Reserve Bank of India

Discussion Paper on
Introduction of Dynamic Loan Loss Provisioning Framework for Banks in India

1. Introduction

Provisioning for loan losses refers to the mechanism used to recognise credit impairments. Provisioning is a critical component to effective financial reporting and prudential supervision. Provisions for loan losses reduce an institution's reported net income in the period in which the provision is recognized. Provisions against loan losses can be broadly divided into two categories: (i) General provisions, and (ii) Specific provisions. General provisions are not tied down to a particular account and are made *ex-ante* on portfolio basis based on a quantitative or qualitative measure of expected loss. As such, these provisions are made on standard assets. Specific provisions are *ex-post* provisions made on loans classified as non-performing assets based on some evidence of impairment of assets. These are generally made on individual account basis. In some jurisdictions, such as India, banks make additional provisions (called floating provisions) which are neither made against any identified losses nor are earmarked against particular loan accounts. Therefore, these provisions are essentially in the nature of general provisions.

2. Review of Present Provisioning Practices

2.1 Provisions based on Accounting Standards

The accounting model for recognizing credit losses being followed presently by most of the countries (as well as under US GAAP and IFRS[1]) is referred as "incurred loss model". Under the approach, provision is made against the loans only on occurrence of an identifiable event that questions the collectability of principal and interest in full. The timing and measurement of losses are, therefore, based on estimating losses that have been incurred as of the reporting date. The current accounting standards based on incurred loss approach do not permit recognizing credit losses based on events that are expected to occur in the future. The incurred loss-based accounting approaches to provision are generally of two types viz., rule based and principle based. While the rule based approach does not give the bank management freedom

[1] Generally Accepted Accounting Principles and International Financial Reporting Standards

from deviating from the set rules, the principle based approach leaves bank management with freedom to pursue the set outcomes in ways that they deem most suitable, given the realities of their own institution. A combination of the above two types is also practiced in some jurisdictions.

The incurred loss model in general and the impairment accounting framework for financial assets - IAS 39 - *Financial Instruments: Recognition and Measurement* attracted a lot of criticism, after the global financial crisis, for not recognizing the expected losses and for being procyclical i.e., it tends to amplify business cycles. Under the incurred loss model, provisions for loan losses can only be established when a loss event has been identified. As loss events are more frequent during economic downturn, provisioning increase at the same time when the bank's operating revenues are declining. More generally, because bank's management have incentives to maximize short term profitability, it may be tempted to delay loan loss recognition. When economic conditions are benign, management may be reluctant to reduce levels of profits with provisions based on pessimistic indicators. At the same time there is a temptation to reduce loan loss provisions because of fewer defaults. Delaying loan loss recognition affects a bank's ability to provide against losses in two major ways. First, loss recognition is concentrated in a shorter period and during a recession, when a bank's income is at its lowest, the growth in loan loss provisions combined with the decline in operating earnings may force a bank to post an annual loss, which reduces its equity. Second, during a downturn, to reduce the risk of further losses, a bank's remedial actions typically include the tightening of lending standards and a reduction in lending. When all banks adopt this behavior, the whole economy may suffer from credit rationing.

The global financial crisis thus highlighted the need to review the impairment-accounting framework for financial assets, which is currently getting the attention from accounting standard setters, the Basel Committee and other international bodies. Further, to address pro-cyclicality, the Basel committee is introducing a number of measures, one of which is to promote forward looking provisions which is discussed in paragraph 2.2.

2.2 Expected loss-based provisions

Advances in credit risk modeling over last decade or so have introduced the concept of expected losses (EL) and unexpected losses (UL) to measure the potential losses in a credit portfolio. It is generally accepted that banks should cover the unexpected losses by capital and expected losses by provisions. The EL is generally derived as the mean of the credit loss distribution. It makes sense to cover the EL with provisions as it is customary to price the EL

portion of the losses in the rate of interest as a credit risk premium, part of which can always be saved as provision. The Basel II Framework provided a further push to this approach by clearly requiring banks to separately measure EL and UL. EL-based provisioning has forward-looking element as it is capable of incorporating through the cycle view of probability of default. The recent financial crisis has provided a still further fillip to the search for a forward-looking provisioning approach due to pro-cyclical considerations. To address this, Basel Committee on Banking Supervision (BCBS) under Basel III reforms is introducing a number of measures. First, it is advocating a change in the accounting standards towards an expected loss (EL) approach. The Basel Committee strongly supports the initiative of the International Accounting Standards Board (IASB) to move to an EL approach. The goal is to improve the usefulness and relevance of financial reporting for stakeholders, including prudential regulators. It has issued publicly and made available to the IASB a set of high level guiding principles that should govern the reforms to the replacement of IAS39. The Basel Committee also supports an EL approach that captures actual losses more transparently and is also less procyclical than the current "incurred loss" approach. Second, it is updating its supervisory guidance to be consistent with the move to such an EL approach. Such guidance will assist supervisors in promoting strong provisioning practices under the desired EL approach. Third, it is addressing incentives to stronger provisioning in the regulatory capital framework.

3. Inadequacy of the Current Provisioning Policy in India

3.1 In normal provisioning policies, specific provisions are made *ex-post* based on some estimation of the level of impairment. The general provisions are normally made *ex-ante* as determined by regulatory authorities or bank management based on their subjective judgement. While such a policy for making specific provisions is pro-cyclical, that for general provisions does not lay down objective rules for utilization thereof.

3.2 Indian banks make the following types of loan loss provisions at present:

- General provisions for standard assets,
- Specific provisions for NPAs,
- Floating provisions,
- Provisions against the diminution in the fair value of a restructured asset.

3.3 The present provisioning policy has the following drawbacks:

- The rate of standard asset provisions has not been determined based on any scientific analysis or credit loss history of Indian banks.

- Banks make floating provisions at their own will without any pre-determined rules and not all banks make floating provisions. It makes inter-bank comparison difficult.

- This provisioning framework does not have countercyclical or cycle smoothening elements. Though RBI has been following a policy of countercyclical variation of standard asset provisioning rates, the methodology has been largely based on current available data and judgement, rather than on an analysis of credit cycles and loss history.

