

Leveraging Mechanism of Commercial Banks and Its Relation with Financial Crisis

by

**Dr. Debashis Mazumdar
Professor & HOD, Economics,
The Heritage College, Kolkata
&**

**Prof. Mainak Bhattacharjee
Asst. Professor, Economics,
Loreto College, Kolkata**

Abstract

The primary role of commercial banks in an economy is that of financial intermediation between lenders and borrowers and they allocate depositors and investors' capital to sectors of the economy in which the risk-return profile appears to be the most attractive. When we consider different sources of bank funding, it becomes clear that at least in times of economic growth and prosperity borrowed assets become cheaper than equity capital and, therefore, leveraging makes the bank more cost-efficient. However, large-scale lending without appropriate analysis of borrowers' risk profiles and without assessing a bank's exposures can create a trouble for the bank. Any mismatch between the assets and liability position can create such trouble. This is why banks' debt level calibration is a delicate balance between risk-taking and profitability on the one hand, and safety and soundness on the other. The risk management activity of any commercial bank is closely linked to the bank's role as a financial intermediary. Banks want to minimize the risks involved in its credit giving operations by conducting an appropriate screening and evaluation of creditworthiness of its borrowers, and by (re)distributing or pooling the risks through the use of financial instruments. American economists Ben S. Bernanke, Douglas W. Diamond and Philip H. Dybvig received Nobel Prize in Economics in 2022 for their contributions to the role of commercial banks in mitigating financial crises. Their research works, based on 1980s data, have also suggested that any failure or collapse in the operation of commercial banks can exacerbate financial crisis in an economy. The commercial banks in India play an important role in funding the real sector, since almost 75% to 85% of financial intermediation is serviced by the commercial banks in India and therefore the leveraging mechanism even under BASEL norms becomes an important criterion for the efficient operation of our financial sector.

Key words: Scheduled Commercial Banks (SCBs), Tier-I leverage, Total exposure, Systematically Important banks

Introduction

The economic growth of a country, among different determining factors, depends to a great extent upon the efficient functioning of its financial sector. Within the financial sector, both short and long-term financial transactions are facilitated by the money market and the capital market respectively. The commercial banks are an integral part of the money market and they play a definite role in the payment mechanism of the economy and the aggregate money supply in the economy depends to a great extent on the credit giving operations of these banks. In this backdrop, we should analyze the leveraging mechanism of the commercial banks. In the present paper, an attempt has been made to show the operational part and the basic motivation of commercial banks behind pursuing this mechanism giving examples particularly from India. More importantly, we shall try to show how far the development of financial crisis in an economy can influence this leveraging mechanism and whether this mechanism, in turn, can intensify the financial crisis.

Some basic concepts

Before entering into the main discussion we must have a clear concept about the leverage of any commercial bank. The Basel Committee on Banking Supervision (BCBS) has defined the leverage or leverage ratio of any commercial bank in the following manner: The leverage ratio or more specifically, the Tier-I leverage ratio of any (scheduled) commercial bank is defined as the amount of Tier-I capital of the commercial bank as a proportion of its total assets or total exposure. It is important to note in this connection that tier-I capital of any commercial bank consists of its equity capital and the reserves and surplus. Therefore,

Tier-1 leverage ratio = (Tier-I capital of the commercial bank) / (Total assets of the bank) = (Tier-I capital of the commercial bank) / (Total Exposure)

Tier-1 assets are ones that can be easily liquidated if a bank needs capital in the event of a financial crisis. So, it is basically a ratio to measure the financial health of any commercial

bank. The higher is the tier- 1 leverage ratio, the higher would be the likelihood of withstanding negative shocks by the bank to its balance sheet. The denominator in the leverage ratio is a bank's total assets or total exposures, which include its consolidated assets, derivative exposure, and certain off-balance sheet exposures. In fact, total assets of any commercial bank includes Cash and balances with the Central bank, balance with other banks, investment in securities, loan and advance, fixed assets and other assets.

