# Measuring the Vulnerabilities and NPA's  of Indian Banking Sector

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***Abstract:*** *This paper evaluates the Indian banking sector vulnerabilities and NPAs situation has been plagued by challenges ranging from bad loans to shrinking profitability in the last few years. The RBI said the 12 accounts constituted about 25 percent of the overall gross non-performing assets, adding it will direct lenders to begin insolvency proceedings around these accounts. The Indian Banking situation is day by day increasing NPAs ratios, with weak debt repayment capacity. The spike in bad loans is likely to continue for a few more quarters given that the Reserve Bank of India (RBI) remains strained and high leverage levels continue to weigh on corporate resilience, which may pose further risks to banks' asset quality. Public and Private sector banks have stepped up recognition of non-performing assets, but their debt recovery capacity remains weak. It is to conclude that the results and trends show that NPAs are having a downward trend over the study period, but Non-Performing Assets of public sector banks are still higher than private sector banks. The returns on the assets have also the downward trends but this is much lower in PSU banks as compared to private banks. Hence, the performances of PSU banks are not suitable as compared to private sector banks. Banking sector vulnerability is measured by six alternative indicators that are frequently employed in the literature on early warning systems. Our results indicate that differences in monetary policy preferences robustly explain cross-states differences in banking vulnerability and validate the benign neglect hypothesis, in that a higher level of RBC implies a more vulnerable banking sector.*

***Keywords:*** *Banking Sector, vulnerability, financial risks, non-performing assets, monetary policy, price stability, RBI Conservatism (RBC) index*

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## I.    Introduction

The Reserve Bank of India (RBI) report 2017 analysed the real situation of the Indian Banking system and it has identified 12 of the largest loan defaulters and will order lenders to start bankruptcy proceedings against them to start unclogging the $150 billion in bad debt plaguing Asia's third-largest economy. The move comes about a month after the government gave the RBI greater power to deal with bad loans, including directing banks to initiate an insolvency resolution process in the case of a default under the bankruptcy code. The committee narrowed the list to 12 by focusing on accounts owing more than Rs. 5,000 crore, where 60 percent or more of the loan had been already classified as non-performing by banks as of March 31, 2017(**RBI Report, 2017**)[1].

### Secnario of Non-Performing Assets (NPAs)

The financial sector in the Indian economy has had a checkered history.The Asset Quality Review (AQR) initiated by the Reserve Bank of India (RBI) has led to an uptick in the recognition of non-performing assets (NPAs) across public sector banks (PSBs). Policy steps to address supply-side bottlenecks notably in the infrastructure sector have ameliorated corporate sector vulnerabilities. However, Indian corporates continue to be highly levered. and some sectors are still subject to debt repayment capacity strains. Sensitivity analysis of corporate balance sheets confirm that exposure to potential shocks is still high and, thus, continues to weigh on PSBs' asset quality. Altogether, PSBs are expected to require further capital augmentation in the coming years, but simulations suggest that, at current provisioning levels, its scale should have a modest fiscal impact(**ManojitSaha, 2017**)[2].

While it is a good sign that banks are finally willing to acknowledge the problem, it doesn't mean the issue is resolved. How to repair such a huge stock of bad assets is a billion dollar question before the industry, the government and the regulator. Any chances of recovery depend on the revival in the economy itself and how

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[1] RBI

[2] ManojitSaha (2017) Asset Quality Review and its impact on banks published by  The Hindu paper,
http://www.thehindu.com/business/Industry/Asset-Quality-Review-and-its-impact-on-banks/article14494282.ece

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effectively the banking system is equipped with tools to take on crony promoters, who have been using the banking system to their advantage. The creation of the proposed bankruptcy code can help since this will provide ammunition to banks to deal with future case of defaults. But, dealing with the existing chunk of defaulters, many of them are wilful defaulters (promoters who have the ability to pay back but wouldn't do so) would require tremendous political will and effective judicial mechanism to deal with disputes between banks and defaulters. The delay in dealing with disputes between banks and corporates significantly impacts the value of the underlying asset and by the time banks manage to initiate recovery process, there wouldn't be much to recover. A perfect example is the Kingfisher case, where a group of 19 large banks are still struggling to make any meaningful progress in the recovery of Rs 7,000 crore loans for liquor-baron Vijay Mallya, who is fighting lenders in the court.

## II.     Literature Review:

A number of researches have been done and gone through and this part of the paper is to present a review of all those are available in the same area of velanerilities and non-performing assets of the Indian banking sector. Some of the analysis is as follows:

**IMF Report(2017)**[3] emphasied that the evaluates corporate and banking sector vulnerabilities in India. The analysis shows that while corporate sector risks have subsided, debt repayment capacity remains strained and high leverage levels continue to weigh on corporate resilience, which may pose further risks to banks' asset quality. Public sector banks have stepped up recognition of non-performing assets, but their debt recovery capacity remains weak. Simulations suggest that potential recapitalization needs, at current provisioning levels, should have a modest fiscal impact.

**ManojitSaha (2017)**[4] **analysed that the real situation of India banking sector** with highlighted in andthe current spike in the bad loans on the books of banks is an indication of the deeper stress within the banking system, accumulated over a longer period. The government should be worried the most since over 90 percent of the total bad loans of Indian banks are on the balance sheets of state-run banks, in which it is the majority owner and for calling a spade a spade and putting an end to the practice of banks masquerading NPAs as good loans by recasting them.

**Singh, V. R., (2016)**[5] said that Non-Performing Assets have always created a big problem for the banks in India and the NPAs level of our banks is still high as compared to the foreign banks.

**Kavitha, N. A. et al., (2016)**[6] said that the extent of NPA is comparatively very high in public sector banks as compared to private banks.

**Tripathi, L. K. et al., (2014)**[7]analyzed the impact of priority sector advances, unsecured advances and advances made to some sectors by banks like SBI group and other banks on Gross NPAs of banks. The study by Sulagna Das et al., in 2014 was done on the State Bank of India and its associates.

**M. L. Singla (2015),**[8] analyzed the percentage share of NPA as components of priority sector lending, the comparative study was conducted between SBI and Associates, New Private Banks, Old Private Banks and Nationalized Banks of the benchmark category, to find out significant difference of NPA and also find out the significant impact of Priority Sector Lending on total NPA of Banks using the statistical tools. Rajput, N. et al., (2012) provide an empirical approach to the analysis of profitability indicators on NPA, it also discusses the factors that contribute towards NPA, and also analyses the solution for the same

**P. Mahajan, (2014)**[9] made an effort to evaluate the NPA of the selected banks and their trends and issues, also the measures taken for managing the NPA's like reformulation of banks' credit appraisal techniques, establishment of monitoring cell, etc.

## III.     Research Methodology

a) *Research Design:* The descriptive research design is used for the analysis and it is essentially a fact finding approach. It aims to explain the behavior and characteristics of an individual or group characteristics and to determine the frequency with the same things occurs

b) *Sample Design:*The deliberate sampling technique is used for the present analysis. This sampling method involves the purposive or deliberate selection of particular units of world for constituting a sample that represents the population.

c) *Selection of the Sample Units:*The banking sector in India is considered as the one of the fastest growing financial institutions in the world. By using the purposive sample,  selected all the  PSU banks respectively

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[3]IMF Repor(2017) Current Issues and problems of Indian Banking Sector, Published by International Monitory Fund, USA

[4]ManojitSaha (2017) Asset Quality Review and its impact on banks published by  The Hindu paper, http://www.thehindu.com/business/Industry/Asset-Quality-Review-and-its-impact-on-banks/article14494282.ece

[5]V. R. Singh, (2016) "A Study of Non-Performing Assets of Commercial Banks and it's recovery in India", Annual Research Journal of Symbiosis Centre for Management Studies, Vol. 4, pp.110-125.

[6]N. A. Kavitha and M. Muthumeenakshi, (2016) "A Comparative Study of Non- Performing Assets of Public and Private Sector Banks", IJMTST, Vol. 2, Issue 03, pp. 37-40.

[7]L. K. Tripathi, A. Parashar and S. Mishra (2014) "A Comparative Study of Advances Contributing to Non Performing Assets between SBI Group and Nationalized Banks",  International Journal Of Marketing, Financial Services & Management Research Vol.3 (7), pp. 147-157.

[8]M. L. Singla (2015), "An Evaluation of Non Performing Assets: A Study of Study of Banking Sector in India", International Journal of Advanced Research, Vol. 4, No. 6, pp.225-239

[9]P. Mahajan, (2014) "Non Performing Assets: A Study of Public, Private & Foreign Sector Banks in India", Pacific Business Review, International Vol.7, Issue 1, pp. 09-16

as the sample units for the study. The sample units selected were considered as one of the successful units in the banking sector.

d) ***Data Collection:*** The data were collected through annual report from sources that are secondary in nature such as internet, magazines, websites, books and journals.

**Tools Applied:** The present analysis is based on the secondary data collected from the annual reports of Reserve Bank of India. The researcher would testing the Schwartz hypothesis directly against the benign neglect hypothesis: does assigning a higher priority to inflation stabilization reduce or increase the vulnerability of the banking sector? To this end, our empirical analysis is original in that it directly addresses the issue of complementary against conflicting objectives, by using different methodologies, by including the global crisis years, and by relying on a genuine measure of the preferences of Reserver Bank of India .

The preference of Reserver Bank of India for price stability is proxied by the CONS index of Reserver Bank of Conservatism (RBC), suggested by Levieuge and Lucotte (2014b) and based on the Taylor curve (Taylor,1979). We consider six alternative measures for banking sector vulnerability that are widely used in the literature on early warning systems as determinants of financial crises: credit volatility, the credit-to-GDP gap, the credit-to-deposit ratio, nonperforming loans, the Zscore, and the capital-to-asset ratio. In essence, these primarily concern the credit cycle and the structure of the balance sheets of the banks. Our results, from a sample of Public Sector Banks over the period 2007 to 2017 ,indicate that the degree of RBC robustly explains banking sector vulnerability, which is in line with the benign neglect hypothesis.

**Research Objectives of the Study**
➢ To study the NPAs situation of Indian Banking Sector
➢ To review of NPAs with limited literature
➢ To analyze the trend of NPA of all Public Sector Banks
➢ To measure the Vunlnerabilitis of Indian Banking System
➢ To suggest suitable Monitory policy suggestsation

**Details on the *CON S* index**

Our measure of Reserver Bank of India uses the method suggested by Levieuge and Lucotte (2014b) on the theoretical basis of the Taylor curve (Taylor, 1979). This curve, shown in Figure 2 below, represents the standard trade-off between the variability of the inflation rate ($\sigma_\pi^2$) and the variability of the output gap ($\sigma_y^2$). Theoretically, any point on this curve is the result of an optimal monetary policy, given the structural model of the economy and the weight assigned to the objective of inflation stabilization. Then, the position where an economy is observed on this curve reveals the central bank's preferences for inflation stabilization relative to output stabilization. The 45° line corresponds to the case in which monetary authorities assign an equal weight to inflation and output variability in their loss function, and a central bank is then considered increasingly conservative as its corresponding point moves along the Taylor curve from the right to the left, that is, as inflation receives increasingly greater weight relative to output variability in its loss function. For example, point A in Figure 2 illustrates the case in which the central bank is more averse to inflation variability than at point B, while tolerating higher output variability. Point A then indicates a more conservative stance than point B.