3.4 In view of the above, there is a need for introducing a comprehensive provisioning framework for banks in India with dynamic and countercyclical elements.

Q1. Do you think there is need for introducing a countercyclical provisioning framework in India?

4. Review of Various Countercyclical Provisioning Approaches

4.1 Countercyclical provisioning approaches have been implemented in some countries even before the financial crisis. Some of these including the ones described in literature, though not implemented, essentially fall into two categories:

- *The approaches which use the dynamic provisioning only to smoothen the cyclical variations in specific provisions thereby avoiding fluctuations in the P&L through the cycle. These may be called "Pure Dynamic Provisioning Policies".*

- *The approaches which, in addition to targeting the smoothening of the cyclical variations in P&L due to specific provisions, also tend to build-up reserve of general provisions in good times to be used in case the cyclical downturn turns out to be more severe than the earlier one. These may be called "Conservative Dynamic Provisioning Policies".*

Some of these approaches are discussed in the ensuing paragraphs.

4.1.1 Spanish Dynamic Provisioning

4.1.1.1 Dynamic provisioning system was put in place by Spain's Central Bank, Banco de Espana in July 2000 to cope with a sharp increase in credit risk on Spanish banks' balance sheets following a period of significant credit growth. Moral suasion had proved to be inadequate in inducing banks to become more conservative. Moreover, intense competition among the banks had resulted in inadequate loan pricing. In addition, there had been a significant reduction in non-performing loans in the second half of the 1990s, which meant that the specific provisions were very low. Infact, in 1999 Spain had the lowest ratio of loan loss provisions to total loans among OECD countries. It also had the highest correlation between the

provisioning ratio and the GDP growth rate (-0.97) for the period 1991-1999. Thus loan loss provisions were very pro-cyclical in Spain: they were very low during periods of expansion and very high during recessions, while credit risk and under-pricing of risk spread during the boom period. Banco de Espana established **statistical (also called dynamic/countercyclical) provision** in addition to the already existing (i) General provision (i.e. provision towards standard assets) and (ii) Specific provision (loan loss provision) in 2000. In 2004 Banco de Espana revised the statistical provisioning system in response to the adoption of the International Financial Reporting Standards (IFRS) by the European Union. The changes involved reverting to only two types of loan loss provisions: Specific and General (Statistical), although the General provisions now have two components, alpha and beta and is set aside as per the following formula:

General Provision (GP) made during the year = $\alpha \Delta C_{t+} (\beta - \frac{\Delta SP_t}{C_t}) C_t$

$= \alpha \Delta C_{t+} (\beta * C_t) - \Delta SP$

Where C_t = stock of loans in amount

ΔC_t = Incremental stock of loans in amount

α = Average estimate of credit loss (expressed as a coefficient or in % terms).

β = Historical average specific provisions (expressed as a coefficient or in % terms)

ΔSP = Incremental specific provisions in amount

4.1.1.2 Explanation of the above formula:

(i) Banks must make provisions against the incremental credit growth according to **α** which is the average estimate of the credit loss. α varies across six homogeneous groups of loans according to the historical information on credit losses.

(ii) As credit risk or incurred losses, not yet identified in a specific loan, translate into specific loan losses at a different speed depending upon the business cycle, **α** is supplemented by a **β** parameter. By comparing β which is the historical average specific provision with the current level of specific provisions, banks can therefore assess the speed at which unspecific incurred losses evolve into specific losses for individual assets.

(iii) In periods of expanding credit, the difference ($\beta C_t - \Delta SP$) is positive and adds to **α** component of the General Provision while in periods when specific losses are much more easily identified in individual loans, the difference reverses and thus this component subtracts from the α component and may cause the general provision fund to be drawn down.

(iv) This General Provision has a cap of 125% of $\alpha.C_t$ to avoid excess provisioning.

(v) The formula presented above is a simplified version. Infact, α and β are assigned according to the six risk buckets or six homogeneous risk categories. The parameter vectors are :

0%; 0.6%; 1.5%; 1.8%; 2%; 2.5% for α

0%; 0.11%; 0.44%; 0.65%; 1.1%; 1.64% for β

Six homogeneous groups are:

a) Zero risk (cash, public sector debt)
b) Home mortgages with LTV below 80%, corporates with rating A or above
c) Loans with real guarantees and home mortgages with LTV above 80%.
d) Rest of loans, including corporates and SMEs
e) Consumer durable financing
f) Credit cards and overdrafts.

4.1.1.3 Evaluation of Spanish Model

(i) The total provisions (general plus specific) made based on this model every year work out to $\alpha \Delta C_t + (\beta * C_t)$.

(ii) α represents the average historical loss rate over one year observed by Spanish banks and therefore may not necessarily be equal to EL, however, if the credit cycles do not change in future, it may be closer to EL over one year.

(iii) The model is sensitive to the accuracy of two parameters α and β. It may particularly be source of error in estimating the correct provisioning requirements if the specific provisioning rates for NPAs in the past are different from true Loss Given Default (LGD) and have been changed significantly over the calibration period.

(iv) The Spanish model is conservative as it creates general provisions equal to $\alpha\Delta C_t$ even when the specific provisions made during the year are equal to historical average of specific provisions. This would be particularly be advantageous if the actual losses during the credit cycle happen to be higher than the previous one.

(v) However, during economic downturns in the Spanish Model, the $(\beta.C_t - \Delta SP)$ factor is solely responsible for reduction of the stock of provisions. Indeed, during bad times the stock of provisions related to the $\alpha\Delta C_t$ term still tends to grow, but at decreasing rates. In other words, the $\alpha\Delta C_t$ term is only able to generate an increase of the stock of provisions during good times, but is not able to reduce it during recessions, unless the specific provisions exceed the sum of long term average of specific provisions βL and long term average of expected loss of incremental loans $\alpha\Delta C_t$.

(vi) Besides, the Spanish Model leads to *ex-ante* provisions equal to αC_t when the specific provisions are equal to their long term average. If these provisions are included in the Tier II capital, they can still be justified. Otherwise, they would be in addition to the capital cushion for expected losses already included in the capital of the standardized approach banks and would be difficult to justify.