In this total exposure, **on-balance sheet exposures** are generally included at their accounting value, although exposures arising from derivatives transactions and securities financing transactions (SFTs) are subject to separate treatment (in essence, amounts owed to a bank are excluded while any on-balance sheet collateral related to such transactions are included). In case of derivative transactions, the Current Exposure Method as suggested by BASEL-II is followed. It captures both the exposure arising from the underlying assets of the derivative contract and the related counterparty credit risk (CCR). The value of this exposure is generally equal to the sum of the replacement cost (the mark-to-market value of contracts with positive value) and an add-on amount representing the potential future exposure of the transaction. Here, the term Mark-to-market implies an accounting practice that involves adjusting the value of an asset to reflect its value as determined by current market conditions. The market value is determined based on what a company would get for the asset if it was sold at that point in time. In trading and investing, certain securities, such as futures and mutual funds, are also marked to market to show the current market value of these investments.

The off-balance sheet (OBS) items arise from such transactions as credit and liquidity commitments, guarantees and standby letters of credit issued by the commercial banks. In an off-balance-sheet product, the bank is obligated to provide the money to the debtor once the need arises. The amount that is included in the exposure measure is determined by multiplying the notional amount of an OBS item by the relevant credit conversion factor (CCF) from the Basel-II standardized approach for credit risk. The CCF is the ratio between the additional amount of a loan used in the future and the amount that

could be claimed.

For instance, if an individual is allowed to draw a credit of INR 20,000 from a bank of which he has already received INR 4,000 from the bank last month then he can still obtain INR 16,000 in the current month. If he today receives another credit of INR 10,000, the CCF will be INR 10,000 divided by INR 16,000, which comes to 0.625.

Basel-III norms indicated a 3 per cent minimum requirement for the Tier-I leverage ratio for commercial banks while it left open the possibility of making the threshold even higher for certain **systematically important financial institutions (SIFI)**. It is important to note that the SIFIs are those banking institutions whose failure is supposed to trigger a financial crisis in the economy. In India, the Reserve bank of India (RBI) in one of its announcements in January, 2022, has declared SBI, ICICI Bank and the HDFC Bank as the domestic SIFI in India.

The leverage of any banking institution can also be measured by the debt-equity ratio and the debt-capital ratio as shown below:

Debt-equity ratio = (Total debt capital of the commercial bank) / (Total equity capital of the commercial bank)

Debt-capital ratio = (Total debt capital of the commercial bank) / (Tier-I & Tier-II capital of the commercial bank)

If the commercial bank borrows more (by issuing, say, certificate of deposits or by discounting the approved securities with the Central Bank or other financial institutions etc.) with the view to enhancing its returns, the leverage of the bank would be higher (i.e. debt-equity ratio will rise or Tier-1 capital leverage ratio would fall from the prescribed standard fixed on the basis of BASEL norms).

Here, Tier-II capital of any commercial bank consists of hybrid capital (say, the convertible debentures), revaluation of reserves (which are created upon the revaluation of an asset), subordinated debt (In the case of a default, creditors owning a subordinated debt will not be paid until the senior bondholders are paid in full) etc.

Leveraging mechanism: Pros & Cons

The primary role of banks in the economy is that of financial intermediation between lenders and

borrowers. The banks allocate depositors and investors' capital to sectors of the economy in which the risk-return profile appears to be the most attractive. The expertise of the commercial banks in evaluating risk profiles and expected returns from the capital invested contributes to mitigating problems of inefficient capital allocation. Furthermore, since on the one hand, depositors often demand products and services that offer high levels of liquidity (such as demand deposits or short-term time deposits), and on the other, borrowers need stability and seek credit with longer maturities in their contracts, there is obviously an inherent maturity mismatch in the asset-liability position of the commercial banks.

However, by building up large pools of deposits and thereby reducing the risk for swift movements in total deposit balances, banks can efficiently transform the maturity of capital (i.e. the deposit liabilities of short-run maturities can be efficiently transformed into assets with longer maturities) and can maintain sustainable financing along with a high level of liquidity. Hence, commercial banks can serve as an important facilitator for efficient capital allocation in every society.

The risk management activity of any commercial bank is closely linked to the bank's role as a financial intermediary. Banks want to minimise the risks involved in its credit giving operations by conducting an appropriate screening and evaluation of creditworthiness of its borrowers, and by (re)distributing or pooling the risks through the use of financial instruments. When a bank opts for loan syndication then it implies a risk-spreading or risk-distributing endeavor whereas extending credit facilities to borrowers with different risk profiles would imply risk-pooling. However, it is often observed that the banks, under the pressure of market forces, extend more credit to only those sectors where there remain excess demands for credit. But if under some unforeseen factors those particular sectors suffer huge loss then the default risks are escalated magnifying the cases of non-

performing assets with the banks. In that situation, the banks may start the process of deleveraging by reducing the quantum of credit and as a result several other sectors of the economy which are still having better prospects would suffer from the shortage of bank credit. It thus shows a negative externality of the bad performance of some chosen sectors which received greater part of bank credit.

