

**Capital efficiency and optimization**

Measured steps to achieve return on equity objectives

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# Foreword

As regulators seek to strengthen the stability and solvency of financial institutions, the pressure on return on equity is immense. Regulators have been prodding banks to align themselves with the BASEL III requirements and the phase-in period for BASEL III requirements has commenced. These requirements strain the return on equity on two fronts:

- The core equity and Tier II capital requirements are expected to increase due to the non-qualification of certain instruments for consideration as eligible capital, control on leverage ratio, and increase in the base capital requirements.
- The need to hold relatively low-yielding high-quality stock of liquid assets is expected to reduce profitability as fund deployment is not always made to the highest yielding asset.

These requirements create fundamental growth challenges for banks, especially those seeking to increase their asset base. These requirements, while aimed at promoting sustainable growth for banks, can lead to near-term slowdown as the impact is assessed and translated relatively slowly into the product pricing mechanism. Variable points of adoption of the BASEL III requirements and inherent regulatory arbitrage caused by inapplicability of guidelines to non-banking lending institutions leading to a delay in the translation of cost of compliance into product pricing.

As banks grapple with a multitude of business challenges and constrained capital requirements, it is important to seek out efficiencies in the current capital usage. Unlocking capital from the existing balance sheet positions can prove far more effective in the near-term than profitability related capital accretion. The ability to unlock capital and liquidity from existing balance sheet positions arises from the following factors:

## Computation effect

Capital computation methods, systems, and processes were established in times of surplus capital where the focus was on accuracy, conservatism, and simplicity of the capital computation process. However, this early development ignored the potential relief available through existing regulations, potential for netting positions and effective allocation of collateral. Errors in computation due to wide use of spreadsheets and constraints in using regulatory provisions for capital relief due to limitations in available technology, further accentuated the computation effect. As a result, risk weighted asset computations for the purpose of determining capital requirements may be inflated. Accordingly, even without migrating to advanced approaches for capital computation under BASEL II, banks can seek to unlock value by refining existing risk weighted asset computations. On the liquidity front, the computation effect further accentuates the return on equity challenge due to variable policies and methods for computation of the liquidity coverage ratio.

## Measurement effect

The advent of BASEL II advanced approaches brought with it the promise of reduction in credit and operational risk capital. The promise is yet to be fulfilled for most Indian banks. Measurement effect can cause increase in capital requirement on many counts. These may include use of sub-optimal statistical methods under the advanced approaches, incorrect assumptions and computations, improper stratification of portfolios and the inability to migrate to more sophisticated approaches due to technology or model constraints. While the investments in BASEL II advanced approaches have been significant both in terms of people and technology, the relatively long implementation cycles and lack of focus on capital efficiency has left significant scope for capital reduction caused by the



measurement effect. For banks that have invested in BASEL II advanced approaches, there exists significant scope to unlock capital through improvements in statistical and computational models. For banks that are commencing the BASEL II advanced approaches journey, it is important to evaluate the impact and manner in which capital can be optimized through application of appropriate measurement techniques.

#### Pricing and profitability effect

Existing fund transfer pricing mechanisms and product pricing techniques have two critical shortcomings: (i) they do not consider the regulatory capital requirement and the corresponding impact on return on equity caused by individual product variants (ii) they do not evaluate the specific risk characteristics of each product variant in order to provide a differential pricing depending on embedded risk factors. This limitation of most fund transfer pricing mechanisms promotes the creation of a pool of assets that are sub-optimal to the return on equity considerations of the bank. To prevent creation of asset pools that are sub-optimal to the return on regulatory capital, it is important for banks to revamp the fund transfer pricing mechanism and drill the same down to the product variant level wherein differential pricing can be captured based on inherent risk factors and utilization of regulatory capital. In the long run, this will also address the current rampant practice of mispricing banking products.



#### Allocation effect

Over time, banks built asset portfolios without focusing on risk adjusted profitability or the impact that profit-generating portfolios were having on regulatory capital requirements. The resultant impact on capital requirements have been far reaching and cannot be corrected immediately. However, a critical re-evaluation of existing portfolios and actively seeking opportunities to reallocate capital and release liquidity through securitization and use of structured products provides an important optimization avenue. Banks have not adequately explored right asset sizing strategies due to legal and taxation considerations. In the new BASEL III regime, it is important to assess the nature of instruments used and acknowledge that embedded features like recourse can have a large bearing on capital requirements. Accordingly, it is critical that banks assess the scope for allocation and structuring as BASEL III capital, leverage and liquidity requirements start phasing in.