4.1.2 Financial Services Authority (FSA), UK Model – Suggested in the Turner Review of March 2009

4.1.2.1 The Turner Review – Discussion Paper of March 2009 (DP09/2: A regulatory response to the global banking crisis") while discussing the role of the accounting framework in procyclicality highlights the concept of dynamic provisioning as implemented in Spain. Thereafter, in relation with counter-cyclical provisioning/reserves, it strongly supports the concept that banks should be required by an automatic or formula based policy to build up buffers when the economy is growing strongly.

4.1.2.2 It then gives a stylised example, given in **Table 1**, of how a dynamic approach would operate to build up a buffer in the good part of the cycle, and which could then be used up when the downturn materializes. It is based upon the existing Spanish approach; however, there is no separate **'α'** factor covering growth in the stock of loans. Key assumptions in the example are:

(i) Ten-year economic cycle,

(ii) An average long-run loss rate of 0.8% of loans, an unchanged mix of loans within the portfolio, and

(iii) An average risk weight of 60% for the loans. It is also assumed that, mainly through the application of a variable scalar approach to Probability of Default (PDs), this risk weight does not itself vary with the cycle.

Under the FSA Model, the flow of dynamic provisions (DP) is calculated using the stock of loans outstanding at the beginning of each year and is set as under:

Dynamic Provisions (to be made during the year) = Long term loan loss estimate (-) Incremental Specific Provision

Table 1: Dynamic provisioning under FSA model

	Year	1	2	3	4	5	6	7	8	9	10	11	12
A	Loans (Rs.)	100	100	105	110	120	135	150	170	190	200	200	200
B	Losses (%)	1.60	1.60	1.00	0.40	0.60	0.50	0.50	0.50	0.40	0.80	1.60	1.60
C	Losses (Rs.) (A*B) Incremental Specific Provisions	1.60	1.60	1.05	0.44	0.72	0.81	0.75	0.85	0.76	1.60	3.20	3.20
D	Long term losses (Rs.) (0.80*A)	0.80	0.80	0.84	0.88	0.96	1.08	1.20	1.36	1.52	1.60	1.60	1.60
E	▲Dynamic provision (Rs.) (D-C)	0.00	0.00	0.00	0.44	0.24	0.27	0.45	0.51	0.76	0.00	(1.60)	(1.07)
F	Dynamic provision (Rs.) i.e. Cumulative balance.	0.00	0.00	0.00	0.44	0.68	0.95	1.40	1.91	2.67	2.67	1.07	0.00
G	RWAs (Rs.)	60	60	63	66	72	81	90	102	114	120	120	120
H	DP Reserve/ RWAs (%)	0.00	0.00	0.00	0.70	0.90	1.20	1.60	1.90	2.30	2.20	0.90	0.00

4.1.2.3 The example starts with a loan book of Rs. 100 during the downturn, but before a dynamic provisioning approach has been implemented. In the early years of the scenario the dynamic provisioning reserve has no impact. Because it had not been set up in the good part of the cycle, prior to the downturn, there is no balance that may be run down in those years when actual credit losses exceed the long-run average.

4.1.2.4 As the economy reverts to more normal conditions, growth starts to return and credit losses fall. During years four to nine the latter are less than the long run average, and this allows a dynamic provisioning reserve to be built up. This can then be automatically reduced in years 11 and 12 in order to provide substantial coverage of the above average losses of the next downturn.

4.1.2.5 Several key considerations should be highlighted from the example:

(i) the need for accurate measurement of the long run default rates. In practice this will require granular measurement of credit risk within each of a bank's sub-portfolios. However, this is the type of process that underlies IRB modeling.

(ii) although implementing a dynamic approach does not require the relevant parties to agree on when a cycle will turn, the quantum of the dynamic provisioning reserve that

has been built up will depend upon the length of the 'good' part of the cycle. If, in the example shown, the particular cycle were to turn down after year six, then the buffer built up would be only half of that assumed. Similarly a more prolonged 'good' part of the cycle would produce a higher buffer; and

(iii) an extended period of lower losses will encourage the tendency for arguments that there has been a structural as opposed to cyclical decrease in credit risk, and that consequently, inter alia, the dynamic provisioning reserve should be reduced by either capping it or revising downwards the long run average assumptions. If such arguments are accepted but prove not to be well-founded, the degree of coverage provided by the dynamic buffer will be reduced and it will prove less powerful than intended.

4.1.2.6. Evaluation of FSA Model

(i) FSA model is a kind of expected loss-based provisioning model. Under this model, the total provisions (dynamic plus specific) made based on this model every year work out to $\boldsymbol{\alpha}C_t$. This essentially covers the defaults which have already materialized and a smoothening component.

(ii) **α** represents the **EL** or average historical loss over one year horizon.

(iii) The model does not involve calibration of specific provisions.

(iv) The model clearly uses annual loss rate of the outstanding loan portfolio. Therefore, the model generates dynamic reserve in substantial amount and much more quickly. Unlike in the case of the model discussed in the previous paragraph, this model would ensure adequate countercyclical provisioning buffer.

4.1.3 Tentative Model of IASB

In November 2009, IASB published exposure draft *Financial Instruments: Amortised Cost and Impairment*. In January 2011, a joint supplement on *Financial Instruments: Impairment* was issued by IASB and FASB. The IASB has proposed to move from the current incurred loss impairment method to one based on expected losses. The proposed expected loss model requires an entity:

(i) to determine the expected credit losses on a financial asset when that asset is first obtained.

(ii) to recognize contractual interest revenue, less the initial expected credit losses, over the life of the instrument.

(iii) to build up provision over the life of the instrument for the expected credit losses.

(iv) to reassess the expected credit loss each period.

(v) To recongise immediately the effects of any changes in credit loss expectations.

However, the common proposal suggested by IASB and FASB in the supplement to Exposure Draft on *Financial Instruments: Amortized Cost and Impairment* is summarized in **Table 2** below. Final proposal is yet to be published.

Table 2: Summary of common proposals of IASB and FASB

Model	**Recognition of credit losses (when appropriate to recognize over life – i.e. "good book")**	**Recognition of credit losses (when not appropriate to recognize over life i.e. "bad book")**
Common Proposal – IASB and FASB.	Higher of (a) Time-proportional amount of remaining lifetime expected credit losses; and (b) All expected credit losses for the foreseeable future (being a minimum of 12 months)	Full amount of remaining lifetime expected credit losses.