**Figure 1:** Preferences along the Taylor Curve
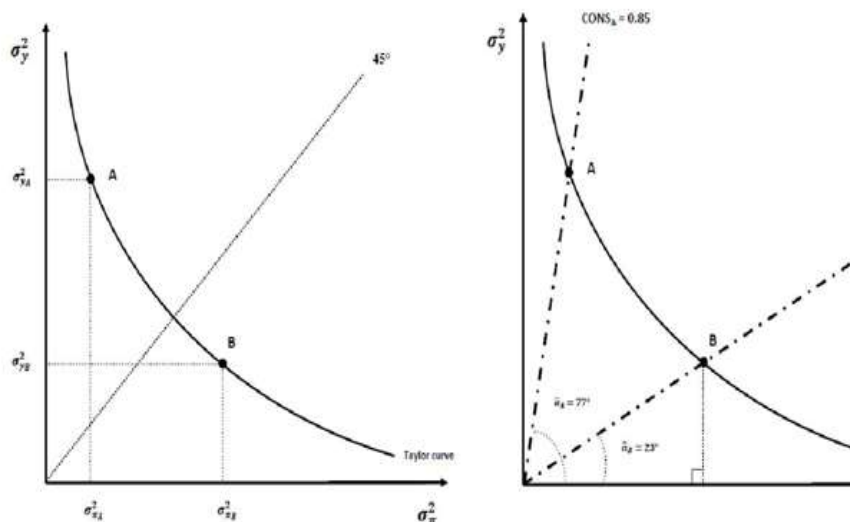
Following this conceptual background, Levieuge and Lucotte (2014b) propose a new index, called *CON S*, which is based on the value of the angle of the straight line joining the origin and a given point on the Taylor Curve. Indeed, knowing the empirical volatilities of inflation and output gap on the adjacent and opposite sides respectively, it is possible to calculate the value of any angle using standard trigonometric formula: $angle(\alpha) = atan(\sigma_y^2/\sigma_\pi^2) \times 180/pi$. Once rescaled to [0, 1], this angle measure constitutes a fair estimate of the relative degree of Reserve Bank of India, equivalent to the relative weight assigned to the inflation objective in a standard

quadratic loss function. Thus, *CON S* is defined as

$$CON\ S = \frac{1}{90}\ "atan\ \frac{\sigma_y^2}{\sigma_\pi^2}\ !_\times \frac{180}{pi}\ \# \tag{1}$$

Levieuge and Lucotte (2014b) initially developed such a *CON S* index for the OECD countries. As $(\sigma_\pi^2)$ and $(\sigma_y^2)$ are easily observable in any country, over any period, extending this index to a broad set of countries is direct and simple. For the purposes of this paper, we have expanded the *CON S* index to a large set of 73 countries from 1980 to 2012. *CON S* is computed on an annual basis, with $\sigma_\pi^2$ and $\sigma_y^2$ computed over five-year rolling windows. As highlighted by Levieuge and Lucotte (2014b), any change in *CON S* can be the result of disturbances, outside the willingness of the central bank to change its preferences. This is potentially an important point to address, as our sample includes emerging countries that are known to be subject to shocks. In this respect, Levieuge and Lucotte (2014b) propose an alternative RESERVER BANK OF INDIA indicator, labelled *CON S W* ("*W* " for weighted), where the ratio $\sigma_y^2/\sigma_\pi^2$ in Equation (2) is weighted by the ratio of disturbances $\sigma_{\varepsilon y}^2/\sigma_{\varepsilon \pi}^2$. $\sigma_{\varepsilon y}^2$ and $\sigma_{\varepsilon \pi}^2$ are the variance of demand and supply shocks, respectively. They are identified from bivariate structural VAR models through the reliable decomposition scheme suggested by Blanchard and Quash (1989).

## IV.    Data Analysis

A strong policy impetus to enforce robust asset quality recognition across PSBs has induced a considerable uptick in NPAs. The AQR, initiated by the RBI in December 2015, is intended to lead to a full recognition of NPAs by March 2017. As a result, NPA slippages across PSBs have accelerated noticeably, and their aggregate NPA ratio increased to 9.3 percent in FY2015/16, from 5 percent a year earlier.2 The accumulation of NPAs reflected both an intensified transition of previously restructured loans into NPAs, and a broader recognition of NPAs among previously unrestructured exposures. The brisk re-classification of standard restructured loans into NPAs accounted for a sizable contraction in restructured assets, whose share in total advances receded to 4.1 percent from 7.1 percent a year earlier. Most AQR-related recognition of NPAs appears to have already materialized, albeit with some potential for a further rise in NPAs, due to remaining, still unrecognized, vulnerable accounts(IMF Report, 2017)[10].

**Figure:2  NPA Formation at Indian Banks, End – FY2016**
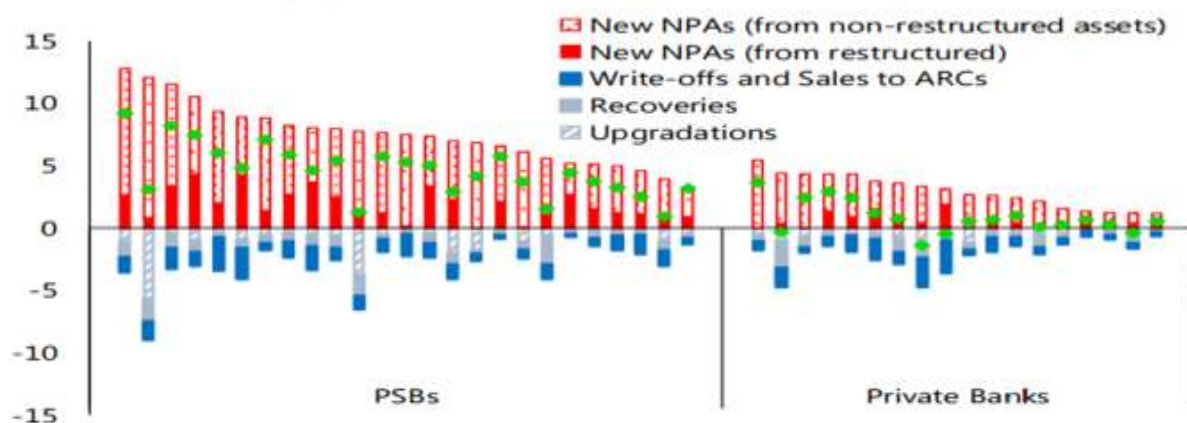


Sources: Reserve Bank of India (RBI); and IMF staff calculations.

[10]IMF Repor(2017) Current Issues and problems of Indian Banking Sector, Published by International Monitory Fund, USA

Low NPA provisioning and weak debt recovery remain key challenges for PSBs. Intensified NPA recognition has led to a considerable uptick in provisioning allocation and a further decline in PSBs' profitability, with return of assets (ROAs) of PSBs turning negative in FY2015/16. However, PSBs' aggregate provision coverage ratio continues to be low, at 39 percent as of end-FY2015/16, raising concerns about the sufficiency of provisioning, particularly in view of weaknesses in the loan resolution process.3 While banks with less robust provisioning coverage (i.e. those below the PSBs' average in FY2014/15) bolstered provisioning in FY2016, previously better-provisioned banks saw provisioning coverage slip to 44 percent in FY2015/16 from 50 percent a year earlier. Overall, PSBs' loan recovery capacity remains weak. The rise in NPAs in FY2015/16 was offset primarily via writeoffs, which accounted for a 1.2 percentage-point offset in NPA slippage rates in FY2015/16, compared to only 0.6 percentage points for loan recoveries, underscoring the need for timely implementation of debt resolution reforms.

**Figure: 3. NPA Provision Coverage Ratios of Public Sector Banks**
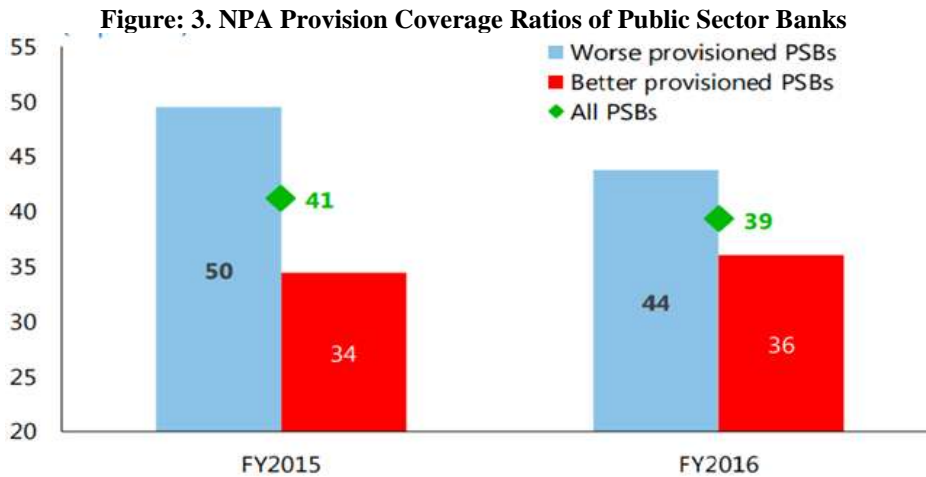


PSBs continue to be exposed to risks related to the slowly improving, but still elevated, corporate sector vulnerabilities.

The link between the financial performance of the banking and corporate sectors in India is strong. With the corporate sector accounting for about 40 percent of banks' (particularly PSBs') credit portfolios, PSB's soundness and their ability to provide effective intermediation in the economy rest on effective debt restructuring and deleveraging in the corporate sector. Corporate vulnerabilities subsided in FY2015/16 on concerted policy efforts to address structural bottlenecks, including delays in environmental clearances and land acquisition permits. Debt-at-risk—the share of debt held by firms with weak debt-repayment capacity (interest coverage ratio below one)—declined to 16.6 percent from 20.2 percent a year earlier, pointing to improved debt-repayment capacity.6,7 However, the high debt-at-risk and NPAs in some sectors—as high as 36 percent in metals and mining—pose NPA slippage risks for banks.