Addressing the aforesaid effects can unlock a significant amount of capital to support growth and counterbalance the pressure on return on equity caused by BASEL III requirements. The quantum of capital sub-optimality caused by each effect may differ from bank to bank depending on various factors including technology, processes, computation techniques, statistical models and people's skill-sets. While working on each of these aspects and strengthening frameworks will support capital efficiency in the long-run, short-term assessments to unlock capital are critical to balance return on equity expectations of stakeholders.

The need for additional capital is unavoidable. Even where capital efficiency is enhanced by addressing the aspects detailed above, growth in the asset base will propel the need for capital. Retention of profits and managing asset delinquency go a long way towards capital conservation. However, the current lack of evaluation relating to nature, timing and pricing of qualifying capital instruments can lead to lower incremental return on equity from expansion of the asset base. Improved planning for regulatory capital through the internal capital adequacy assessment process coupled with a holistic evaluation of taxation implications and the regulatory efficiency of capital instruments is important to support long-term return on equity expectations.

This document highlights the manner in which banks can seek to unlock and enhance capital efficiency through simple improvements. While long-term sustained investments are important for enhancing return on equity, smaller corrections and enhancements can create a sound base for unlocking existing capital.

# Computation effect

The computation effect is mainly caused by sub-optimal application of capital computation guidelines prescribed under both the standardized and advanced approaches under BASEL II. The BASEL II guidelines provide capital relief in case certain mitigating factors exist or are put in place. These largely centre on allocation of collateral across risk positions and application of netting arrangements. This problem is further accentuated by simplistic assumptions being employed to determine the quantum of risk weighted assets especially in case of structured products.

The computation effect was initially caused by the use of spreadsheets to compute risk weighted assets. As the computations of risk weighted assets were ported from spreadsheets to capital computation

engines, the ability of capital computation engines to address computational challenges caused by spreadsheets were not assessed in its entirety. Accordingly, netting and differential application of collateral to risk positions which could potentially reduce capital requirements were not always considered or were ignored. Further, the ability to create algorithms to allocate collateral to the highest capital consuming asset was usually not considered as a tool to reduce capital requirements. Computational errors that carried forward from the spreadsheet environment to automated tools continue to persist in many cases.

Addressing the computation effect with a view to releasing capital and liquidity can be achieved through the following approach:

## Assumption checks

- Distinguish assumptions for computation of risk weighted assets and liquidity requirements at a product variant level.
- Revalidate assumptions vis-a-vis regulatory guidelines.
- Evaluate modifications to product contractual terms that can potentially reduce quantum of risk capital and liquidity requirements.

## Computational error checks

- Validation of computation formulae used.
- Validation of computation logic vis-a-vis regulatory guidelines.
- Validation of liquidity coverage ratio computations.

## Collateral allocation checks

- Evaluate alternatives for re-allocation of collateral to reduce overall capital requirements.
- Centralised aggregation of collateral.
- Design algorithm to dynamically re-allocate collateral.

## Netting checks

- Evaluate netting opportunities created through contractual arrangements.
- Evaluate opportunities to modify certain contractual terms to enable capture of netting benefit.
- Algorithms to identify back-to-back deals for application of netting criteria.



# Measurement effect

The measurement effect is typically caused by migration to advanced approaches. Advanced approaches are anchored on the belief that statistical modelling of the impact of risk parameters can provide a greater degree of accuracy in computing potential losses, as compared to the use of thumb-rules under the standardized approaches. The corollary to this understanding, further validated through statistical studies undertaken by the Basel

Committee for Banking Supervision, is that banks who accurately model their risk parameters will consume lesser risk capital than under the standardized approaches. However, in reality the migration to advanced approaches has rarely brought about any significant reduction in risk capital. The primary reasons for the existence of the measurement effect and potential red-flags indicating their presence is highlighted below:

SNo	Primary reason	Red flags
1	Overly conservative modelling approach focused on passing the back-tests or use tests	<ul style="list-style-type: none"> <li>Actual losses are consistently a fraction of the computed value at risk number.</li> <li>Actual credit losses are a fraction of the dynamic credit loss provisioning.</li> </ul>
2	Inadequate or inaccurate historical data or existence of significant data gaps	<ul style="list-style-type: none"> <li>Inordinate amount of time consumed on data cleansing and back-filling.</li> <li>Large number of data fields overlaid on data from source systems.</li> </ul>
3	Computation methodologies or assumptions do not adequately capture or model all risk parameters	<ul style="list-style-type: none"> <li>Large number of products using only a single data series for modelling risk parameters.</li> <li>Large number of undocumented assumptions for constructing data series or computing results.</li> </ul>
4	Statistical methods and models used are not optimal for the specific product/instrument	<ul style="list-style-type: none"> <li>Identical models/methods used for different product variant types.</li> <li>Standard off-the-shelf models used without risk parameter customization.</li> </ul>
5	Oversimplified model assumptions	<ul style="list-style-type: none"> <li>Correlation impact of risk parameters ignored.</li> <li>Clustering of products with different risk and cash flow profiles for the purpose of risk modelling.</li> </ul>
6	Sub-optimal application of regulatory dispensations	<ul style="list-style-type: none"> <li>Large number of risk capital computations undertaken at a position level as opposed to a portfolio level.</li> </ul>

Addressing the measurement effect requires a concerted effort and a continuous improvement process relating to validation of risk and data models. Validation efforts should not be restricted to review of model assumptions alone as this would have limited impact on optimizing risk capital. Banks often adopt a hybrid approach when transitioning from the standardized approaches to the advanced approaches and the more

complex parts of the advanced approaches are usually left for later implementation. Accordingly, the complete benefits of advanced approaches, in terms of identifying the true risk profile and capital commensurate to the same, are not achieved.

Addressing the measurement effect requires addressing the following aspects:



# Pricing and profitability effect

Indian banks have traditionally established profitability management frameworks based on the conventional Fund Transfer Pricing ('FTP') methodologies, which considers either the historic cost of funds or the marginal cost of funds to determine the return on equity ('ROE') for each business unit. While such frameworks were adequate in the past, banks today also need to consider the risk inherent in each product/product variant and price in the same as part of the FTP framework, with a view to determining risk adjusted profitability. The absence of risk-based pricing gives rise to an inability to evaluate the true contribution of each product or business line to shareholder value and hampers the development of capital allocation and incentivization schemes for optimizing bank-wide return on equity. This shortcoming in existing FTP and product pricing frameworks gives rise to the pricing and profitability effect.

The adjacent figure provides an overview of the manner in which the FTP framework can be strengthened to enable banks to address the pricing and profitability effect and enable the establishment of a framework for optimizing bank-wide return on equity:

## Cost factors

True contribution to shareholder value can be captured only when all relevant costs are captured and attributed to the products or business lines from which they emanate. While banks have traditionally employed a cost of funds based approach for fund transfer pricing, it is now imperative to also capture all non-interest costs, including cost related to compliance (such as adherence to LCR, NSFR

requirements, etc.), as well as operational costs (such as automation costs, fixed assets, etc.).

## Risk factors and risk premiums

In order to establish risk-based pricing, it is necessary to identify the nature of risks prevalent in each type of product/product class and employ the same for assigning differential FTP rates. Risk premiums also need to be computed for each type of risk (viz. credit risk, market risk, operational risk, liquidity risk, interest rate risk, etc.), considering the regulatory capital requirements for that risk and, where feasible, the contribution of specific product to bank-wide risk exposures for that risk.

Additional consideration is required for products with embedded optionalities which expose the bank to additional uncertainty, such as current account and savings account balances, pre-payment of term loans, premature withdrawals of term deposits, etc. The robustness and reliability of behavioural models employed for risk assessment of such products play a critical role in determining risk premiums for such products.

## Risk adjusted profitability

Differential FTP rates are assigned to each product/product class on the basis of the risk factor mapping conducted and risk premiums computed. The risk adjusted profitability computed for each product is aggregated to determine the business unit's risk adjusted profitability and enable reallocation of capital, resources, etc., among the business units with a view to optimize bank-wide return on equity.