4.1.4 Dynamic Provisioning adopted in Peru

4.1.4.1 In Peru, generic rate of provisioning was applicable to loans according to the type of debtor viz. commercial, micro-firms, consumers, mortgage, etc. The Peruvian financial supervisor/regulator then set a rule based on GDP growth. In this way, cyclical provisioning was activated when the rate of growth of GDP exceeds a certain threshold (in boom periods), which is related to an estimation of potential output growth. These cyclical provisions are part of generic provisions. When cyclical provisioning is activated, generic provision charge increase (although this depend on the type of debtor), as shown in **Table 3** below.

Table 3: Rate of generic provisions with and without activating the cyclical provisioning

Type of debtor	**When the rule is not activated**	**Additional when the rule is activated (cyclical)**
Corporate	0.7	0.40
Large Firms	0.7	0.45
Medium firms	1	0.30
Small firms	1	0.50
Micro firms	1	0.50
Consumer Revolving	1	1.50
Consumer Non-Revolving	1	1.00
Mortgage	0.7	0.40

4.1.4.2 If cyclical provisioning is activated, it deactivates by two rules:

Rule 1 – when the average of the y/y GDP growth rate of the last 30 months goes from a level above 5% to one below it.

Rule 2 – when the average of the y/y GDP growth rate of the last 12 months is 4 percentage points lower than the value of this average one year before.

4.1.4.3 The rationale behind using GDP instead of credit based rule (as used in Spanish Dynamic Provisioning) is the assumption that GDP precedes credit. In this sense, credit growth would not be a good variable to anticipate future banks losses and thus reduces the desirability to relate provisions to credit growth. Further, the GDP based rule is systemic. This means that its activation does not depend on a bank's behavior, but on the system as a whole. For this reason, the effect could be asymmetric on banks: it could be the case that a more prudent bank would have to increase generic provisions.

4.1.4.4 Evaluation of Peruvian Model

- This model addresses the pro-cyclicality of provisioning through varying general provisions rates over the cycle. Its strong point seems to be the scientific basis for activation and deactivation of the countercyclical provisioning rates.
- It is not clear how the model interacts with the specific provisioning regime and how it ensures adequacy of both the specific and general provisions.

4.1.5 Dynamic Provisioning adopted in Columbia

4.1.5.1 In 2007 Colombia adopted a model of dynamic provision for commercial and consumption loans, which represented about 90% of total outstanding loan portfolio. The banking regulator developed reference model for commercial and consumption credit risk. Although each bank can use its own credit risk model, which must be approved by the regulator, at present banks are using the reference model developed by the regulator.

4.1.5.2 The reference model established three types of provisions: individual, countercyclical and generic or general provisions, which are tax deductible. Individual provisions reflect the characteristic risk of every borrower and every type of loan and, can only be used if the loan becomes non-performing. Countercyclical provisions seek to cover changes in borrower's credit risk due to changes in the economic cycle and have the same characteristics as individual provisions. With the present regulation it is not easy to distinguish between individual and countercyclical provisions as both go to the same balance account. Finally, generic or general provisions are at least 1% of the total loan portfolio and this type of provisions can be used to meet countercyclical provisions regulation requirements.

4.1.5.3 Once the model of countercyclical provisions was implemented there was a dramatic fall in generic or general provisions. In fact, the system was criticized since the rise in the increase in the individual provisions, through countercyclical, was compensated in part by the reduction in generic or general provisions. The regulator, using historical data, calculates two risk

scenarios, A and B (where B is a riskier scenario). The outputs of this calculation are two default probability matrices which contain default probabilities for every type of credit and borrower. Provisions are the result of:

P = OVL*DP*LOD
Where:
OVL = Outstanding Value of the Loan or Exposure at Default (EAD)
DP = Default Probability or Probability of Default (PD)
LOD = Lost once Defaulted or Loss Given Default (LGD)

4.1.5.4 Every year the regulator decides which matrix will be used to compute individual provisions. During years of high credit and economic growth, matrix A is used to calculate the normal provisions and matrix B will be used to calculate the provisions under the riskier scenario, so that countercyclical provisions will be the difference between the riskier scenario provisions and the normal scenario provisions. During years of low growth matrix A will be used to calculate individual provisions and there will be no accumulation of countercyclical provisions.

4.1.5.5 The regulator can also exercise discretion in determining when banks can use countercyclical provisions to compensate the increase in individual provisions during an economic downturn. Once the regulator declares the *change of state* all banks can use countercyclical provisions, regardless of the financial health of individual institutions. Such a discretionary model, with no principles behind the change of state (and thus of provisioning) created a great uncertainty, which has led the Colombian regulator to announce a revision of the system in a direction that would make it more rules-based and more similar to the Spanish system.

4.1.5.6 The new system is based on the following principles (details not available). First, rules will be used instead of regulator's discretion in declaring the change of state. Second, the change of state will not be announced for the system as a whole but will be determined individually for each institution according to rules to be established. Third, clearer rules on accumulation and drawing down of countercyclical provisions will be adopted. Fourth, dynamic provisioning will be used as generic ones - and not individual - in the downturn. Fifth, there will be differentiation between institutions for the building–up of the countercyclical provisions, so that banks with higher credit growth rates will accumulate higher countercyclical provisions.

4.1.5.7 Evaluation of the model

This model seems to be conceptually sound as it recognises different types of provisions. However, interaction among various components of provisioning and the adequacy thereof cannot be commented upon due to non-availability of details.

Q2. Is the proposed Dynamic Provisioning (DP) framework is the appropriate countercyclical provisioning framework for India? Which of the other approaches discussed in the paper could have made a better choice according to you?