**Figure:4 Corporate Sector Vulneabilities**
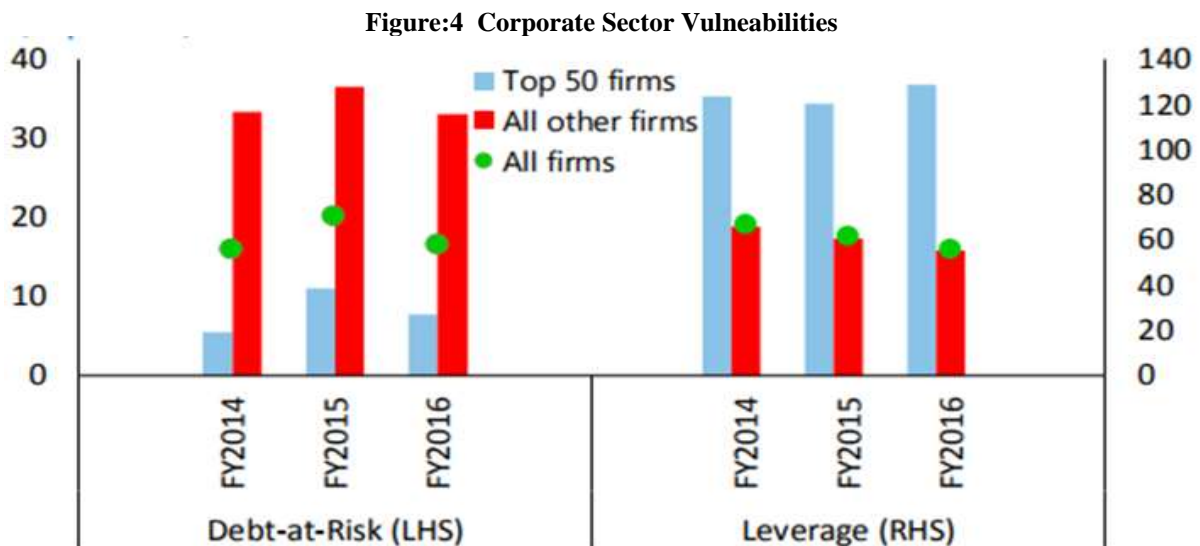


Sources: CapitalIQ; and IMF staff estimates.

**Figure: 5 Sectoral Distribution of Debt at Risk**



Sources: Reserve Bank of India; and IMF staff estimates.
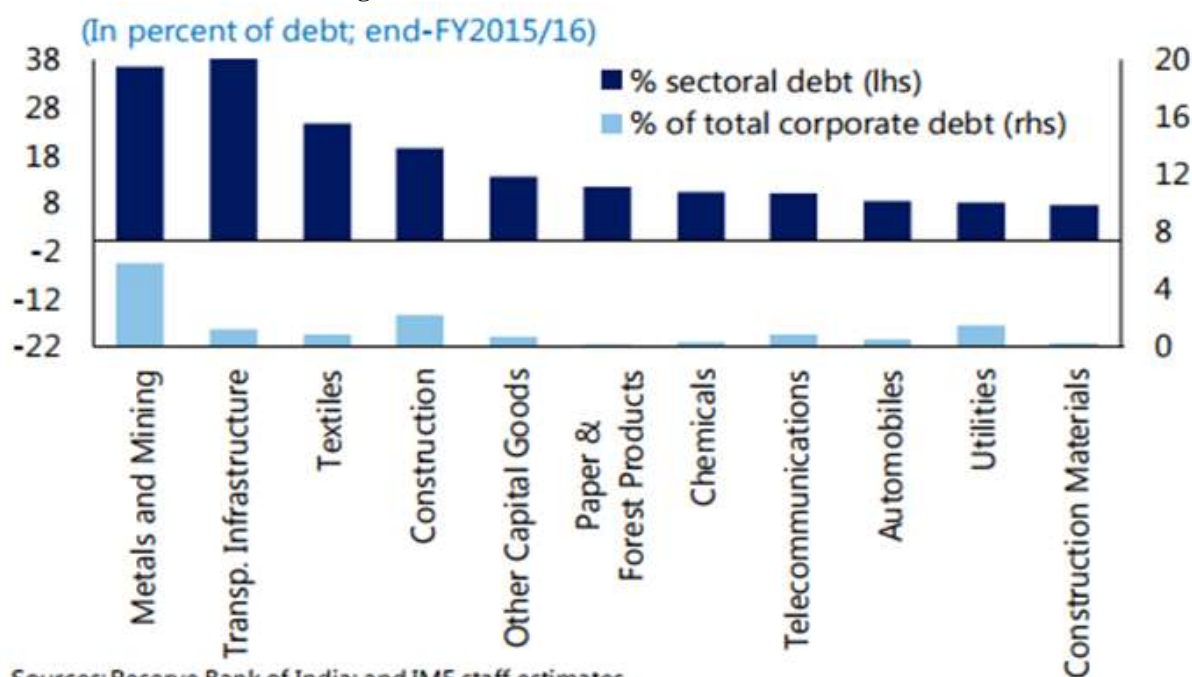
The risks to the banking sector as at end March 2014 increased since the publication of the previous FSR[2] as reflected by the Banking Stability Indicator (BSI)[3], which combines the impact on certain major risk dimensions. Though there are marginal improvements in the soundness and asset quality, concerns over liquidity and profitability continue.

**Table I** (Various ratios of the PSU banks for FY-2011-12 to FY-2015-16)

| NPA Ratios | FY-2011-2012 | FY-2012-2013 | FY-2013-2014 | FY-2014-2015 | FY-2015-2016 |
|---|---|---|---|---|---|
| Gross NPA (SBI) | 39,676.46 | 51,189.39 | 61,605.35 | 56,725.34 | 98,172.80 |
| Net NPA (SBI) | 15,818.85 | 21,956.48 | 31,096.07 | 27,590.58 | 55,807.02 |
| % of Net NPA (SBI) | 1.82 | 2.10 | 2.57 | 2.12 | 3.81 |
| % Growth of Net NPA (SBI) | 0.00% | +15.38% | +22.38% | -17.5% | +79.71% |
| Return on Assets % (SBI) | 0.88 | 0.91 | 0.65 | 0.76 | 0.46 |
| % Growth on Assets (SBI) | 0.00% | +3.4% | -28.57% | +16.92% | -39.47% |
| Gross NPA (PNB) | 8,719.62 | 13,465.79 | 18,880.06 | 25,694.86 | 55,818.33 |
| Net NPA (PNB) | 4,454.23 | 7,236.50 | 9,916.99 | 15,396.50 | 35,422.57 |
| % of Net NPA (PNB) | 1.52 | 2.35 | 2.85 | 4.06 | 8.61 |
| % Growth of Net NPA (PNB) | 0.00% | +54.6% | +21.27% | +42.45% | +112.06% |
| Return on Assets % (PNB) | 1.19 | 1.00 | 0.64 | 0.53 | -0.61 |
| % Growth on Assets (PNB) | 0.00% | -15.96% | -36% | -17.18% | -215.09% |
| Average % of NNPA of PSU Banks | 1.67 | 2.225 | 2.71 | 3.09 | 6.21 |
| Average % of NNPA Growth of PSU Banks | 0.00% | +33.23% | +21.79% | +14.02% | +100.97% |
| Return on Assets % of PSU Banks | 1.035 | 0.955 | 0.645 | 0.645 | -0.075 |
| % Growth on Assets of PSU Banks | 0.00% | -7.72% | -32.46% | 0.00% | -111.62% |

Corporate deleveraging has been slow and uneven, particularly among larger firms and across certain sectors, exposing corporates to elevated risks. In the aggregate, firms' indebtedness has been declining consistently, with the median debt-to-equity ratio falling to 56 percent at end-FY2016, from 67 percent two years earlier. However, leverage levels continue to be high relative to other emerging markets (EMs). The debt of highly-levered firms (debt-to-equity ratios above 150 percent) accounts for about half of outstanding

corporate debt, and such concentration of debt at the tail-end of the leverage distribution raises corporate vulnerabilities to shocks. Importantly, leverage is also uneven across sectors and firm size. Certain industries
The spike in bad loans is likely to continue for a few more quarters given that the Reserve Bank of India (RBI) has given a deadline of March 2017 for banks to declare all bad loans on their books. This is one reason why banks are aggressively reporting NPAs from now onwards.. In the currucent situaiton the SBI has reported gross NPAs at 5.1 percent compared with 4.15 percent in the preceding quarter, while another bank Union Bank of India reported 7.05 percent against 6.12 percent on a quarterly basis. Higher provisions associated with increase in bad loans pushed down the net income of by substantial margin for both banks. Under norms, banks need to set aside money, known as provisions, against possible future losses and existing non-performing loans.Even though it might cause pain in the immediate future, it's good that banks are forthcoming in recognising bad loans, since this can help addressing the hidden rot in their books.

**Table II (**Various ratios of the Private Banks for FY-2011-12 to FY-2015-16)

| NPA Ratios | FY-2011-2012 | FY-2012-2013 | FY-2013-2014 | FY-2014-2015 | FY-2015-2016 |
|---|---|---|---|---|---|
| Gross NPA (HDFC) | 1,999.39 | 2,334.64 | 2,989.28 | 3,438.38 | 4,392.83 |
| Net NPA (HDFC) | 352.33 | 468.95 | 820.03 | 896.28 | 1,320.37 |
| % of Net NPA (HDFC) | 0.20 | 0.20 | 0.30 | 0.20 | 0.28 |
| % Growth of Net NPA (HDFC) | 0.00% | 0.00% | +50% | -33.34% | +40% |
| Return on Assets % (HDFC) | 1.80 | 1.90 | 2.00 | 2.00 | 1.90 |
| % Growth on Assets (HDFC) | 0.00% | +5.55% | +5.26% | 0.00% | -5% |
| Gross NPA (ICICI) | 9,475.33 | 9,607.75 | 10,505.84 | 15,094.69 | 26,221.25 |
| Net NPA (ICICI) | 1,860.84 | 2,230.56 | 3,297.96 | 6,255.53 | 12,963.08 |
| % of Net NPA (ICICI) | 0.73 | 0.77 | 0.97 | 1.61 | 2.98 |
| % Growth of Net NPA (ICICI) | 0.00% | +5.47% | +25.97% | +65.97% | +85.09% |
| Return on Assets %(ICICI) | 1.50 | 1.70 | 1.78 | 1.86 | 1.49 |
| % Growth on Assets (ICICI) | 0.00% | +13.33% | +4.7% | +4.49% | -19.89% |
| Average % of Net NPA of Private Banks | 0.465 | 0.485 | 0.635 | 0.905 | 1.59 |
| Average % Growth of NNPA of Private Banks | 0.00% | +4.3% | +30.92% | +42.51% | +75.69% |
| Average Return on Assets % of Private Banks | 1.65 | 1.8 | 1.89 | 1.93 | 1.695 |
| Average % Growth on Assets of Private Banks | 0.00% | +9.09% | +5% | +2.1% | -12.17% |

