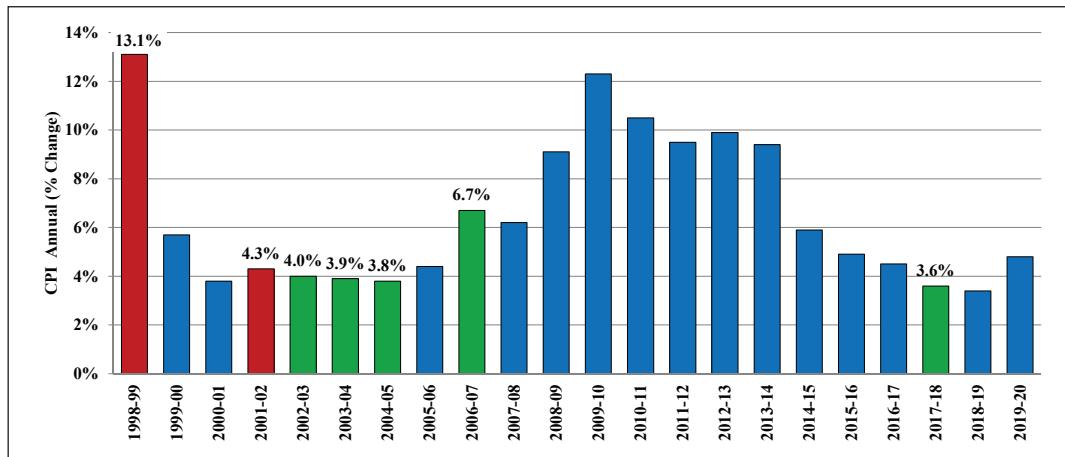
Note: Red signifies year of rating downgrade. Green signifies year of rating upgrade.

Source: IMF

3.49 Figure 39 shows India's overall debt (as per cent of GDP) in relation to sovereign credit ratings changes during 1998-2019. Most credit ratings upgrades occurred in years that witnessed higher overall debt as compared to the previous year.

3.50 Figure 40 shows India's consumer price inflation (annual per cent change) in relation to sovereign credit ratings changes during 1998-2020. The pattern of correlation between inflation and changes in sovereign credit ratings is not clear.

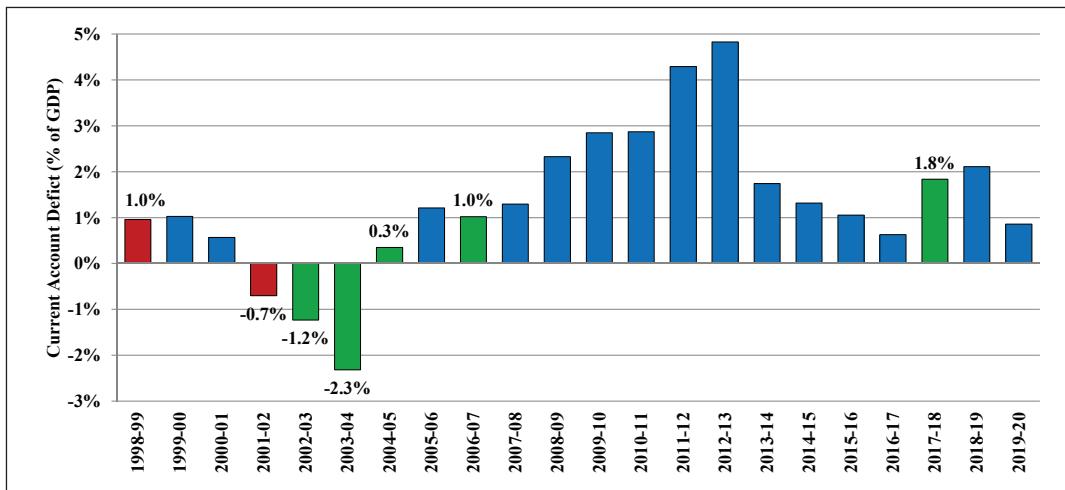
Figure 40: India's Consumer Price Inflation (Annual per cent Change) and Sovereign Credit Rating Changes



Note: Red signifies year of rating downgrade. Green signifies year of rating upgrade.