5. Proposed Provisioning Framework for Banks in India

5.1 Theoretical Model

5.1.1 The objective of the Dynamic Provisioning framework is to smoothen the impact of incurred losses on the P&L through the cycle, and not to provide general provisioning cushion for expected losses. This smoothening can be achieved based on the premise that average losses and hence average specific provisions, through the cycle will be equal to EL. Consequently, the dynamic provision created during a year will be the difference between EL and the specific provisions made during the year. This would lead to the following equation

$$\Delta DP = EL - \Delta SP = \alpha C_t - \Delta SP$$

5.1.2 Keeping in view the above observations, a **Dynamic Provisioning Framework for Loan Loss Provisions** for banks in India, consisting of two components, may be considered as under:

a) *Ex-post* **Specific Provisions "SP"** made during a year as required as per RBI guidelines. These provisions will be debited to P&L account.

b) **Dynamic Provisions "DP"** equal to $\alpha C_t - \Delta SP$ i.e. the difference between the long run average expected loss of the portfolio for one year and the incremental specific provisions made during the year. This is based on **FSA approach**. It is assumed that when the approach is implemented for the first time, the bank has adequate specific provisions to cover its NPAs. Positive value of $\alpha C_t - \Delta SP$ will increase the credit balance in DP Account. Negative value will represent a drawdown from the DP Account. This will generally ensure that every year the charge to P&L on account of specific provisions and DP is maintained at a level of αC_t.

Important aspects of the framework are as under:

(i) Under the internal ratings-based approach for credit risk (IRB) of Basel II, EL calculations require downturn LGD, but the EL is estimated only for one year. Consequently, under IRB, general provisions are expected to cover losses only for one year. Under the Dynamic provisioning approach based on annual EL, if annual EL is based on downturn LGD, it would grossly overestimate the provisioning requirements because it would be applied on outstanding balance every year. Therefore, while conservatively, the annual additions to DP may be calculated based on downturn LGD, in order to avoid excessive provisioning the stock of DP at any given point in time may be capped at

Stock of Loans*{[(M-1)*(Normal Annual EL)] + [Downturn Annual EL for the last year]}

Where

M is the weighted average maturity of specific loan portfolio of the bank or 5 years[2] *whichever is lower.*

EL is expressed in percentage terms

For an instrument subject to a determined cash flow schedule, effective maturity M is defined as:

$$\text{Effective Maturity (M)} = \sum_t t * CF_t / \sum_t CF_t$$

Where

CF_t denotes the cash flows (principal, interest payments and fees) contractually payable by the borrower in period t.

Banks not having capability to calculate M, may assume it to be 5.

Q3. What is your opinion about calculation of DP based on downturn LGD instead of normal LGD?

(ii) The DP will also be subject to a floor of $0.33\alpha C_t$, as explained in the example in **Table 4** below.

[2] The effective maturity has been capped at 5 years in view of the effective maturity under IRB approach for credit risk under Basel II being capped at 5 years.

Table 4 - Example of Dynamic Provisioning

Year	**1**	**2**	**3**	**4**	**5**	**6**
Loans outstanding(C_t)	1000	1200	1500	1600	1750	1950
ΔSP	5	10	25	37	29	25
αC_t (1.5% of C_t)	15	18	22.50	24	26.25	29.25
Floor for DP	**5**	**6**	**7.5**	**8**	**8.75**	**9.75**
ΔDP ($\alpha C_t - \Delta SP$)	10	8	(2.50)	(7.5)*	0.75@	4.25
Stock of DP	**10**	**18**	**15.50**	**8**	**8.75**#	**13.00**

* ΔDP ($\alpha C_t - \Delta SP$) = - 13. However, due to floor of 8, the drawdown from DP is restricted to 7.5. The balance 5.5 will be charged to P&L A/c.

@ ΔDP ($\alpha C_t - \Delta SP$) = - 2.75. However, since the DP has already hit the floor, no further drawdown from it is permitted. The additional provision of 2.75 will be charged to P&L A/c. In addition, to maintain a minimum DP floor equal to 0.33 α, the DP has to be increased by 0.75 even though the specific provisions made are more than αC_t.

Even though the floor for DP is 8.75, the bank may not add any amount to DP over the last year's balance of 8 to maintain the floor, as the economy is facing recession.

Here in this example, the dynamic provision is created in the first and second year as the expected loss (αC_t) is more than the specific provisions. Thus, the positive value of ($\alpha C_t - \Delta SP$) will add to the stock of Dynamic provisions. In the third year when the specific provisions exceed the expected loss, there is a draw down from the stock of dynamic provisions which continues in the 4th year also. However, drawdown is restricted to the floor for DP Account. In the 5th year, specific provisions are more than αC_t. However, since the DP Account has already hit the floor, no further drawdown is permitted and the entire excess amount (of Rs. 2.75) will be charged to P&L account.

Q4. What is your opinion about the floor and cap for cumulative DP prescribed in the framework?

(iii) The total provisions (TP) made during a year would be as under:

TP = DP+SP

TP ($Year_0$) = Existing amount of general provisions + max (SP_{out}, 70% of NPA)

Incremental dynamic provisions made during a year ($Year_{1,2,3.....n}$) = **αC_t - ΔSP**

Where

SP is the outstanding balance of specific provisions when the framework is introduced.

Δ SP is the incremental specific provisions made during the year.

Alpha (α) will represent long run average of historical losses for one year calibrated based on percentage of losses during a year to the outstanding balance of standard loans in the beginning of the year.

(iv) When the Dynamic Provisioning Approach will be first implemented, a bank will transfer the entire amount of general and floating provisions to **DP**. Thereafter, every year DP will grow with an amount equal to $\alpha C_t - \Delta SP$**,** subject to a cap prescribed in (i) above.

(v) DP should be created on quarterly basis, by taking 25% of alpha.

(vi) Specific provisions at the time of introduction of Dynamic Provisioning Approach should be higher of the existing amount of specific provisions or 70**%**[3] of NPA, to be apportioned among various asset classes**.**

(vii) In order to ensure that banks do not draw down from DP to absorb higher losses due to their own credit appraisal and credit supervision weaknesses and deplete it before the slowdown occurs, its draw down has to be allowed specifically by RBI based on evidence of a slowdown (which need not be severe enough to activate the countercyclical capital buffers). A suitable framework for release of DP could be formulated by RBI.

(viii) In times when DP has not been released by RBI, banks will not be allowed to dip into DP if their profitability is not sufficient to accommodate the specific provisions.