**Figure 6** (Financial years Average NNPA percent of PSU and Private Banks from 2011-12 to 2015-16 with polynomial trend lines)
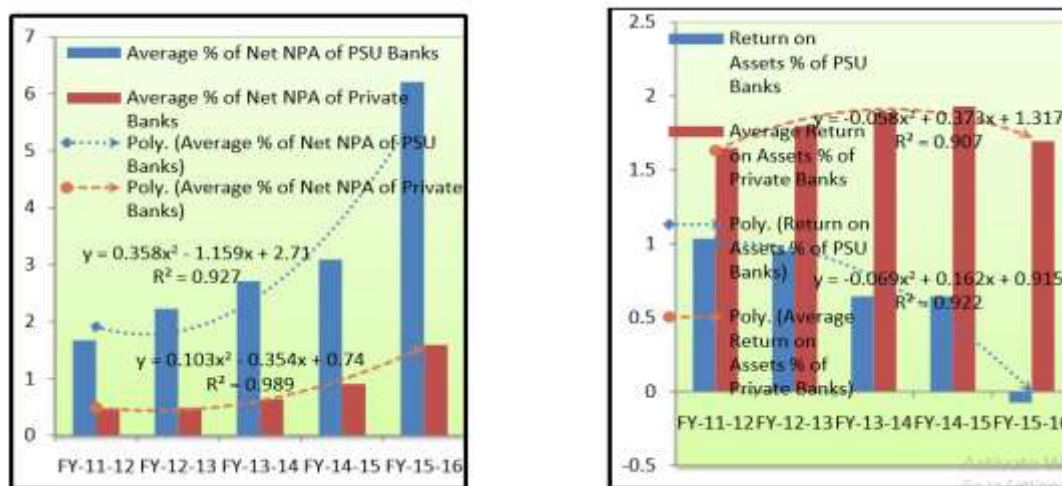


There were some of the hidden NPAs of banks have been a bigger concern for the regulator than the declared ones, since no one had actual estimate of the extent of bad loans in the banking system.. Indian Government need a deep surgery needed to clean up balance sheets; NPA recognition is anaesthetic to do surgery," Banks typically prefer to postpone the problem by technically retaining many NPAs as performing ones to show a good book. But, as Rajan has been cautioning banks, this would result in larger problems in future due to accumulation of bad assets that aren't recognized as bad yet. The reported gross NPAs of Indian banks stand at around Rs 3 lakh crore, while restructured assets (under CDR and bilateral channels) together would constitute almost double amount. On the whole, the total stressed assets in the banking system would be in 10-12 percent of the total bank loans given for banks. But, this isn't all.

**Table: 2** Bank with Higher gross NPAs in %, Q3-FY 2017 by RBI Report

| Bank with higher gross NPA in % | | | |
| --- | --- | --- | --- |
| Bank with higher gross NPA in % | Q3-Fy 2016 | Q2-FY2016 | Q3-Fy2015 |
| IOB | 12.36 | 11 | 8.12 |
| Dena Bank | 9.85 | 6.84 | 5.61 |
| United Bank(1) | 9.57 | 8.9 | 12.03 |
| Bank of India | 9.18 | 7.55 | 4.07 |
| Central Bank | 8.95 | 6.86 | 6.2 |
| Punjab Natl.Bank | 8.47 | 6.36 | 5.97 |
| Bank of Maha | 7.97 | 7.98 | 6.65 |
| Oriental Bank | 7.75 | 5.7 | 5.97 |
| Union Bank(1) | 7.05 | 6.12 | 5.46 |
| Allahabad Bank | 6.4 | 5.26 | 5.46 |
| St Bk of India | 5.48 | 4.19 | 5.09 |
| ICICI Bank | 4.72 | 4.77 | 3.4 |
| Syndicate Bank | 4.61 | 3.72 | 3.6 |
| Vijaya Bank | 4.32 | 3.98 | 2.92 |

More skeletons will tumble out of the closet when banks fully declare the NPAs in their books. The earlier leeway banks used to enjoy to push bad assets to restructured loan category is no longer available now since the RBI has asked banks to treat fresh restructured loans at par with bad loans.If one looks at the October-December quarter numbers of banks, lenders have already started to aggressively recognize bad assets, even though it meant huge hit on their net profit and bloodbath in the stock market. At least three public sector banks (PSBs), Central Bank of India, Allahabad Bank and Dena Bank posted huge losses in the October-December quarter on account of a sharp increase in bad loans, while Punjab National Bank (PNB), India's second largest state-run bank, logged a significant fall in its profit. PNB reported gross non-performing assets (NPAs) of 8.47 percent for the December-quarter. This is the highest level of bad loans the bank has recorded at least in 11 years. High bad loans result in high provisioning; the money every bank needs to set aside to cover their future losses, which more than doubled for PNB to Rs 3,776 crore in the third quarter from Rs 1,468 crore in the year-ago quarter. As a result, the net profit of the bank plunged 93.4 percent to Rs 51 crore in the third quarter, compared with Rs 775 crore in the corresponding period in last year. This is arguably one of the worst quarterly results of PNB in recent years. Similarly, Central Bank of India logged a loss of Rs 836.62 crore for October-December 2015-16, against a profit of Rs 137.65 crore in the third quarter of the previous fiscal with its GNPAs rising to 8.95 percent of the gross advances during the quarter, as against 6.2 percent a year ago.

**Table: 3** Net Profits in Rs. Crore

| Net Profit in Rs crore | | | |
| --- | --- | --- | --- |
| Bank | Q3-FY2016 | Q3-FY2015 | % change |
| Bank of India | -1506 | 173 | - |
| Dena Bank | -663 | 77 | - |
| Central Bank | -837 | 138 | - |
| Allahabad Bank | -486 | 164 | |
| Oriental Bank | -425 | 157 | - |
| Syndicate Bank | -120 | 157 | - |
| IOB | -1425 | 516 | - |
| Panjab Natl. Bank | 51 | 775 | -93.4 |
| Union Bank | 79 | 302 | -74 |
| St Bk of Mysore | 27 | 96 | -72 |
| St Bk of India | 1115 | 2910 | -61.7 |
| Union Bank | 17 | 42 | -59.3 |

Similarly, Dena Bank reported a loss of Rs 662.85 crore for the third quarter as against net profit of Rs 76.56 crore in the same quarter last year, after it witnessed its GNPAs jumping to 9.85 percent from 5.61 percent in the year-ago period. Allahabad Bank's loss stood at Rs 486.14 crore for the third quarter, hit by 6.40 percent GNPAs (from 5.46 percent) and subsequent provisions.

**Measures of banking sector vulnerability**

As there is no universally accepted empirical measure of banking sector vulnerability, we employ six alternative variables commonly used in the literature First, a simple way of measuring the potential effect of benign neglect on financing conditions and financial instability more generally is to focus on credit volatility. Inessence, thehigherthecreditvolatility, themoreunstablefinancing is for households and firms. This variable is calculated as a ten-year moving variance on quarterly credit data, which come from the International Monetary Policy Financial Statistics (RBI) database.

Oursecondmeasureisthecredit-to-GDPgap. Thisisoneofthemostwidely accepted proxies for banking and financial imbalances among policymakers and academics and is designed to measure the size of the credit cycle, as the deviations of credit from the "normal" range of historical experience - and then to capture excess credit growth. The researcher will consider the ratio of nonperforming loans to total gross loans as another indicator of banking sector vulnerability. This variable is used as a proxyforthequalityofbanks'assetsand, moregenerally, asaproxyforbanking system stability (Koetter et al., 2014). A higher value of this ratio indicates a degradation of the quality of the assets held by the banks in the country. According to Cihák and Schaeck (2010), the proportion of non-performing loans is also a good predictor of systemic banking vulnerabilities.

Then we consider the Z-score, a measure that is widely used in the literature tocapturethesolvencyofthebankingsystem(see,e.g.,Becketal.,2010;Laeven and Levine, 2009; Demirgüç-Kunt et al., 2008; Boyd and Runkle, 1993). It is based on a comparison between banks' buffers in the form of their capitalization and returns and their risks in the volatility of returns. Formally, the Z-score is defined as $Z = (k + \mu)/\sigma$, where k is equity capital as a percentage of assets, $\mu$ is return as a percentage of assets, and $\sigma$ is the standard deviation of return on assets as a proxy for return volatility. Because a bank becomes insolvent when the value of its assets drops below the value of its debt, the Z-score can be interpreted as the number of standard deviations that a bank's return must fall below its expected value to wipe out all the equity in the bank and render it insolvent. The Z-score is inversely related to the probability of a bank becoming insolvent. Asourempiricalanalysisisconductedatthecountrylevel,theZ-score can then be interpreted as the banking system's distance to default.Our last measure of banking sector vulnerability is the bank capital-to-asset ratio, which measures the banking system's capitalization. A higher ratio indicatesabettercapitalizedbankingsystem. Asabankwithhighercapitalprovides a cushion against insolvency and better resilience to adverse shocks, this ratio can be viewed as an inverse proxy for banking system vulnerability (see, e.g., Beltratti and Stulz, 2012). Note that the credit-to-deposit ratio, the capital-to-asset ratio and the share of nonperforming loans to total gross loans are variables that belong to the "financialsoundnessindicators"oftheInternationalMonetaryFund. Ultimately, using these six different indicators allows us to consider all aspects of banking sector vulnerabilities.