Source: RBI and IMF

Figure 41: India's Current Account Deficit (as per cent of GDP) and Sovereign Credit Rating Changes



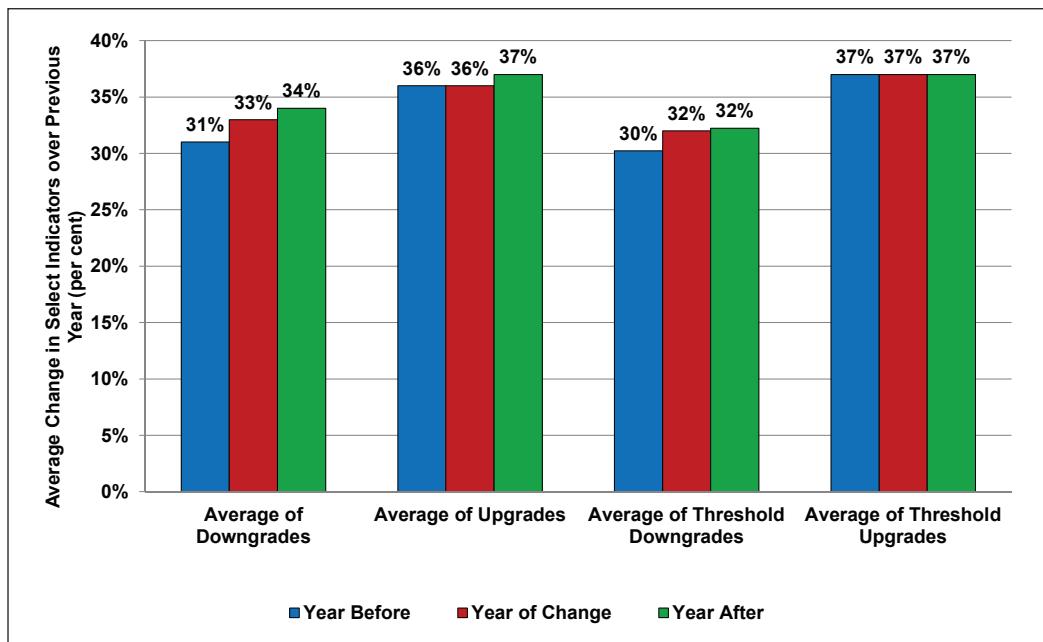
Note: Red signifies year of rating downgrade. Green signifies year of rating upgrade.

Source: RBI

3.51 Figure 41 shows India's current account deficit (as per cent of GDP) in relation to sovereign credit ratings changes during the period 1998-20. The pattern of correlation between sovereign credit rating changes and current account deficit is not clear.

3.52 Figure 42 shows the average change in annual performance of these macroeconomic indicators (GDP growth, fiscal deficit, general government debt, overall debt, inflation and current account deficit) before, during and after a sovereign credit ratings change. It may be seen that during years of India's sovereign credit rating changes, the average performance of macroeconomic indicators was better than or similar to the previous year. The average performance of macroeconomic indicators further improved or was similar in the year after the sovereign credit rating change.

Figure 42: Average Change in Annual Macroeconomic Indicators and India's Sovereign Credit Rating Changes (1998-2018)



Source: RBI, MoSPI, IMF and Survey Calculations

Box 7: Methodology for Probit Regression of Determinants of India's Sovereign Credit Rating Upgrades and Downgrades

Using data from 1998-2019, we performed two probit regressions, one each for the event of a sovereign credit ratings downgrade and upgrade for India.

Table 6 below reports results for the following probit regression for India's sovereign credit ratings changes:

Ratings Downgrade = β_1 Real GDP Growth Rate (quarter-on-quarter growth) + β_2 Fiscal Deficit (annual, per cent of GDP) + β_3 Consumer Price Inflation (annual change, per cent)*

Ratings Upgrade = β_1 Real GDP Growth Rate (quarter-on-quarter growth) + β_2 Fiscal Deficit (annual, per cent of GDP) + β_3 Consumer Price Inflation (annual change, per cent)*

Where Ratings Downgrade = 1 for years when India's sovereign credit rating was downgraded by either S&P, Moody's or Fitch, and 0 otherwise

and Ratings Upgrade = 1 for years when India's sovereign credit rating was upgraded by either S&P, Moody's or Fitch, and 0 otherwise

*GDP quarterly data from RBI. Base year 2011-12 for 2011-19, base year 2004-05 for 2004-11 and base year 1999-2000 for 1998-04

3.53 Table 6 reports coefficients of probit regression for the event of a ratings downgrade and ratings upgrade based on three explanatory variables: GDP growth rate (quarter-on-quarter), fiscal deficit (annual, as per cent of GDP) and consumer price inflation (annual, per cent change). Of the three explanatory variables, fiscal deficit and consumer price inflation are found significant

in explaining India's sovereign credit ratings downgrades during 1998-2019. Only consumer price inflation is found significant in explaining India's sovereign credit ratings upgrades during 1998-2019.