Q5. The drawdown of DP would be allowed specifically by RBI based on evidence of a slowdown. What is your opinion about this? What would you suggest could act as a trigger for permitting release of DP? Should this trigger be the same as that for releasing the countercyclical capital buffer under Basel III?

5.1.3 Treatment of Dynamic Provisions with respect to Capital and NPAs

- As the DP is proposed to be calibrated based on downturn LGD, it has elements of both specific provisions and general provisions.

- To the extent the DP is represented by the difference from the average normal EL, it can be treated as akin to specific provisions as there will be high likelihood of this balance getting drawn down in down turn which would be normally expected. This amount may be netted from Gross NPAs to arrive at Net NPAs. However, to the extent the DP is represented by additional component to reflect the down turn LGD, it can be treated as general provision.

- Thus, in addition to maintaining actual *'DP Account calibrated based on downturn LGD'*, banks may also maintain a notional *'DP Account based on normal LGD'*. At the end of a quarter, the balance in the notional *DP Account based on normal LGD* may be treated as specific provisions and the difference between the two accounts may be treated as general provision and considered eligible for Tier II capital.

[3] 68% is the downturn LGD for loan portfolio estimated in this exercise (Table 6).This is rounded off to 70%.

Q6. What do you think about the treatment of DP with respect to capital and NPA? What is your take on the approach of apportionment of DP between specific and general provision?

6. Calibration of Parameters of Model based on data of Indian banks

6.1 Estimation of α

6.1.1 Consistent with the IRB approach, **α** represents the loss expected over one year horizon, not the life-time loss inherent in the portfolio. Ideally, calibration of alpha (α) should be based on forward-looking through-the-cycle probability of default of various asset classes/rating classes. It should be based on the credit history of individual banks and reflect their own credit risk profile. However, in view of lack of required data, it is not possible for all banks to have α calibrated based on their individual credit histories at this stage. It has also not been possible for RBI to calibrate system-level α for different rating classes of loan portfolios at this stage.

6.1.2 Considering the availability of data, it has been possible to calibrate α for the following four asset classes based on a sample of 9 banks comprising 32.53% of Gross Advances of Scheduled Commercial Banks as on March 31, 2010.

- Corporate loans excluding infrastructure, commercial real estate (CRE) and Small and Medium Enterprises (SME).
- Housing loans
- Retail loans (other than housing loans)
- All other loans[4]

6.1.3 Alpha has also been calibrated for the total loan portfolio of banks based on a sample of 15 banks comprising 45.03% of Gross Advances of all Scheduled Commercial banks as on March 31, 2010.

6.1.4 Calculation of Expected Loss (EL)

EL over next one year has been calculated using Basel II IRB formula given below:

EL = EAD*PD*LGD

6.1.5 Calculation of PD

PD of a loan portfolio of a bank has been estimated as the average of PDs for the number of years in the sample. PD has been defined as an average of the 'percentage of incremental

[4] Staff loans and other loans with zero or near zero LGD are also included here. Since calibration is based on total of all other loans, banks should apply the dynamic provisioning framework to total of all other loans; excluding the staff and other loans mentioned here would lead to underestimation of provisions on this segment(all other loans).

NPAs during the year to the outstanding loans in the beginning of that year'. Ideally, the PD should be calculated based on number of defaults rather than the amount defaulted. However, given that data on non-performing loans available in RBI is only in terms of amount, we have used the defaulted amount to calculate PDs. Weighted average PD[5] of different asset classes is furnished in **Table 5** below. Column 5 shows the final values of PD scaled by the system-wide PD implied by data furnished by banks to RBI under off-site monitoring system (OSMOS).

Table 5: Weighted Average PD of Various Asset Classes

S.No.	Particulars	Value of PD (%)	Average length of data series used	PDs scaled by system-wide PD implied as per OSMOS data
1	2	3	4	5
(i)	**PD based on sample of 9 banks**			
	Corporate loans	1.03	6.33 years	0.92
	Retail loans	3.52	5.33 years	3.16
	Housing Loans	1.43	5.44 years	1.28
	Other Loans	2.85	5.00 years	2.56
	Total Loans	2.03	**7.22 years**	**1.82**
(ii)	**PD of total loans based on sample of 15 banks**	2.21	8.33 years	Scaling factor = **0.9**(1.82/2.03)
(iii)	**PD of total loans based on all banks-OSMOS**	**1.82**	10 years	

Q7. What is your opinion about the approach followed for calculating PD? Do you think PD based on number of defaults rather than on amount defaulted would be materially different?

6.1.6 Calculation of LGD

LGD is calculated as the "average loss in NPA accounts (represented by write-offs) as a percentage to outstanding balance of loans in the respective accounts when these were classified as NPAs". Estimating LGD is more challenging because, due to lack of sufficient readily available data with banks, it is not possible to estimate it based on the losses observed in accounts which have been finally closed after defaults. Therefore, LGD has been estimated based on portfolio level NPAs and write-offs. Step-by-step procedure to estimate portfolio level LGD for the purpose of Dynamic Provisioning Model is summarized in paragraph 6.1.7 below.

6.1.7 Procedure followed to estimate portfolio level LGD

[5] Weighted by the gross advances

a. A pool of NPAs was identified for tracking its resolution. For this purpose, total NPAs were taken as the sum of balance of NPAs in the beginning of the first year in the sample and the incremental NPAs in all subsequent years[6]. While the last year in all the banks in the sample is March 2010, the first year has varied from 2001 to 2007.

b. LGD is a measure of loss at the time of default. As per IRB Approach banks should take into account the downturn LGD[7] to measure the EL.

c. Write –offs have been taken as a proxy for loss in the estimation. However, the write-offs figures reported by the banks in the sample years would require an adjustment for the balance of unresolved NPAs. This adjustment was made based on estimates arrived at by expert judgment of officials of banks dealing with NPA management.

d. Three calculations of LGD have been made. First, based on sample of 9 banks which had furnished segment-wise data. Second, based on sample of 15 banks which had submitted data for the bank as a whole. The third, based on data available with OSMOS. The average and the downturn LGD arrived at under the three methods are furnished in **Table 6**.