` The second set of control variables is intended to capture the degree of banking competition because this can affect the risk-taking behaviour of financial intermediaries and, in turn, banking sector vulnerability. We measure the level ofbankingcompetitionusingtwoproxiescommonlyemployedinthebankingliterature. The first is the Lerner index (Lerner, 1934), which measures the degree of market power of the banks and is thus an inverse proxy for bank competition. A low value (the minimum is 0) indicates a high degree of competition, while a highvalue(themaximumis1)indicatesalastockofcompetition. Theseconduct proxy weconsiderisameasureofbankconcentration. Thiscorrespondstotheassetsof thethreelargestcommercialbanksasasharceoftotalcommercialbankingassets. As with the Lerner index, bank concentration is an inverse proxy for competition because a concentrated market structure is expected to be associated with higher prices and profits, reflecting an uncompetitive context. These two variables are obtained from the GFD database. Despite the large number of studies devoted to the competition-stability nexus, the relationship between competitionandbankrisk-takingremainsambiguous. Underthe"competition-fragility" view, bank competition is seen as detrimental to financial stability. Conversely, the "competition-stability" view rejects the competition-stability trade-off hypothesis and argues that market power increases bank portfolio risks

Finally, we control for the regulation of the banking system and the financial market. Weconsideraninverseproxyforthedegreeoffinancialregulation,which correspondstotheaggregatefinancialliberalizationindexdefinedbyAbiadetal. (2010). This is obtained from their database of financial reforms. The index is normalized between 0 and 1, with 0 corresponding to a fully controlled financial system and 1 to a fully liberalized sector. A benefit of this indicator is that it captures the multi-dimensional nature of financial liberalization. To this end, the measure incorporates seven characteristics of the financial system, which are credit controls; interest rate controls; the reserve requirements; the existence of entry barriers; state participation in the banking market; the policies on securities markets; and the restrictions

on the capital account. The results reported in the literature for the effect of financial liberalization on banking vulnerability are ambiguous. In the seminal works of McKinnon (1973) and Shaw (1973), state intervention appears to reduce the efficiency of financial systems. More recently, empirical studies also contend that financial liberalization contributes to improved economic growth (see, for instance, Bekaert et al., 2005). However, as argued by Kaminsky and Reinhart (1999), lax banking regulation may lead to more risk-taking, which may in turn induce a higher degree of banking sector vulnerability. This view is empirically confirmed by Giannone et al. (2011)[11], who showthattheliberalizationprocessincreditmarketsinducedgreaterrisk-taking behaviour. Tohaveacompletepictureofthedegreeoffinancialliberalization,we also consider a measure of financial openness using the Chinn-Ito index (Chinn and Ito, 2006, 2008). This index is a de jure measure of financial openness that assesses the extent of openness in capital account transactions. It is also normalized between 0 and 1, with the highest degree of financial openness corresponding to a value of 1 and the lowest to a value of 0. The expected impact of this variable on the vulnerability of the banking sector is uncertain. On the one hand, according to Abiad et al. (2007)[12], greater financial openness allows investors to diversify their portfolios: this implies a longer investment horizon and reduces the risk of sudden stops, which may in itself reduce banking vulnerability. On the other hand, globally integrated financial systems are more exposed to international financial shocks and may experience more pronounced financial vulnerability (Giannone et al., 2011)[13].

Under the benign neglect hypothesis, a positive relationship is expected between banking sector vulnerability and Reserver Bank of India (CONS and CONS_W). The results should be that the Reserver Bank of India indexes are positively correlated with credit volatility, the credit-to-GDP gap, the credit-to-deposit ratio and the nonperforming loans ratio. Conversely, the indexes should be negatively correlated with the Z-score and the capital-to-asset ratio. Figure 1 reports the mean value of our six measures of vulnerability for each quartile of the Reserver Bank of India indexes. As expected, we observe a positive correlation between the Reserver Bank of India indexes and the mean values of 1) credit volatility, 2) the credit-to-GDP gap, and 3) the creditto-deposit ratio. Analogously, we see that higher degrees of conservatism are related to lower capital-to-asset ratios. Finally, the plots are less clear for the nonperforming loans ratio and the Z-score variable. Beyond these interesting simple correlations, the benign neglect and Shwartz's hypotheses are compared in depth in the formal econometric analysis in the next section

## V.    Analytical Results

This section presents the methodology and the results of our empirical analysis. Driven by data availability, the sample covers Public Ssector Banks, from 2007 to 2017. To test the impact of Reserver banks' preferences on banking sector vulnerability, so testing benign neglect against Schwartz's hypothesis, we run the following estimation:

$Y_{i,t} = \propto + \beta RBC_{i,t} + \gamma_1 \sigma_{i,t} + \gamma_2 X_{i,t-1} + \delta_i + \delta_t + \epsilon_{i,t}$    (1)

where $Y_{i,t}$ alternatively represents one of our six measures of banking sector vulnerability for country i at time t. $RBC_{i,t}$ is the indicator of Reserver bank'
preferences (CONS or CONS_W)[14], σi,t is a vector containing the variances of supply and demand shocks, and Xi,t−1 is a vector that includes the other control variables, which are lagged to address potential endogeneity. Moreover, country fixed effects (δi) are included in equation (1) and are intended to eliminate unobserved time-invariant heterogeneity at the country level. We also introduce time fixed effects (δt) to absorb the impact of global shocks that may affect all the countries in the sample, such as the subprime crisis. i,t is the error term.
Throughout the study, the researcher will be particularly interested in the sign and significance of β. For Y, measuring banking sector vulnerabilities, a positive β would validate the benign neglect hypothesis, while a negative one would support Schwartz's hypothesis. As the Z-score and capital-to-asset ratio are inverse proxies for banking vulnerabilities, the signs related to the alternative hypotheses are reversed.

**Table 4:** Reserve Bank India and banking sector vulnerability (credit volatility and credit-to-GDP gap)

| Dependent variable | | Credit volatility | | | Credit-to-GDP gap | | |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (1) | (2) | (3) |
| *CONS* | | 21.876** | 72.966*** | 48.586*** | 15.300*** | 15.405*** | 16.013*** |
| | | (11.009) | (23.357) | (15.776) | (2.715) | (3.604) | (5.822) |

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[11]Giannone, D., Lenza, M., and Reichlin, L. (2011). Market freedom and the global recession. IMF Economic Review, 59(1):111–135

[12]Abiad, A. G., Leigh, D., and Mody, A. (2007). International finance and income convergence: Europe is different. IMF Working Papers 07/64, International Monetary Fund.

[13]Giannone, D., Lenza, M., and Reichlin, L. (2011). Market freedom and the global recession. IMF Economic Review, 59(1):111–135

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| | | | | | | |
|---|---|---|---|---|---|---|
| Variance of supply shocks | -2.497 | -1.931 | -4.512 | 0.845 | -0.694 | 0.819 |
| | (4.396) | (9.708) | (6.199) | (1.083) | (1.487) | (2.288) |
| Variance of demand shocks | 6.219 | 8.396 | 4.528 | -2.995*** | -2.674** | -6.285*** |
| | (4.200) | (8.444) | (6.371) | (1.033) | (1.306) | (2.351) |
| GDP per capita | -0.051 | -0.192 | -0.067 | 0.018 | 0.138*** | 0.456*** |
| | (0.097) | (0.303) | (0.251) | (0.025) | (0.050) | (0.093) |
| Lerner index | | -85.748** | -70.582*** | | 20.855*** | 4.420 |
| | | (42.438) | (26.077) | | (6.648) | (9.624) |
| Bank concentration | | 0.019 | -0.255 | | -0.054 | -0.130 |
| | | (0.347) | (0.247) | | (0.057) | (0.091) |
| Financial openness | | | 11.791 | | | -0.477 |
| | | | (26.484) | | | (9.774) |
| Financial liberalization | | | -245.911*** | | | 43.525 |
| | | | (81.036) | | | (29.907) |
| Constant | 3.171 | -2.339 | 204.093** | 20.089 | -24.489*** | -98.434*** |
| | (50.881) | (46.411) | (81.070) | (13.857) | (7.368) | (29.920) |
| Observations | 874 | 460 | 282 | 998 | 564 | 282 |
| R-squared | 0.047 | 0.074 | 0.140 | 0.144 | 0.229 | 0.242 |
| Number of countries | 73 | 55 | 43 | 73 | 56 | 43 |
| | | | | | | |
| *CONS_W* | 27.396** | 78.508*** | 52.334*** | 12.634*** | 13.129*** | 17.784*** |
| | (10.764) | (24.142) | (16.250) | (2.682) | (3.713) | (5.993) |
| Variance of supply shocks | 1.098 | 8.262 | 2.334 | 2.444** | 1.103 | 3.138 |
| | (4.672) | (10.039) | (6.471) | (1.153) | (1.541) | (2.386) |
| Variance of demand shocks | 2.797 | -3.101 | -4.325 | -4.763*** | -4.696*** | -9.254*** |
| | (4.350) | (8.886) | (6.429) | (1.064) | (1.345) | (2.371) |
| GDP per capita | -0.056 | -0.163 | -0.033 | 0.026 | 0.145*** | 0.468*** |
| | (0.096) | (0.303) | (0.251) | (0.025) | (0.051) | (0.093) |
| Lerner index | | -75.460* | -67.923*** | | 22.195*** | 5.290 |
| | | (42.305) | (26.006) | | (6.703) | (9.590) |
| Bank concentration | | 0.079 | -0.231 | | -0.050 | -0.120 |
| | | (0.349) | (0.247) | | (0.058) | (0.091) |
| Financial openness | | | 10.248 | | | -1.004 |
| | | | (26.440) | | | (9.750) |
| Financial liberalization | | | -255.003*** | | | 40.725 |
| | | | (80.583) | | | (29.717) |
| Constant | 2.200 | -12.063 | 206.214** | 22.115 | -23.759*** | -98.405*** |
| | (50.694) | (47.308) | (80.505) | (13.914) | (7.580) | (29.688) |
| Observations | 874 | 460 | 282 | 998 | 564 | 282 |
| R-squared | 0.050 | 0.076 | 0.143 | 0.135 | 0.220 | 0.246 |
| Number of countries | 73 | 55 | 43 | 73 | 56 | 43 |
| | | | | | | |

Note: Standard errors are reported in parentheses.
*, **, and *** denote significance at the 10%, 5% and 1% level, respectively.

**Table 5:** Reserve Bank of India and banking sector vulnerability (credit-to-deposit and non-performing loans)

| Dependent variable | Credit-to-deposit ratio | | | Nonperforming loans ratio | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| *CONS* | 18.919*** | 30.933*** | 24.822*** | 6.539*** | 7.176*** | 3.528** |
| | (5.451) | (5.777) | (9.180) | (1.378) | (1.417) | (1.702) |
| Variance of supply shocks | -10.270*** | -3.101 | -3.135 | 0.705 | 1.124** | 0.744 |
| | (2.179) | (2.341) | (3.557) | (0.499) | (0.562) | (0.658) |
| Variance of demand shocks | -3.470* | -3.508 | -5.792 | 2.354*** | 2.317*** | 1.565** |
| | (2.097) | (2.155) | (3.659) | (0.479) | (0.500) | (0.689) |
| GDP per capita | 0.317*** | 0.258*** | 0.795*** | 0.082*** | 0.107*** | 0.090*** |
| | (0.050) | (0.082) | (0.158) | (0.017) | (0.019) | (0.027) |
| Lerner index | | 19.817* | 10.600 | | -9.347*** | -4.308 |
| | | (10.640) | (15.472) | | (2.526) | (2.820) |
| Bank concentration | | -0.197** | -0.241 | | -0.012 | 0.063** |
| | | (0.090) | (0.151) | | (0.022) | (0.027) |
| Financial openness | | | -27.446* | | | -0.488 |
| | | | (15.219) | | | (2.815) |
| Financial liberalization | | | 100.466** | | | -21.858** |
| | | | (46.579) | | | (8.636) |
| Constant | 23.120 | 61.077*** | -64.114 | -11.083*** | -9.605*** | 7.161 |
| | (26.760) | (11.710) | (46.604) | (2.634) | (2.960) | (8.654) |
| Observations | 940 | 525 | 272 | 607 | 532 | 274 |