## Strengthening the product pricing framework

- Employ marginal pricing based on observable liquid market curves/benchmarks, with a view to promote transparency in product pricing.
- Incorporate cost of compliance within the FTP methodology, considering cost of maintaining reserves, cost of adhering to Basel III LCR requirements, NSFR and leverage ratios, etc.
- Define factors applicable to each product variant for:
  - Risk factors inherent in a product which expose the bank to various risks (credit risk, market risk, etc.).
  - Other attributes influencing product behavior such as priority sector loans, contingent liabilities (LCs, BGs, etc.).
- Re-validate assumptions relating to cash flow patterns and conduct behavioral studies where required.
- Define scalable framework of computing conventional and risk adjusted profitability.
- Develop methodologies for computing premiums for each risk/non-risk factor such as credit risk, market risk, etc.
- Where factors apply to all products (e.g., liquidity risk), compute premiums to be applied at balance sheet level.
- Assign premiums to product variants depending on product attributes identified as part of the mapping exercise.
- Compute risk adjusted profitability for each customer/product variant and aggregate the same to each business unit.
- Determine risk adjusted return on equity for each business unit, considering regulatory capital consumed.

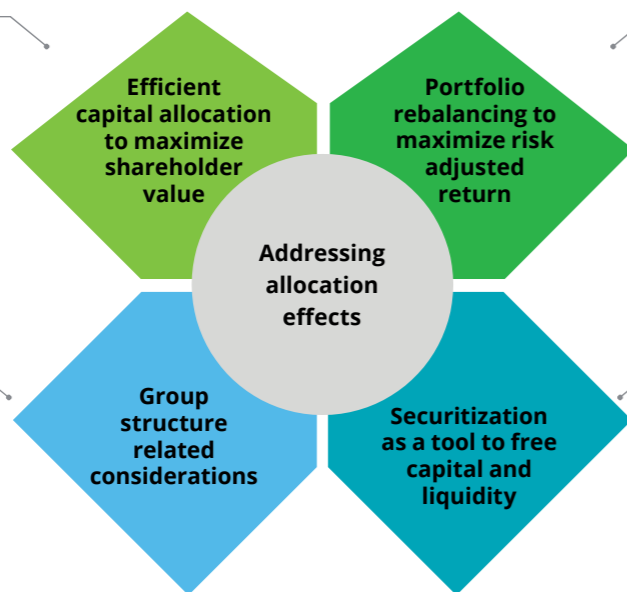
# Allocation effects

Increasing domestic demand in the boom years of 2003 to 2009, fuelled by plentiful liquidity and access to cheap credit, resulted in significant balance sheet growth for Indian banks. However, the need to maintain increased capital requirements under Basel III, comply with liquidity risk norms and heightened regulatory expectations has led to significant pressure on bank margins. The tendency

to over-capitalize/over-leverage products or business units due to delineation of capital allocation with risk adjusted RoE further exacerbates the allocation effects impacting Indian banks. Senior management must critically evaluate their asset mix and business strategy with a view to identifying opportunities to unlock capital and liquidity. Banks may address the allocation effect through:

## Board/Executive Management

- Optimize bank-wide risk adjusted returns.
- Undertake targeted incentivization of products and business units earning superior risk adjusted returns.
- Identify divestment opportunities for non-core business lines with low risk adjusted returns.
- Scope for regulatory arbitrage owing to differential regulatory environment for group entities.
- Need to evaluate benefits of transferring sub-optimal risk adjusted RoE yielding portfolios to alternate group entity.



## Business Heads

- Construction of model portfolios on the basis of capital allocated and actual/expected risk adjusted return on equity from each sub-portfolio.
- Enables decision making by business heads for portfolio rebalancing (down-sizing or expansion).
- Scope to free up capital and liquidity for re-deployment on higher earning assets.
- Favorable impact on capital adequacy requirements and Basel III LCR and balance sheet ratios.

## Efficient capital allocation to maximize shareholder value

The primary objective of capital allocation is to optimize risk adjusted profitability across the bank, through targeted incentivization of products and business units earning superior risk adjusted returns. As part of their annual financial budgeting and capital planning process, banks should plan its asset growth by considering the risk adjusted profitability (i.e., risk adjusted return on equity) earned

by various business units. Capital allocation may also be conducted at the product level by specifically identifying products with superior risk adjusted returns and allocating greater capital for the same. Non-core business lines which generate low risk adjusted returns may also be divested with a view to free up funds and capital for deployment in higher earning assets.

## Portfolio rebalancing to maximize risk adjusted return

Model portfolios may be constructed for each portfolio on the basis of capital available for each portfolio and actual/expected risk adjusted return on equity from each product. Credit portfolios may be further segregated by customer segments, internal rating bands, etc., while treasury portfolios may be segregated on the basis of trading desks or asset classes. The model portfolios would enable business heads to identify the need for rebalancing, based on the current portfolio compositions, and support decision-making on portfolio expansion/downsizing decisions.