Normally any commercial bank expects that by leveraging, the interest paid on the borrowed capital will be smaller than the return generated from the investment of that capital, thus improving the bank's performance. If leveraging mechanism is employed successfully, the difference between the cost of capital and the return on capital employed will contribute to the principal as an economic profit. So, on the benefit side, leverage enables higher economic growth of any country by relocating idle or unproductive capital to growth prospects. Leverage is supposed to be the key element for growth of a banking institution as well as the economy as a whole.

Commercial banks make a profit on the interest earned on its borrowed funds through lending spreads (i.e. the difference in the interest rate charged on the loan amount and the interest rate to be paid on the borrowed amount of the bank), and on commissions charged for services. However, to amplify its income and capacity to lend, it can also choose to leverage, i.e. borrow more money on its own account (e.g. from governments or other financial institutions) and then lend it to other clients at a higher interest rate. It not only enhances profitability but also creates a source of additional volatility of income of the commercial banks.

Thus, excessive leverage carries a threat of the 'amplification effect' of the volatility of returns, i.e. the absolute increase in value of returns is accelerated with the leverage and the chances of making loss are also accelerated. When interest and principal payments cannot be serviced, the debt levels increase, causing the enterprise, or sometimes the entire economy, to fall further down the debt spiral. Leverage makes the economy more dependent on funding, and, therefore, more volatile and sensitive to unforeseen shocks in capital markets.

When we consider different sources of bank funding, it becomes clear that at least in times of economic growth and prosperity borrowed assets become cheaper than equity capital and therefore leveraging makes the bank more cost-efficient. However, large-scale lending without appropriate analysis of borrowers' risk profiles and without assessing a bank's exposures can create a trouble for the bank. This is why banks' debt level calibration is a delicate balance between risk-taking and profitability on the one hand, and safety and soundness on the other.

The relationship between borrowed funds, clients' deposits, and own funds must be managed in such a way that the commercial banks remain solvent at all times, and that a sufficient buffer is available to cover unforeseen costs or defaults. This buffer is, in part, determined by the bank's level of leverage (BASEL norms also emphasize on this buffer). However, some critics have drawn attention to the fact that assets of any bank differ in their ability to absorb losses and the leverage ratio is, therefore, not sufficient for determining the risk assumed by the bank. The business model followed by a bank, i.e. the main activities of the bank, the types of assets it holds, and the level of operating leverage (i.e. how far the additional earning of the bank is sufficient to cover the additional cost of borrowing) are other important factors to be considered while evaluating a bank's ability to steer clear of insolvency when markets are volatile.

If there is a nominal fall in the underlying asset value (say, in case of mortgage-based loan), this leads to a direct increase in the loan value relative to the asset value since loans extended by the bank to its client are constant and quoted in nominal terms. It also implies that the debt ratio is contingent upon the underlying asset values. When prices of the mortgaged assets fall, the borrower faces problems to service his/her debt, since the value that would be realised through liquidation of the assets would no longer match the original amount extended by the bank as a loan. The second consequence of a fall in asset values is a decline in the perceived financial standing of the borrower. When the market value of the borrower drops, creditors (viz. the banks) demand higher lending rates, and the indebted borrower might find it hard to deliver profits. This can quickly

become a downward spiral in which the anticipation of insolvency or delinquency may actually force that borrower out of business. The outbreak of global financial crisis during 2008-2009 was particularly an outcome of such excess leveraging of the banks in USA and Europe.