| | | | | | | |
|---|---|---|---|---|---|---|
| R-squared | 0.150 | 0.229 | 0.226 | 0.303 | 0.349 | 0.501 |
| Number of countries | 72 | 55 | 42 | 65 | 54 | 41 |
| | | | | | | |
| *CONS_W* | 13.406** | 23.487*** | 25.105*** | 6.328*** | 6.398*** | 4.030** |
| | (5.359) | (5.965) | (9.391) | (1.409) | (1.468) | (1.752) |
| Variance of supply shocks | -8.614*** | 0.210 | 0.166 | 1.575*** | 1.984*** | 1.268* |
| | (2.302) | (2.432) | (3.720) | (0.525) | (0.584) | (0.689) |
| Variance of demand shocks | -5.529** | -7.639*** | -10.146*** | 1.412*** | 1.354*** | 0.900 |
| | (2.159) | (2.238) | (3.706) | (0.486) | (0.509) | (0.687) |
| GDP per capita | 0.327*** | 0.266*** | 0.804*** | 0.084*** | 0.109*** | 0.093*** |
| | (0.050) | (0.083) | (0.159) | (0.017) | (0.019) | (0.027) |
| Lerner index | | 22.433** | 11.547 | | -8.770*** | -4.139 |
| | | (10.845) | (15.475) | | (2.551) | (2.814) |
| Bank concentration | | -0.198** | -0.238 | | -0.009 | 0.065** |
| | | (0.092) | (0.151) | | (0.022) | (0.027) |
| Financial openness | | | -28.044* | | | -0.607 |
| | | | (15.228) | | | (2.808) |
| Financial liberalization | | | 95.086** | | | -22.520*** |
| | | | (46.407) | | | (8.580) |
| Constant | 27.201 | 66.386*** | -59.657 | -10.884*** | -9.361*** | 7.113 |
| | (26.802) | (12.060) | (46.197) | (2.642) | (3.025) | (8.583) |
| Observations | 940 | 525 | 272 | 607 | 532 | 274 |
| R-squared | 0.144 | 0.207 | 0.225 | 0.300 | 0.340 | 0.504 |
| Number of countries | 72 | 55 | 42 | 65 | 54 | 41 |
| | | | | | | |

Note: Standard errors are reported in parentheses.
*, **, and *** denote significance at the 10%, 5% and 1% level, respectively.

**Table 6:** Reserve Bank of India and banking sector vulnerability (Z-score and capital-to-asset)

| Dependent variable | | Z-score | | | Capital-to-asset ratio | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| *CONS* | -2.064** | -2.685** | -3.196* | -2.936*** | -2.223*** | -1.212 |
| | (1.043) | (1.056) | (1.733) | (0.598) | (0.585) | (0.984) |
| Variance of supply shocks | 0.575 | 0.406 | -0.443 | 0.409* | 0.176 | -0.685* |
| | (0.408) | (0.431) | (0.681) | (0.211) | (0.227) | (0.388) |
| Variance of demand shocks | -0.745* | -0.999*** | -1.714** | -0.588*** | -0.728*** | -0.994** |
| | (0.379) | (0.379) | (0.700) | (0.204) | (0.198) | (0.380) |
| GDP per capita | -0.039*** | -0.045*** | -0.055** | -0.013 | -0.022*** | -0.035** |
| | (0.014) | (0.015) | (0.028) | (0.008) | (0.008) | (0.017) |
| Lerner index | | 4.617** | 2.338 | | 2.291** | 1.310 |
| | | (1.960) | (2.865) | | (0.973) | (1.426) |
| Bank concentration | | 0.010 | 0.017 | | 0.021** | 0.051*** |
| | | (0.017) | (0.027) | | (0.009) | (0.015) |
| Financial openness | | | 1.177 | | | -0.825 |
| | | | (2.909) | | | (1.887) |
| Financial liberalization | | | -15.198* | | | -10.917* |
| | | | (8.902) | | | (5.697) |
| Constant | 20.851*** | 20.666*** | 35.072*** | 12.779*** | 12.133*** | 21.611*** |
| | (2.009) | (2.201) | (8.906) | (1.155) | (1.206) | (5.690) |
| Observations | 633 | 577 | 282 | 457 | 429 | 187 |
| R-squared | 0.037 | 0.061 | 0.072 | 0.115 | 0.138 | 0.205 |
| Number of countries | 60 | 56 | 43 | 54 | 52 | 40 |
| | | | | | | |
| *CONS_W* | -2.455** | -3.019*** | -3.564** | -3.096*** | -2.354*** | -1.028 |
| | (1.043) | (1.079) | (1.786) | (0.614) | (0.608) | (1.088) |
| Variance of supply shocks | 0.257 | 0.031 | -0.908 | -0.008 | -0.128 | -0.826** |
| | (0.425) | (0.444) | (0.711) | (0.218) | (0.231) | (0.394) |
| Variance of demand shocks | -0.413 | -0.591 | -1.120 | -0.151 | -0.396* | -0.814** |
| | (0.387) | (0.387) | (0.707) | (0.209) | (0.205) | (0.403) |
| GDP per capita | -0.040*** | -0.047*** | -0.057** | -0.014* | -0.023*** | -0.035** |
| | (0.014) | (0.015) | (0.028) | (0.008) | (0.008) | (0.017) |
| Lerner index | | 4.278** | 2.164 | | 2.019** | 1.261 |
| | | (1.963) | (2.859) | | (0.978) | (1.431) |
| Bank concentration | | 0.008 | 0.015 | | 0.020** | 0.051*** |
| | | (0.017) | (0.027) | | (0.009) | (0.015) |
| Financial openness | | | 1.282 | | | -0.915 |
| | | | (2.906) | | | (1.902) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Financial liberalization | | | -14.645* | | | -10.661* |
| | | | (8.858) | | | (5.701) |
| Constant | 21.208*** | 21.192*** | 35.085*** | 12.909*** | 12.306*** | 21.342*** |
| | (2.017) | (2.244) | (8.849) | (1.159) | (1.219) | (5.746) |
| Observations | 633 | 577 | 282 | 457 | 429 | 187 |
| R-squared | 0.040 | 0.063 | 0.074 | 0.117 | 0.139 | 0.201 |
| Number of countries | 60 | 56 | 43 | 54 | 52 | 40 |
| | | | | | | |

Note: Standard errors are reported in parentheses.
*, **, and *** denote significance at the 10%, 5% and 1% level, respectively.

Table 4 presents the results with credit volatility and the credit-to-GDP gap as endogenous variables. Table 5 reports results obtained with the credit-to-deposit ratio and the nonperforming loans to total gross loans ratio. Finally, Table 6 gives the results obtained with the Z-score and the capital-to-assets ratio as proxies for banking sector vulnerability. In each table, specificationincludes *CON S*, the variances of macroeconomic shocks and real GDP per capita as explanatory variables. Specifications (2) and (3) then successively include variables intended to control for banking competition or concentration in (2), and for the financial environment in (3). Banking competition and banking concentration are included simultaneously because many studies find no evidence that bank competitiveness measures are related to banking system concentration (e.g., Claessens and Laeven, 2004; Lapteacru, 2014)[17]. For all the specifications reported from Table 1 to Table 3, we find a robust relationship between the measure of inflation aversion for the central bank and the level of banking sector vulnerability. Excluding specification (3), with the capital-to-asset ratio as the endogenous variable, the coefficients associated with the two indexes of Reserver Bank of India are significant at the 5% level. A higher degree of Reserver Bank of India clearly entails higher banking sector vulnerability. Hence our results strongly support the benign neglect hypothesis. In other words, the more the Reserver Bank of India focus on the inflation goal, the more they neglect vulnerabilities in the banking sector, especially by enabling credit cycles to be amplified and excessive and volatile amounts of credit to be accumulated (Table 4) and by allowing banks' balance sheets to deteriorate (Tables 5 and 6). Importantly, this result is robust despite a substantial change in the sample size due to data availability once variables capturing the banking market structure and financial regulation are included.The non-significance of the coefficient for the Reserver Bank of India ' preferences when the capital-to-asset ratio is used as the dependent variable in specification (3) can easily be explained. Since the late 1980s, the Basel Committee on Banking Supervision (BCBS) has made recommendations on regulations on bank capital and leverage. The most striking example is the implementation in 1992 of the Cook ratio as an international norm for banks' capital. Such requirements were followed by many countries whatever the preferences of their Reserver Bank of India . In our sample, no country has an average capital-to-asset ratio below the reference value of 3%[18] (the norm recommended by the Basel III agreement, see BIS, 2014). This is the case for the 40 countries that remain once financial openness and regulation data are considered in specification (3). In consequence, this variable does not act as an indicator of banking sector vulnerability for these countries, which is why the capital-to-asset ratio is found to be less dependent on Reserver Bank of India than the other measures of banking sector vulnerability.

Moreover, the significance of the control variables depends on both the sam-ple size and the choice of the dependent variable, particularly for macroeco-nomic shocks. As highlighted above, the expected sign of banking competition is unclear. When the Lerner coefficient is significant, competition between banks weakens the banking sector in most cases. Our result highlights the "competition-fragility" view mentioned above. This explanation is particularly relevant when we consider the Z-score as the endogenous variable, as it might be expected that competition lessens the returns on assets for financial institutions. The co-efficients associated with the concentration index lead to the same conclusion, except for the last column of Table 6. A more concentrated banking market leads to a more stable financial sector. Next, the results for the financial liberalization indicators are mixed. When we consider the Z-score, the credit-to-deposit ratio and the capital-to-asset ratio, lax financial regulation induces more financial vul-nerability, as in Kaminsky and Reinhart (1999) and Giannone et al. (2011). This explanation does not hold for credit volatility and the nonperforming loans ratio, the results for which are in line with Bekaert et al. (2005) and support the notion that financial liberalization improves the efficiency of the banking system. Fi-nally, financial openness is only significant when we consider the credit-to-deposit ratio as an endogenous variable. This suggests that this characteristic is not an important determinant of banking fragility. Overall, the signs associated with the control variables are consistent with the theoretical arguments raised in the literature.The results of the corresponding robustness regressions are displayed in Ta-ble 4 to Table 6, still considering specifications (1) to (3). For parsimony, only the coefficients of *CON S* (upper panel of the table) and *CON S_W* (lower panel) are reported.