Table 6: Probit Regression Credit Ratings Downgrade and Upgrade

VARIABLES	(1)	(2)
	Dependant variable: Credit Rating Downgrade	Dependant variable: Credit Rating Upgrade
Real GDP Growth	-0.0036 (0.0274)	0.0135 (0.0219)
Fiscal Deficit	1.422*** (0.520)	-0.135 (0.108)
Consumer Price Inflation	0.150** (0.0747)	-0.391*** (0.104)
Constant	-14.72*** (4.777)	2.356** (0.938)
Observations	84	84
Wald chi2 (3)	9.325	16.47
Prob > chi2	0.0253	0.0009
Pseudo R2	0.4257	0.2334

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

POLICY IMPLICATIONS

3.54 The Survey questioned whether India's sovereign credit ratings reflect its fundamentals, and found evidence of a systemic under-assessment of India's fundamentals as reflected in its low ratings over a period of at least two decades. India's fiscal policy must, therefore, not remain beholden to such a noisy/biased measure of India's fundamentals and should instead reflect Gurudev Rabindranath Thakur's sentiment of a mind without fear. In other words, India's fiscal policy should be guided by considerations of growth and development rather than be restrained by biased and subjective sovereign credit ratings.

3.55 While sovereign credit ratings do not reflect the Indian economy's fundamentals, noisy, opaque and biased credit ratings damage FPI flows. Sovereign credit ratings methodology must be amended to reflect economies' ability and willingness to pay their debt obligations by becoming more transparent and less subjective. Developing economies must come together to address this bias and subjectivity inherent in sovereign credit ratings methodology to prevent exacerbation of crises in future.

3.56 The pro-cyclical nature of credit ratings and its potential adverse impact on economies, especially low-rated developing economies must be expeditiously addressed. India has already raised the issue of pro-cyclicality of credit ratings in G20. In response, the Financial Stability Board (FSB) is now focusing on assessing the pro-cyclicality of credit rating downgrades.

CHAPTER AT A GLANCE

- Never in the history of sovereign credit ratings has the fifth largest economy in the world been rated as the lowest rung of the investment grade (BBB-/Baa3). Reflecting the economic size and thereby the ability to repay debt, the fifth largest economy has been predominantly rated AAA. China and India are the only exceptions to this rule – China was rated A-/A2 in 2005 and now India is rated BBB-/Baa3.
- India's sovereign credit ratings do not reflect its fundamentals. Within its sovereign credit ratings cohort – countries rated between A+/A1 and BBB-/Baa3 for S&P/ Moody's – India is a clear outlier on several parameters, i.e. it is rated significantly lower than mandated by the effect on the sovereign rating of the parameter. These include GDP growth rate, inflation, general government debt (as per cent of GDP), cyclically adjusted primary balance (as per cent of potential GDP), current account balance (as per cent of GDP), political stability, rule of law, control of corruption, investor protection, ease of doing business, short-term external debt (as per cent of reserves), reserve adequacy ratio and sovereign default history. This outlier status remains true not only now but also during the last two decades.
- Credit ratings map the probability of default and therefore reflect the willingness and ability of borrower to meet its obligations. India's willingness to pay is unquestionably demonstrated through its zero sovereign default history. India's ability to pay can be gauged not only by the extremely low foreign currency denominated debt of the sovereign but also by the comfortable size of its foreign exchange reserves that can pay for the short term debt of the private sector as well as the entire stock of India's sovereign and non-sovereign external debt. India's forex reserves can cover an additional 2.8 standard deviation negative event, i.e. an event that can be expected to manifest with a probability of less than 0.1 per cent after meeting all short-term debt.
- As ratings do not capture India's fundamentals, it comes as no surprise that past episodes of sovereign credit rating changes for India have not had major adverse impact on select indicators such as Sensex return, foreign exchange rate and yield on government securities. Past episodes of rating changes have no or weak correlation with macroeconomic indicators.
- India's fiscal policy, therefore, must not remain beholden to a noisy/biased measure of India's fundamentals and should instead reflect Gurudev Rabindranath Thakur's sentiment of a mind without fear.
- Despite ratings not reflecting fundamentals, they can however be pro-cyclical and can affect equity and debt FPI flows of developing countries, causing damage and worsening crisis. It is therefore imperative that sovereign credit ratings methodology be made more transparent, less subjective and better attuned to reflect economies' fundamentals.