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[6] It is recognised that opening balance of NPAs includes some accounts which have already experienced recoveries and also write-offs, and could potentially distort LGD estimation through this method. However, for the sake of this exercise, it is presumed that any pool of NPAs at any given time contains accounts with different age after classification as NPA, and that recoveries and write-offs in the accounts take place in constant proportion over time so that tracking any pool of NPAs from any point in its life would lead to more or less the same amount of LGD. Infact, adjustments made to the opening balance of NPAs to reflect the possible recoveries and write-offs which had already taken place, based on the judgmental sampling changed the estimates only marginally. This adjustment was based on expert sampling. For this purpose, banks were provided a specially designed Excel-based calculator based on which the adjustments were carried out. In these approximations recoveries have been taken at their discounted value.

[7] Downturn LGD is arrived at by multiplying the average LGD with a scaling factor of 1.58. The factor of 1.58 is arrived at as under:

(i) Calculating the following 4 alternative proxies for time varying LGD for various years in the sample :

- Incremental provisions plus Write -off/ NPA in the beginning of the year :
- Incremental provisions plus Write -off/ NPA in the last two years (66% of NPA at the beginning of second last year and 34% of NPA at the beginning of the last year)
- Write -off/ NPA in the beginning of the year
- Write -off/ NPA in the last two years(66% of NPA at the beginning of second last year and 34% of NPA at the beginning of the last year)

(ii) Taking average of various years for each of the metrics.

(iii) Normalizing/dividing the average in (ii) above for each of the metrics with the average of that metric for last three years in the sample (2008-09 to 2010-11- which are treated as down turn years and have incidentally shown the highest values of the metrics in the sample). (These figures were: 1.49, 1.98, 1.18, 1.53, respectively)

(iv) Taking average of the four figures arrive at as indicated in (iii) above.

Table 6: LGD Estimates

	Average LGD (%)	Scaling Factors	Downturn LGD (%)
Corporate loans	31.57	1.91	60.30
Retail loans	29.20	1.91	55.77
Housing Loans	7.02	2.85	20.00[8]
Other Loans	69.23	1.30[9]	90.14
Total Loans (sample of 9 banks)	**39.81**	**1.58**	**62.90**
Total Loans (sample of 15 banks)	42.96		67.88
Total loans (all banks-OSMOS)	45.48		71.86

It may be observed from the above table that LGD estimates based on three different samples are comparable. However, the estimate based on the OSMOS data is higher than that based on other two samples. Since the LGD based on the entire population sample is expected to be more representative of a medium-risk portfolio, the segment-wise LGD based on a sample of 9 banks has been rescaled to align with the overall LGD of **71.86%** based on OSMOS data. Re-scaled estimates are given in **Table 7** below.

Table 7: Re-scaled LGD Estimates

	Average LGD (%)	Downturn LGD (%)
Corporate loans	36.07	78.99
Retail loans	33.36	73.06
Housing Loans	8.02	20.00
Other Loans	79.09	90.17
Total Loans	45.48	71.86

Q8. What is your opinion about the methodology followed to calibrate LGD including the method use to arrive at the downturn LGD? What could have been a better methodology to calculate average and downturn LGD keeping in view the data requirements?

Q9. What is your opinion about the rationale and methodology of scaling the parameters calculated based on a sample of 9 banks to arrive at system level parameters to be used for the dynamic provisioning Framework?

[8] Downturn LGD for housing loans has been assumed to be 20% as has been done by some countries which have not seen a serious down turn in housing market (e.g. Australia). Under IRB, there is floor of 20% for LGD of mortgage loans.

[9] The scaling factor 1.3 for other loans is a constraint applied to cap the LGD of other loans to 90%.

6.1.8 Calculation of EL (alpha)

(i) Estimates of α are summarized in **Table 8** below. The EL shown in the **Table 8** has not been calculated by multiplying the PDs shown in **Table 5** and LGD shown in **Table 7**. The estimates have been arrived at based on weighted average of ELs of individual banks, which is the correct procedure.

Table 8: Estimates values of segment-wise α based on 9 banks sample scaled with All-banks sample

	EL based on weighted average of ELs of individual banks	
	α based on normal LGD (%)	**α based on downturn LGD (%)**
1	**2**	**3**
Corporate Loans	0.28	0.62
Retail loans	1.21	2.67
Housing loans	0.11	0.27
All other loans[10]	1.67	2.26
Total	**0.84**	**1.37**

Q10. What is your opinion about the approach followed for calibration of alpha? What could have been a better approach for calibrating alpha? What do you think are the asset classes in respect of which alpha could have been calibrated keeping in mind the data requirement of atleast 5 or 6 years in that asset class?

7. Implementation of Dynamic Provisioning Framework

7.1 Ideally, any provisioning framework should be based on the expected loss experience of individual banks. However, invariably, there will be many banks in any jurisdiction which may not be able to implement such an approach due to non availability of requisite data. Nevertheless, there is merit in introducing a standardized approach for such banks which is calibrated based on the pool of data collected from a representative sample of banks. Obviously, such a calibration would be attempted by the supervisory authority themselves so that it has credibility and acceptability among banks. In paragraph 6, the approach developed by the RBI has been discussed. Banks which have capability to calibrate their own parameters may, **with the prior approval of RBI**, introduce dynamic provisioning framework using the theoretical model described in paragraph 5 above. The banks which are not able to introduce dynamic provisioning based on their data set have to use the standardized calibration discussed in paragraph 6 and summarized in **Table 9** below.

[10] The value of alpha for 'Other loans' have been backed out from the values for the total loan and the three segments for which data was available from the 9 banks.

7.2 The estimated value of **α** for individual segments is significantly different from the value of **α** for the Total Loans Portfolio. Therefore, fixing a single **α** at the level of Total Loans Portfolio will neither be appropriate nor prudent. The sample size of 9 banks based on which the segment-wise values have been estimated covers 32.53% of the credit portfolio of scheduled commercial banks and is fairly representative of the whole population of banks in India. In this sample, relative proportion of corporate loans, retail loans, housing loans and other loans was 49%, 17%, 6% and 28%, respectively. Since the figures based on OSMOS data are more representative, the segment-wise values of parameters as scaled up to align with the corresponding values based on the OSMOS data sample, as reflected in Table 8 (column 3) are finally proposed for implementing the new approach. Therefore, a **Dynamic Provisioning Framework** for banks in India as per **Table 9** below may be considered.