Trend of leverage ratio of commercial banks in India

The Basel Committee on Banking Supervision (BCBS) introduced a leverage ratio in the 2010 Basel III package of reforms. Hence, it would make sense if we review the trend of Tier-I leverage ratio of Indian Scheduled Commercial Banks (SCBs) during 2011-2022 and try to establish its relationship with the credit growth of SCBs. Fig.-1 shows that during 2011-20, credit growth rate indicated a falling trend in India but Fig.-2 indicates that the Tier-1 leverage ratio of SCBs had shown an increasing trend during that period. Lower credit growth by the SCBs would normally imply lower total exposure and it would obviously imply higher Tier-1 leverage ratio. But during 2020-22, we find a positive correlation between credit growth and the growth in leverage ratio. It implied that Tier-1 capital must have grown at higher pace than the total exposure in Indian SCBs during that period. Similarly, if we observe a falling Tier-1 leverage ratio with falling growth rate of credit, that situation may imply a falling market value of bank equities (say due to growing NPAs). The RBI report also indicated that the growth rate of off-balance sheet exposures of the private sector and foreign commercial banks decelerated during 2018-21, while those of public sector commercial banks contracted during 2018-20 suggesting a prudent behaviour on the part of these banks in the face of elevated credit risk. Though the off-balance sheet exposures of PSBs increased during 2020-21 but the overall growth rate of off-balance sheet exposures of all SCBs declined during 2018-21. This can also be a viable cause behind rising Tier-I leverage ratio during that period.

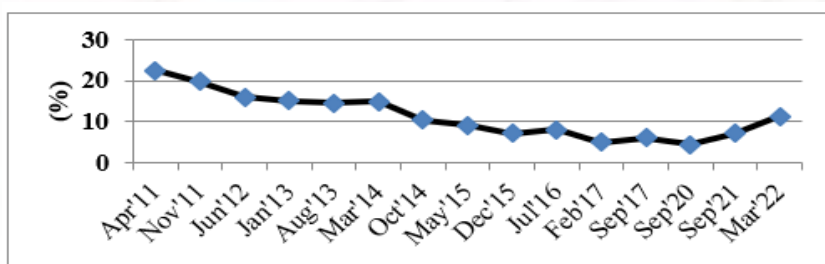


Fig.-1 Credit Growth (Y-o-Y) of SCBs in India during 2011-2022
Source: RBI Reports

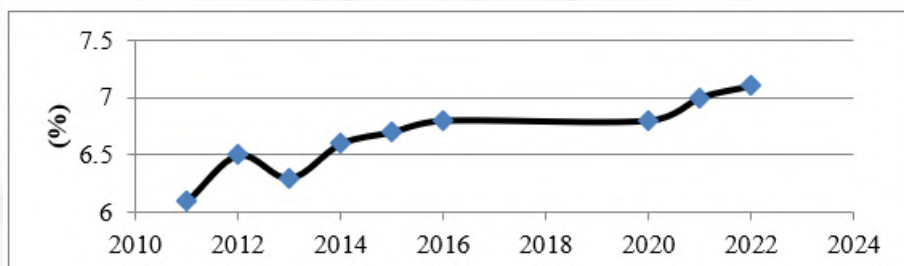


Fig.-2 Tier-1 Growth Rate (Y-o-Y) of Tier-I leverage ratio of SCBs in India during 2011-2022
Source: RBI Reports

Here, the growth in Tier-1 leverage ratio would not always mean lower risk for SCBs. If asset quality declines with the growth in bank leverage then it would obviously imply higher risk. However, the RBI Reports clearly indicated that during 2011-2016, the asset quality of SCBs declined in India. It is normally measured by the Gross Non-Performing Assets (GNPA) of the SCBs. During this period the non-performing loan ratio (NP loan as % of total loan extended by the SCBs) increased from about 3.9% to 9%. This apart, return on assets also declined during that period. However, during 2020-22, along with the rise in Tier-1 leverage ratio, asset quality of the banks also improved as reflected by falling GNPA. So, during this period rising tier-1 leverage was supposed to be accompanied by a falling risk of Indian SCBs.

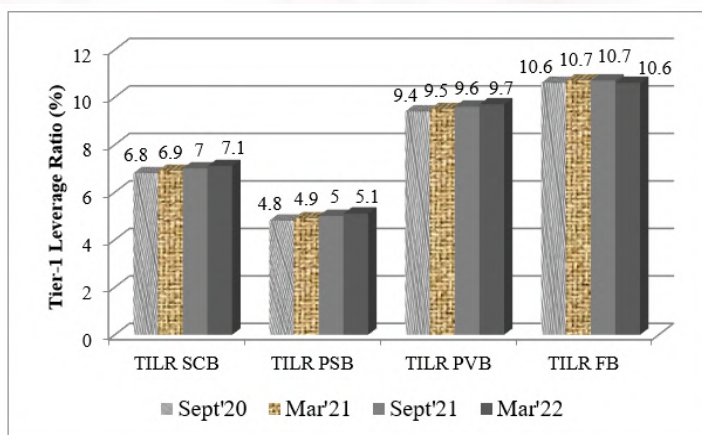


Fig.-3 Tier-I leverage Ratio across the Indian SCBs during 2020-22
Source: RBI Report