**Table 7:** Robustness checks with credit volatility and the credit-to-GDP gap

| Measure of Reserver Bank of India ' preferences | | | *CONS* | | | |
|---|---|---|---|---|---|---|
| Dependent variable | | Credit volatility | | Credit-to-GDP gap | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Alternative measures of shocks (a) | 25.501** | 93.713*** | 65.198*** | 15.143*** | 16.167*** | 19.067*** |
| (GDP growth and inflation) | (9.950) | (23.658) | (16.913) | (2.464) | (3.648) | (5.967) |
| Alternative measure of competition (b) | | 73.083*** | 45.426** | | 19.807*** | 22.452*** |
| (Boone index) | | (24.734) | (17.893) | | (3.459) | (5.449) |
| Alternative measure of concentration (c) | | 78.450*** | 51.007*** | | 17.215*** | 17.605*** |
| (assets of the five largest banks) | | (24.606) | (16.519) | | (3.719) | (5.978) |
| Alternative measure of liberalization 1 (d) | | | 48.586*** | | | 16.013*** |
| (credit controls) | | | (15.776) | | | (5.822) |
| Alternative measure of liberalization 2 (e) | | | 54.945*** | | | 14.092** |
| (banking supervision) | | | (16.079) | | | (5.817) |
| Alternative measure of liberalization 3 (f) | | | 48.586*** | | | 16.013*** |
| (supervisor power index) | | | (15.776) | | | (5.822) |
| Alternative measure of liberalization 4 (g) | | | 77.692*** | | | 11.983*** |
| (law and order) | | | (24.155) | | | (3.648) |
| Adding measure of *de facto* financial | | | 48.920*** | | | 15.895*** |
| openness (h) (capital flows) | | | (15.944) | | | (5.822) |
| | | | | | | |
| Measure of Reserver Bank of India ' preferences | | | *CONS_W* | | | |
| Dependent variable | | Credit volatility | | Credit-to-GDP gap | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Alternative measures of shocks (a) | 26.484*** | 73.953*** | 51.960*** | 7.507*** | 8.332** | 8.125 |
| (GDP growth and inflation) | (10.071) | (23.776) | (16.391) | (2.512) | (3.603) | (6.151) |
| Alternative measure of competition (b) | | 85.838*** | 57.656*** | | 17.133*** | 25.055*** |
| (Boone index) | | (25.631) | (18.695) | | (3.574) | (5.705) |
| Alternative measure of concentration (c) | | 86.128*** | 53.473*** | | 15.300*** | 18.307*** |
| (assets of the five largest banks) | | (25.602) | (17.011) | | (3.857) | (6.158) |
| Alternative measure of liberalization 1 (d) | | | 52.334*** | | | 17.784*** |
| (credit controls) | | | (16.250) | | | (5.993) |
| Alternative measure of liberalization 2 (e) | | | 56.729*** | | | 16.411*** |
| (banking supervision) | | | (16.613) | | | (5.989) |
| Alternative measure of liberalization 3 (f) | | | 52.334*** | | | 17.784*** |
| (supervisor power index) | | | (16.250) | | | (5.993) |
| Alternative measure of liberalization 4 (g) | | | 82.681*** | | | 9.789*** |
| (law and order) | | | (24.943) | | | (3.707) |
| Adding measure of *de facto* financial | | | 52.983*** | | | 17.458*** |
| openness (h) (capital flows) | | | (16.487) | | | (6.020) |

Note: This table reports the estimated values of $\beta$ in Eq. (1). Standard errors are reported in parentheses. *, **, and ***

**Table 8:** Robustness checks with the credit-to-deposit ratio and the non-performing loans ratio

| Measure of Reserver Bank of India ' preferences | | | *CONS* | | | |
|---|---|---|---|---|---|---|
| Dependent variable | | Credit-to-deposit ratio | | Nonperforming loans ratio | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Alternative measures of shocks (a) | 16.654*** | 35.261*** | 31.385*** | 5.232*** | 6.214*** | 3.257* |
| (GDP growth and inflation) | (4.988) | (5.928) | (9.669) | (1.460) | (1.524) | (1.930) |
| Alternative measure of competition (b) | | 33.236*** | 29.544*** | | 7.934*** | 4.678*** |
| (Boone index) | | (4.611) | (5.553) | | (1.450) | (1.727) |
| Alternative measure of concentration (c) | | 30.815*** | 27.382*** | | 7.635*** | 2.958* |
| (assets of the five largest banks) | | (5.989) | (9.463) | | (1.441) | (1.767) |
| Alternative measure of liberalization 1 (d) | | | 24.822*** | | | 3.528** |
| (credit controls) | | | (9.180) | | | (1.702) |
| Alternative measure of liberalization 2 | | | 21.147** | | | 4.134** |

| | (1) | (2) | (3) | (1) | (2) | (3) |
|---|---|---|---|---|---|---|
| (e) | | | | | | |
| (banking supervision) | | | (9.227) | | | (1.724) |
| Alternative measure of liberalization 3 (f) | | | 24.822*** | | | 3.528** |
| (supervisor power index) | | | (9.180) | | | (1.702) |
| Alternative measure of liberalization 4 (g) | | | 27.204*** | | | 7.136*** |
| (law and order) | | | (5.887) | | | (1.512) |
| Adding measure of de facto financial | | | 24.264*** | | | 3.495** |
| openness (h) (capital flows) | | | (9.252) | | | (1.713) |
| | | | | | | |
| Measure of Reserver Bank of India' preferences | | | *CONS_W* | | | |
| Dependent variable | Credit-to-deposit ratio | | | Nonperforming loans ratio | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Alternative measures of shocks (a) | 15.854*** | 19.449*** | 20.470** | 5.403*** | 6.203*** | 2.666 |
| (GDP growth and inflation) | (5.170) | (5.916) | (9.570) | (1.399) | (1.495) | (1.782) |
| Alternative measure of competition (b) | | 25.410*** | 30.019*** | | 7.305*** | 5.068*** |
| (Boone index) | | (4.786) | (5.799) | | (1.505) | (1.815) |
| Alternative measure of concentration (c) | | 23.377*** | 26.753*** | | 7.091*** | 3.566* |
| (assets of the five largest banks) | | (6.232) | (9.703) | | (1.497) | (1.812) |
| Alternative measure of liberalization 1 (d) | | | 25.105*** | | | 4.030** |
| (credit controls) | | | (9.391) | | | (1.752) |
| Alternative measure of liberalization 2 (e) | | | 22.566** | | | 4.434** |
| (banking supervision) | | | (9.441) | | | (1.779) |
| Alternative measure of liberalization 3 (f) | | | 25.105*** | | | 4.030** |
| (supervisor power index) | | | (9.391) | | | (1.752) |
| Alternative measure of liberalization 4 (g) | | | 18.981*** | | | 6.294*** |
| (law and order) | | | (6.027) | | | (1.543) |
| Adding measure of de facto financial | | | 24.272** | | | 4.044** |
| openness (h) (capital flows) | | | (9.509) | | | (1.770) |

Note: This table reports the estimated values of $\beta$ in Eq. (1). Standard errors are reported in parentheses. *, **, and*** denote significance at the 10%, 5% and 1% level, respectively.

(a): we replace macroeconomic shocks with the annual growth rate of real GDP and the annual inflation rate.

(b) and (c): we replace the Lerner index with the Boone index and the three largest commercial banks with the assets of the five largest commercial banks, respectively. As the banking competition/concentration variables are excluded from the set of control variables in the first specification, we only present the estimated coefficients associated with the central bank's preferences indicator in specifications (2) and (3).

(d), (e), (f) and (g): we replace the financial liberalization variable with measures of credit controls, banking supervision, supervisory power and quality of institutions (law and order), respectively. As the financial liberalization variable is only included in the set of control variables for the first specification, we only present the estimated coefficients associated with the central bank's preferences indicator in specification (3).

(h): we add a measure of capital flows, only in specification (3), to simultaneously include *de jure* and *de facto* indicators of financial openness.

**Table 9** Robustness checks with the Z-score and the capital-to-asset ratio

| Measure of Reserver Bank of India' preferences | | | *CONS* | | | |
|---|---|---|---|---|---|---|
| Dependent variable | | Z-score | | Capital-to-asset ratio | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Alternative measures of shocks (a) | -1.848* | -2.004* | -1.790 | -3.049*** | -2.378*** | -1.419 |
| (GDP growth and inflation) | (1.008) | (1.023) | (1.686) | (0.720) | (0.732) | (1.103) |
| Alternative measure of competition (b) | | -2.910*** | -3.138* | | -2.365*** | -1.105 |
| (Boone index) | | (1.016) | (1.765) | | (0.572) | (0.967) |
| Alternative measure of concentration (c) | | -2.814*** | -3.534** | | -2.154*** | -1.644* |
| (assets of the five largest banks) | | (1.058) | (1.748) | | (0.585) | (0.992) |
| Alternative measure of liberalization 1 (d) | | | -3.196* | | | -1.212 |
| (credit controls) | | | (1.733) | | | (0.984) |
| Alternative measure of liberalization 2 (e) | | | -2.767 | | | -0.930 |
| (banking supervision) | | | (1.743) | | | (1.029) |
| Alternative measure of liberalization 3 (f) | | | -3.196* | | | -1.212 |
| (supervisor power index) | | | (1.733) | | | (0.984) |
| Alternative measure of liberalization 4 (g) | | | -2.804** | | | -2.086*** |
| (law and order) | | | (1.116) | | | (0.585) |

| | (1) | (2) | (3) | (1) | (2) | (3) |
|---|---|---|---|---|---|---|
| Adding measure of de facto financial | | | -3.117* | | | -1.154 |
| openness (h) (capital flows) | | | (1.732) | | | (0.985) |
| | | | | | | |
| Measure of Reserver Bank of India ' preferences | | | *CONS_W* | | | |
| Dependent variable | | Z-score | | | Capital-to-asset ratio | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Alternative measures of shocks (a) | -2.793*** | -3.440*** | -3.040* | -3.015*** | -2.304*** | -0.956 |
| (GDP growth and inflation) | (1.018) | (1.067) | (1.783) | (0.599) | (0.598) | (1.062) |
| Alternative measure of competition (b) | | -2.838*** | -2.936 | | -2.573*** | -1.182 |
| (Boone index) | | (1.040) | (1.860) | | (0.593) | (1.068) |
| Alternative measure of concentration (c) | | -3.113*** | -3.938** | | -2.157*** | -1.329 |
| (assets of the five largest banks) | | (1.090) | (1.798) | | (0.612) | (1.100) |
| Alternative measure of liberalization 1 (d) | | | -3.564** | | | -1.028 |
| (credit controls) | | | (1.786) | | | (1.088) |
| Alternative measure of liberalization 2 (e) | | | -3.270* | | | -0.748 |
| (banking supervision) | | | (1.797) | | | (1.141) |
| Alternative measure of liberalization 3 (f) | | | -3.564** | | | -1.028 |
| (supervisor power index) | | | (1.786) | | | (1.088) |
| Alternative measure of liberalization 4 (g) | | | -3.094*** | | | -2.084*** |
| (law and order) | | | (1.128) | | | (0.601) |
| Adding measure of de facto financial | | | -3.515* | | | -0.995 |
| openness (h) (capital flows) | | | (1.792) | | | (1.093) |

*** denote significance at the 10%, 5% and 1% level, respectively.

(a): we replace macroeconomic shocks with the annual growth rate of real GDP and the annual inflation rate.