## Securitization as a tool to free capital and liquidity

Asset portfolios which provide sub-optimal risk adjusted returns should be evaluated for securitization purposes. Undertaking securitization for such portfolios frees

up capital which can be re-deployed for assets earning higher risk adjusted returns and also provides liquidity in-flows which favourably impacts the liquidity coverage ratio and other balance sheet metrics. Banks may also consider pursuing credit origination opportunities specifically with the intention of securitizing such assets, with a view to enhance fee-based revenues without the need to maintain capital over the complete life of the asset.

## Group structure-related considerations

Owing to the varying regulatory environment for different financial entities, there may be scope for regulatory arbitrage relating to capital management. Accordingly, banks should evaluate the benefits of transferring sub-optimal risk adjusted return yielding portfolios to an alternate group entity which may not be subject to the same stringent capital adequacy requirements as the bank.





# Deficit planning and management

While the phased implementation of the Basel III norms in India has commenced, there is already widespread acceptance of the need for capital infusion at most Indian banks. The requirement for capital instruments to be loss absorbing in order to qualify under Basel III results in a larger proportion of regulatory capital under Basel II (specifically Innovative Perpetual Debt Instruments or IPDI instruments) no longer being eligible and grandfathering

requirements for the same have already begun. The lack of similar loss absorbing instruments in the Indian debt market further accentuates the challenges relating to price discovery and issuance of capital instruments eligible under Basel III. Accordingly, it is imperative for banks to strengthen the process of capital budgeting and consider the following aspects prior to undertaking capital infusions:

## 01 Capital Budgeting

- Determine capital requirements over multi-year horizon.
- Key input into the capital allocation framework for optimizing bank-wide risk adjusted returns.
- Assess impact of change in business, risk and regulatory factors on capital requirements.
- Develop contingency capital plans for priority issuance of capital due to stress conditions.

## 02 Tax Implications

- Create tax efficient structures for issuance of capital instruments.
- Consider tax treaties between India and other geographies for foreign banks operating in India.
- Structure tax efficient deals for securitization/divestments undertaken by banks.

## 03 Optimizing the capital structure

- Assess available capital instruments and extent to which they meet Basel III criteria for eligibility.
- Benchmark capital structure with peer banks.
- Determine optimum volume of each type of capital instrument, considering the bank's projected capital.



### Capital budgeting and scenario analysis

Capital budgeting should be directed towards determining the capital required to support banks' growth over a multi-year horizon and identify points of capital shortfall if any. The capital budgeting process should consider the impact of key drivers which may adversely impact banks' capital adequacy such as increased credit off-take, reduced NIM, lower treasury income, transition to advanced approaches under Basel II, incremental phase-in of Basel III, etc. Banks should establish documented plans for raising capital and finalize the characteristics of the capital instrument to be issued. Contingency plans should be established for raising capital within a shorter time-frame, which would be triggered on the capital adequacy levels breaching internal/regulatory limits within the next one year.

### Tax implications

Taxation norms have the potential to significantly influence the overall cost of capital infusions and it is, therefore, imperative for banks to give careful consideration to the development of a tax efficient structure for issuance of capital instruments. Foreign bank branches operating in India undertaking capital infusions from their parent entities have significantly larger scope for realizing tax efficiencies, especially in light of tax treaties that may exist between India and their home countries. Further, effective deal structuring from a taxation standpoint can significantly reduce the cost of securitization/divestments undertaken by banks.

### Optimizing the capital structure

The differential pricing of Tier I instruments (preference shares, perpetual debt instruments, etc.), and Tier II instruments (bonds, debentures, etc.), necessitate the need for determining the optimum amount of capital instruments of each type that should be issued. Banks should benchmark their capital structures with peer banks and review their internal balance sheet and capital consumption projections in order to determine the optimal capital mix.



# Deloitte service offerings



Our capital and liquidity management service offerings are focused on addressing all dimensions that can help optimize liquidity and risk capital requirements. Our services span across data validation, model validation, model development, calibration of models, development of algorithms, development and implementation of risk-based pricing

models and implementation of risk technology across multiple platforms. Our services cover the entire liquidity and risk capital value chain including allocation, re-allocation, consumption, pricing, monitoring and optimization of liquidity and capital. Our capital and liquidity management service offerings are highlighted below:



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