A disaggregated view of the Tier-I leverage ratio (TILR) of Indian SCBs shows that it was lowest in case of the Public Sector Commercial Banks (PSBs) with, however, a rising trend during 2020-22. The TILR of Private Sector Commercial Banks (PVBs) also indicated a rising trend and it was higher than that of PSBs. In case of Foreign Commercial banks (FBs), the TILR trend indicated almost a stagnant situation at 10.6% which was, however, higher than that achieved by the PVBs (Fig.-2). In 2019, RBI has reduced the leverage ratio from 4.5 percent to 4 percent for systemically important banks and 3.5 percent for other banks and it was expected that this would help the commercial banks to increase their exposure.

The commercial banks in India play an important role in funding the real sector, since almost 75% to 85% of financial intermediation is serviced by the commercial banks in India, as opposed to, for example, the United States, where only a third of all financial intermediation is conducted by banks. In India, the commercial banks are particularly important for MSMEs who lack the knowledge and size to participate in capital markets, and therefore the debt financing of the MSMEs supported by the commercial banks has a strong bearing on the macroeconomic development. The funding is partly carried out by issuing loans or lines of credit to enterprises. This supports the notion that leveraged financing of businesses in India facilitates higher employment levels, contributes to economic activity, and improves the business competitiveness.

Leveraging mechanism and financial crisis

There remains a big debate relating to the issue of causality between leveraging mechanism of commercial banks and the financial crisis. In 2022, the Nobel Prize in Economics has been awarded to the economists, viz., Ben Bernanke, Douglas W. Diamond and Philip Dybvig recognizing their contributions to the research works related to the role of commercial banks in uplifting the financial health of an economy and why avoiding bank collapses is vital in this regard. Before the seminal contribution of Bernanke (Bernanke, 1983) on this issue, there was a common perception among the economists that bank

failures are a consequence of economic downturn. But Bernanke, in his analysis, has shown that it was other way round, i.e. collapse in banking sector actually prolonged the economic depression of 1930s. Diamond and Dybvig (1983) also showed that commercial banks play a crucial role in the financial sector and with the help of a simple model they indicated that a bank run can lead to a suspension of convertibility and a damaging impact on the economy, and stressed the need for government intervention in the form of deposit insurance so as to reduce the intensity if this crisis.

Friedman and Schwartz (1963) emphasized the monetary impact of the bank failures. They were of the opinion that bank failures intensifies economic depression by (a) reducing the wealth of bank shareholders and (b) more importantly, by leading to a rapid fall in the money supply in an economy. However, Bernanke was of the opinion that the argument put forward by Friedman and Schwartz had a support for the monetary view but it was not a complete explanation of the link between the financial sector and aggregate output in the 1930s.

Bernanke (1983) focused on non-monetary (primarily credit-related) aspects of the financial sector-output link and considered the problems of debtors as well as those of the banking system. The disruptions of 1930-33, according to Bernanke, reduced the effectiveness of the financial sector as a whole in performing the intermediation services since intermediation between some classes of borrowers and lenders required nontrivial market-making and information-gathering service. With an increase in the real costs of intermediation, some borrowers (particularly households, farmers and small firms) found credit to be expensive and difficult to obtain. This credit squeeze through its negative impact on aggregate demand aggravated the situation of economic depression during 1930s.

However, despite the adoption of capital adequacy norms of BASEL-1 since 1988, the developed world with seemingly sound banking system failed to restrict the emergence of financial crisis of 2007-08. With the evolution of mortgaged backed securities and the involvement of commercial banks in derivative market, the nexus of greedy banks and

rating agencies could lead to 'housing bubble'. Alternatively speaking, lack of proper risk-management system and inadequate check upon the leveraging mechanism followed by the commercial banks can often result in a potential financial crisis to an actual crisis.