(b)     and (c): we replace the Lerner index with the Boone index and the three largest commercial banks with the assets of the five largest commercial banks, respectively. As the banking competition/concentration variables are excluded from the set of control variables in the first specification, we only present the estimated coefficients associated with the central bank's preferences indicator in specifications (2) and (3).

(d), (e), (f) and (g): we replace the financial liberalization variable with measures of credit controls, banking supervision, supervisory power and quality of institutions (law and order), respectively. As the financial liberalization variable is only included in the set of control variables for the first specification, we only present the estimated coefficients associated with the central bank's preferences indicator in specification (3).

(h): we add a measure of capital flows, only in specification (3), to simultaneously include *de jure* and *de facto* indicators of financial openness.

**Table 10: 2**SLS results for credit volatility, credit-to-GDP gap and credit-to-deposit ratio

| Dependent variable | | | Credit volatility | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| CONS | 39.453* | 127.286** | 66.164* | | | |
| | (20.193) | (54.720) | (37.553) | 49.289** | 163.217** | 87.753** |
| CONS_W | | | | | | |
| | | | | (23.268) | (70.843) | (43.453) |
| Observations | 842 | 438 | 272 | 775 | 412 | 255 |
| Number of countries | 68 | 51 | 40 | 66 | 50 | 39 |
| R-squared | 0.046 | 0.069 | 0.138 | 0.048 | 0.053 | 0.122 |
| Hansen J-OverID test [p-value] | 0.741 | 0.389 | 0.128 | 0.758 | 0.594 | 0.371 |
| Cragg-Donald Wald F Stat. | 569.7 | 202.9 | 97.65 | 345.6 | 115.8 | 71.04 |
| Stock &Yogo critical value (10%) | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 |
| | | | | | | |
| Dependent variable | | | Credit-to-GDP gap | | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| CONS | 14.246*** | 16.918*** | 16.096* | | | |
| | (3.503) | (4.776) | (8.361) | 10.024** | 11.718** | 22.668** |
| CONS_W | | | | | | |
| | | | | (4.034) | (5.613) | (9.472) |
| Observations | 958 | 538 | 272 | 892 | 513 | 255 |
| Number of countries | 69 | 52 | 40 | 68 | 52 | 39 |
| R-squared | 0.154 | 0.249 | 0.262 | 0.130 | 0.234 | 0.244 |
| Hansen J-OverID test [p-value] | 0.069 | 0.083 | 0.178 | 0.150 | 0.256 | 0.531 |
| Cragg-Donald Wald F Stat. | 740.2 | 319.6 | 97.65 | 446.5 | 196 | 71.04 |
| Stock &Yogo critical value (10%) | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 |
| | | | | | | |
| Dependent variable | | | Credit-to-deposit ratio | | | |

| | (1) | (2) | (3) | (1) | (2) | (3) |
|---|---|---|---|---|---|---|
| CONS | 17.365*** | 37.376*** | 32.260*** | | | |
| | (5.097) | (6.640) | (8.872) | | | |
| CONS_W | | | | 11.408** | 28.599*** | 39.855*** |
| | | | | (5.806) | (7.954) | (9.598) |
| Observations | 902 | 500 | 262 | 837 | 475 | 245 |
| Number of countries | 68 | 51 | 39 | 67 | 51 | 38 |
| R-squared | 0.163 | 0.267 | 0.261 | 0.154 | 0.235 | 0.239 |
| Hansen J-OverID test [p-value] | 0.076 | 0.072 | 0.054 | 0.051 | 0.120 | 0.132 |
| Cragg-Donald Wald F Stat. | 656.2 | 269.8 | 96.99 | 395.2 | 163.2 | 71.07 |
| Stock &Yogo critical value (10%) | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 |
| | | | | | | |

Note: This table reports the estimated values of *β* in Eq. (1). Standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

**Table 11: 2**SLS results for nonperforming loans ratio, z-score and capital-to-asset ratio

| Dependent variable | | | Nonperforming loans ratio | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| CONS | 10.491*** | 10.372*** | 8.699*** | | | |
| | (2.423) | (1.562) | (2.275) | | | |
| CONS_W | | | | 9.526*** | 9.840*** | 8.406*** |
| | | | | (2.606) | (1.918) | (2.616) |
| Observations | 572 | 504 | 264 | 545 | 482 | 250 |
| Number of countries | 56 | 50 | 38 | 56 | 50 | 38 |
| R-squared | 0.298 | 0.349 | 0.481 | 0.318 | 0.368 | 0.468 |
| Hansen J-OverID test [p-value] | 0.583 | 0.794 | 0.843 | 0.311 | 0.624 | 0.658 |
| Cragg-Donald Wald F Stat. | 326.7 | 273.8 | 93.43 | 193.9 | 167.3 | 69.57 |
| Stock &Yogo critical value (10%) | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 |
| | | | | | | |
| Dependent variable | | | Z-score | | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| CONS | -1.886* | -2.466** | -2.240 | | | |
| | (1.126) | (1.216) | (2.084) | | | |
| CONS_W | | | | -2.216* | -2.914** | -2.441 |
| | | | | (1.343) | (1.453) | (2.376) |
| Observations | 604 | 549 | 272 | 576 | 524 | 255 |
| Number of countries | 57 | 53 | 40 | 57 | 53 | 39 |
| R-squared | 0.032 | 0.061 | 0.081 | 0.030 | 0.053 | 0.083 |
| Hansen J-OverID test [p-value] | 0.409 | 0.622 | 0.670 | 0.345 | 0.537 | 0.470 |
| Cragg-Donald Wald F Stat. | 358.1 | 326.7 | 97.65 | 217.3 | 200.4 | 71.04 |
| Stock &Yogo critical value (10%) | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 |
| | | | | | | |
| Dependent variable | | | Capital-to-asset ratio | | | |
| | (1) | (2) | (3) | (1) | (2) | (3) |
| CONS | -2.433*** | -1.752** | -1.035 | | | |
| | (0.913) | (0.880) | (1.226) | | | |
| CONS_W | | | | -1.836** | -1.426 | -0.860 |
| | | | | (0.912) | (0.873) | (1.409) |
| Observations | 434 | 407 | 179 | 414 | 388 | 169 |
| Number of countries | 52 | 50 | 36 | 52 | 50 | 36 |
| R-squared | 0.136 | 0.157 | 0.218 | 0.130 | 0.159 | 0.271 |
| Hansen J-OverID test [p-value] | 0.231 | 0.232 | 0.406 | 0.279 | 0.312 | 0.314 |
| Cragg-Donald Wald F Stat. | 265.3 | 248.9 | 64.57 | 175.0 | 175.0 | 48.06 |
| Stock &Yogo critical value (10%) | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 | 22.30 |

Note: This table reports the estimated values of *β* in Eq. (1). Standard errors are reported in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

## VI. Conclusion

The dramatic recent crisis occurred in the context of the Great Moderation. This has shed doubt on the conventional wisdom of price stability guaranteeing macroeconomic and financial stability. An alternative view contends that with monetary policies focused primarily on price stability, financial risks were left largely

unaddressed. The belief in the "divine coincidence" has, in retrospect, been revealed to be benign neglect. As a consequence, financial instability has undermined macroeconomic stability despite inflation being low and stable.The results and trends show that NPAs are having a downward trend over the study period, but Non Performing Assets of public sector banks are still higher than private sector banks. The returns on the assets have also the downward trends but this is much lower in PSU banks as compared to private banks. The core management of private sector banks is more professional, much competent and expertise than the PSU banks. So, they are more competent in making plans to recover funds from borrowers including both institutional and individuals. The public sector banks are required to lend money to the poorer sections of the society also, where the recovery chances is very low. That is why, the NPAs of public sector banks have sharp declining trend, and still it is much higher than private sector banks. Now the various steps have been taken by the government for recovery and reducing the NPAs of PSU banks. The one time settlement scheme i.e., compromise scheme, Debt Recovery Tribunals, LokAdalats, Securitization and reconstruction of financial assets and enforcement of Security Interest Act 2002, Corporate Reconstruction Companies, Credit information on the defaulters and role of credit information bureaus are the steps taken by the government. The ruling of Honorable Supreme Court i.e., upholding the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002, is also a big step for banks to recover the loan and lowering the NPA's. So, conclusively it can be said that this is the suitable time for government to rethinks its privatization strategy about the PSU banks and let them freely compete in the market

In this context, our paper is the first to address directly the link between the relative preferences of Reserve Bank of India for the inflation stabilization objective, indicating their degree of conservatism, and banking sector vulnerability. To assess this we tested benign neglect against Schwartz's hypothesis. Our results, from a sample of Public Sector Banks, indicate that differences in Reserve Bank of India Conservatism (RBC) robustly explain cross-country differences in banking sector vulnerability and unambiguously validate the benign neglect hypothesis.

On normative grounds, this result suggests two alternative perspectives for recommendations. One is that central bankers now know that it could be very costly to neglect financial and banking vulnerabilities as the cost of doing so is that the usual monetary policy orthodoxy must be renounced once a dramatic crisis occurs, and unconventional measures implemented instead. This could lead central bankers to tolerate a dilution of their primary price stability objective in order to devote greater attention to output and financial stability. This raises the issue of determining adequate instruments in terms of number and assignment so as to affect these sometimes conflicting goals. To be fully efficient, this would also require formal reforms stating such additional objectives in law. Reserve Bank of India would then officially be responsible for this goal.A macroeconomic model with utility-based loss functions for both monetary and macro-prudential policies would be particularly suited tosuch an analysis. It would allow for the simultaneous identification of the rela-tive preferences and the underlying structural "deep parameters" that Reserver Bank of India implies contribute most to such conflicts.

While a higher level of a more vulnerable banking sector, it is widely recognized that a highly inflationary context is not conducive to sound financial conditions. This suggests that an immediate extension of our results would be to examine the existence of non-linearities in the link between Reserver Bank of India and banking sector vulnerability. Furthermore, our results suggest more fundamental extensions. One is the overall assessment of an excessively high degree of Reserver Bank of India . As shown in this paper, a conservative stance exacerbates banking vulnerabilities that are at the origin of banking and financial crises. This could be called the *ex ante* effect of Reserver Bank of India . Furthermore, it can be expected that the degree of Reserver Bank of India also impacts the pace of economic recovery in the aftermath of a crisis. Indeed, a conservative central banker may be reluctant to deviate from the sacred inflation objective to support the economy and the financial system once a financial crisis has occurred. At best, conservative monetary authorities would react too late. This would be the *ex post* effect of Reserver Bank of India . Thus, an immediate extension of this paper would be to investigate the impact of Reserver Bank of India on the severity and costs of banking and financial crises.

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