Table 9: Dynamic Provisioning Framework

Nature of Incremental Provisions/Reserves	**Formula**			**Remarks**	
Specific Provisions (SP)	As per regulatory guidelines issues by RBI[11]			Charged to P&L	
Dynamic Provisions (DP)	$\alpha C_t - \Delta SP$			Charged to P&L.	
Values of Parameters	Corporate loans	Retail Loans	Housing loans	All other Loans	Total Loans
Alpha (α)	0.62%	2.67%	0.27%	2.26%	1.37%

Q11. Do you think your bank has the requisite data and capability at this stage to calibrate its own parameters to apply the proposed dynamic provisioning framework?

8. Impact of the Proposed Framework

8.1 Effectively, the introduction of new approach would mean not requiring any general provisions over the cycle. Under the proposed approach, generally banks will have only two provisions (i) Dynamic provisions and (ii) Specific provisions.

8.2 In terms of impact on the P&L of banks, the approach would mean taking a total provisioning charge to P&L Account equivalent to 1.37% of the gross advances annually. OSMOS data shows that during the period from 2003 to 2010 (8 years), average annual charge to P&L on account of standard asset provisions and specific provisions gross of write-offs amounted to

[11] At inception, specific provisions would be higher of existing amount of specific provisions or 70% of NPAs.

1.04% of gross advances, with a range of 0.58% to 1.87% of the gross advances. The additional charge is mainly attributed to calibration of **α** based on downturn LGD.

Q12. Do you think your bank will be able to withstand the additional impact of the proposed provisioning framework? Do you think the proposed framework would have a permanent impact on the profitability of your bank / banks in general?

8.3 Action Points for Future

8.3.1 Improving calibration

The estimations of **α** involved substantial amount of approximations due to non-availability of required data, even though these are based on expert judgment of banks. Of the total loss amount considered to calculate average LGD, 26% has been based on expert judgement. Going forward, it is proposed to improve the calibration and reduce the proportion of data used based on expert judgement, as under:

- by increasing the cross-sectional dimension i.e. size of the sample.
- by increasing the time series dimension i.e. number of years of data.
- by increasing the number of segments.

Besides, due to lack of sufficient time series, it was not possible to calculate the parameters based on any statistical analysis. In order to achieve the above objective, banks may be required to put in place mechanism to collect the data required for calibrating the parameters of dynamic provisioning **with immediate effect** for the following categories of loans classified as standard assets:

(i) Corporate Loans (5X7 categories)

		General Purpose Unsecured Corporate Loans	Commercial Real Estate Loans	Infrastructure Loans	Industrial Loans	Other Corporate Loans
1	2	3	4	5	6	7
	Investment Grade					
1	Accounts with overdues upto 30 days,					
2	Accounts with overdues between 31-60 days,					
3	Accounts with overdues between 61-89 days.					
	Non-investment Grade[12]					

[12] Unrated loans will be included in Non-investment grade for a period of two years and thereafter as per rating i.e. in the in the investment grade if rated as BBB- or above, otherwise in non-investment grade.

4	Accounts with overdues upto 30 days,					
5	Accounts with overdues between 31-60 days,					
6	Accounts with overdues between 61-89 days.					
7	Restructured Loans upto 2 years of restructuring[13]					

(ii) Retail Loans (4X4 categories)

		Retail Loans unsecured (Basel II)	Retail Loans Secured (Basel II)	Mortgage Loans with LTV Ratio not exceeding 75%	Mortgage Loans with LTV Ratio exceeding 75%
1	Accounts with overdues upto 30 days				
2	Accounts with overdues upto 60 days, and				
3	Accounts with overdues between 61-89 days,				
4	Restructured Loans upto 2 years of restructuring[14]				

The calibration will be reviewed every two years. Banks will have to collect default data (gross incremental NPAs) for all **51** categories. However, specific provisions and write-off data need to be collected only for main **9** categories of advances with break-up into investment and non-investment grade for corporate loans.

Q13. What is your opinion about the asset categories suggested for future in respect of which banks are required to collect data for DP framework?

8.3.2 Banks having high risk credit portfolios

The proposed framework would ideally ensure adequate provisioning buffers for a bank having a medium risk portfolio. Therefore, in asking banks to make provisions based on parameters standardized based on system-level data, there is a risk that banks having riskier portfolios may

[13] After 2 years restructured corporate loans will be included in other normal categories.

[14] After 2 years restructured retail loans will be included in other normal categories.

be under-provisioning. Considering this concern, banks should be advised to progressively aim at developing capability to be able to calculate **α** based on their own credit history. In the meantime, they should consider making general and specific provisions more than what will be required under the proposed new approach. In addition, supervisory department of RBI should be vigilant on the provisioning requirements of these banks given the riskiness of these portfolios and recommend higher provisioning wherever warranted. This should necessarily be the case in Retail loans where the 9 banks portfolios showed wide variation in downturn EL ranging from 0.48% to 11.12%.

8.4 Applicability of Dynamic Provisioning Framework to banks approved for IRB approach

The Dynamic Provisioning Framework may be made applicable to banks approved for IRB approach also, with the modification that '**α'** for these banks will be equal to the expected loss measure generated by the individual banks using the IRB formula and other criteria laid down for implementing the IRB Approach.

8.5 Alignment of specific provisioning rates with the LGD of individual segments

It may be observed from **Table 7** that the LGD of different segments of bank loan portfolios varies significantly. Downturn LGDs were estimated at 79%, 73%, 20%, 90% and 72% for Corporate Loans, Retail Loans, Housing Loans, Other Loans and Total Loans, respectively. This suggests that there is need for prescribing segment-wise specific provisions rates so as to align them with the risk profile of NPAs. It seems except for housing loans an appropriate average specific provisioning rates for NPAs seems to be around 75%. However, the above results may be confirmed by carrying out a more rigorous study based on sample of individual accounts from across section of banks before a view is taken in the matter.

Q14. What is your opinion about the proposal to re-calibrate the specific provisions rates as per the downturn LGD?