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APPENDIX

Moody's Credit Ratings Methodology

Sovereign Bond Ratings Sector Scorecard Overview

Factor	Sub-factor	Sub-factor Weighting	Metric/Sub-sub-factor	Metric / Sub-sub-Factor Weighting
Factor: Economic Strength	Growth Dynamics	35%	Average Real GDP Growth _{t-4 to t+5}	25%
			Volatility in Real GDP Growth _{t-9 to t}	10%
	Scale of the Economy	30%	Nominal GDP (US\$ bn) _t	30%
	National Income	35%	GDP per Capita (PPP, Int. USD) _t	35%
Factor: Institutions and Governance Strength	Adjustment to Factor Score	0 - 9 notches	Other	
	Quality of Institutions	40%	Quality of Legislative and Executive Institutions	20%
			Strength of Civil Society and the Judiciary	20%
	Policy Effectiveness	60%	Fiscal Policy Effectiveness	30%
			Monetary and Macroeconomic Policy Effectiveness	30%
	Adjustment to Factor Score	0 - 3 notches	Government Default History and Track Record of Arrears	
Factor: Fiscal Strength	Debt Burden	50% ¹	General Government Debt / GDP _t	25%
			General Government Debt / Revenue _t	25%
	Debt Affordability	50% ¹	General Government Interest Payments / Revenue _t	25%
			General Government Interest Payments / GDP _t	25%
	Adjustments to Factor Score	0 - 6 notches	Debt Trend _{t-4 to t+1}	
			General Government Foreign Currency Debt / General Government Debt _t	
			Other Non-Financial Public Sector Debt / GDP _t	
			Public Sector Financial Assets and Sovereign Wealth Funds / General Government Debt _t	
	0 - 3 notches		Other	
Factor: Susceptibility to Event Risk	Political Risk	Minimum Function ²	Domestic Political and Geopolitical Risk	
	Government Liquidity Risk	Minimum Function ²	Ease of Access to Funding	
	Banking Sector Risk	Minimum Function ²	0 - 2 scoring categories	Adjustment to Sub-factor Score High Refinancing Risk
			Risk of Banking Sector Credit Event (BSCE)	
			Total Domestic Bank Assets / GDP _t	
	External Vulnerability Risk	Minimum Function ²	0 - 2 scoring categories	Adjustment to Sub-factor Score
			External Vulnerability Risk	
			0 - 2 scoring categories	Adjustment to Sub-factor Score
	Adjustment to Factor Score	0-2 scores		

Source: Moody's

Fitch's Credit Ratings Methodology

Sovereign Analytical Pillars – SRM Weights

Analytical pillar	Macroeconomic performance, policies & prospects		Public finances	External finances
	Structural features			
SRM weights (%)	53.7	10.9	18.0	17.4
SRM variables	Measure	Impact	Weight (%)	Coefficient
Governance indicators	Latest	Positive	20.4	0.075
GDP per capita	Latest	Positive	12.3	0.040
Share in world GDP	Latest	Positive correlation with size	13.2	0.607
Years since default or restructuring event	Latest	Negative	6.4	-2.481
Broad money supply (% of GDP)	Latest	Positive	1.4	0.185
Overall weight in SRM			53.7	
SRM variables (%)	Measure	Impact	Weight (%)	Coefficient
Real GDP growth volatility	Latest	Negative	4.9	-0.767
Consumer price inflation	3-year centred average	Negative	3.1	-0.056
Real GDP growth	3-year centred average	Positive	2.9	0.093
Overall weight in SRM			10.9	
SRM variables	Measure	Impact	Weight (%)	Coefficient
Gross general govt debt/GDP	3-year centred avg	Negative	8.0	-0.021
General govt interest (% of revs)	3-year centred avg	Negative	4.7	-0.046
General govt fiscal bal./GDP	3-year centred avg	Directional	3.0	0.055
FC govt debt/gross govt debt (%)	3-year centred avg	Negative	2.4	-0.006
Overall weight in SRM			18.0	
SRM variables	Measure	Impact	Weight (%)	Coefficient
Reserve currency flexibility	Latest	Positive	7.8	0.551
Sovereign net foreign assets (% of GDP)	3-year centred avg.	Positive	6.7	0.011
Commodity dependence	Latest	Negative	0.8	-0.003
Foreign exchange reserves (months of CXP) ^a	Latest	Positive	1.3	0.027
External interest service (% of CXR)	3-year centred avg.	Negative	0.7	-0.012
Current account balance + foreign direct investment (% of GDP)	3-year centred avg.	Directional	0.2	0.002
Overall weight in SRM			17.4	

Source: Fitch