Leveraging mechanism & the Policy Stance

In the recent past (2007-08), during the turbulence in financial market particularly in USA, the banks were accused of having taken on excessive leverage and were therefore subject to scrutiny. In response, and as a measure of limiting systemic risk, the Basel Committee of Banking Supervisors, following the G-20 request to enhance financial sector resilience, proposed that banks should be legally obliged to comply with a pre-defined leverage ratio standard. Thus, as per Basel-III norm the commercial banks in general have to maintain a Tier-I leverage ratio of at least 3% (as we have mentioned earlier) as a supplementary measure to the risk-based ratio of Basel II and making it a Pillar I measure. With this ratio, the Basel Committee aims to constrain the build-up of leverage in the banking sector, and reinforce the risk-based requirements with a non-risk-based "backstop" measure, based on gross exposure. The proposed ratio would also take into account the off-balance sheet items, thus aiming to embrace as many bank exposures as possible. While the reasoning behind this proposal is clear and just, it must be stated that accounting for the off-balance sheet items is no straightforward matter. Hence, at this point in time, implementing the measure coherently remains a challenge. Increasingly, one of the broadly agreed policy stances among the policy makers is that the commercial banks should be legally obliged to comply with a pre-determined leverage ratio standard (as observed under BASEL norms). However, such a policy measure would address debt levels alone, and not the use to which the borrowed money is put. As long as the money is optimally allocated in economic terms, high leverage levels do not necessarily imply higher risk. It is only when the credibility of the borrower or the return of the underlying asset becomes more uncertain that high leverage will increase the risk profile of the bank. Disregarding this aspect would not only constitute a failure

in reaching the intended goal of introducing a leverage ratio, it could also impose undue constraints on lending and slow down the economic recovery.

From theoretical view point, the debt levels of the commercial banks should be balanced so that costs of debt and benefits arising out of such debt are in perfect equilibrium. Only then the leveraging mechanism cannot lead to any crisis. As easy as this may sound, it is virtually impossible to determine accurately the optimal level of leverage.

This apart, as some banks are highly important systemically (as we have already indicated), which is why there is a wide interest in society in keeping them in business or keeping them alive and vibrant. The intense interconnectedness among banks, and between banks and other economic sectors, signifies that a bank failure can cause deep repercussions on the overall economy, as was the case with the Lehman Brothers in 2008. As a result, several governments chose to inject capital into banks, guarantee banks' deposits, or even take an equity stake, in order to ensure that the financial institutions remained a 'going concern'. For instance, the government of India, through its budgetary support, has infused capital amounting about Rs. 3.15 lakh crore in public sector commercial banks during 2011-19 and during 2020-22 this infusion of capital, particularly to weak public sector commercial banks, was to the tune of about Rs. 90,000 crore. Generally, the PSBs receive this capital support through the issue of additional Tier-1 capital, viz. the zero coupon bonds with longer maturity issued at a discount to their face values. However, according to India Ratings and Research, fair valuing of the capital infused by the government through non-interest bearing long-term deep discount bonds (sold by the commercial banks to the government) can ultimately reduce the effective Tier-I capital levels since the present value of these bonds would be much lower than their face values. However, it is to be noted that this type of budgetary support to the banks should be a part of the short-term crisis management policy stance so as to make the banks more alert and resilient to withstand future crises.

In the coming years, banks will obviously continue reducing their leverage (or alternatively speaking, they will try to raise the Tier-I leverage ratio), while building up their capital

base and improving their liquidity positions, but that is not an easy task. These issues will have to be addressed in the climate of a depressed economic growth and subdued investment climate, which will force banks to find new ways of generating adequate returns on assets and equity in order to keep investors within reach.

IS-BB Model

The leveraging mechanism of the commercial banks can be explained with the help of the following general equilibrium framework.

Goods market equilibrium: denoted by IS function

$$Y = c(1 - \theta)Y + \bar{I}(\varepsilon) + I(i_B) + \theta Y + d\left(\frac{\bar{H}}{P}\right) \dots (1) \quad \dots (1)$$

Y= Aggregate output, c=MPC, θ = tax rate, \bar{I} = Given aggregate private investment financed by reinvestment of profit, ε = profit expectation, I= Bond-financed investment of the private sector, i_B = interest rate on bond issued by the private firms, $\left(\frac{\bar{H}}{P}\right)$ = Real value of high-powered money, $d\left(\frac{\bar{H}}{P}\right)$ = Change in monetary base, i.e. borrowing from the Central Bank by the government.

Here, as i_B rises, I will fall and therefore other things remaining the same, aggregate demand for output will fall. So, there arises excess supply in the goods market and the producers, bothered by unsold stocks, would reduce the output. So, Y will fall. So, we get a negative correlation between i_B and Y. Hence, the IS curve, showing different combinations of i_B and Y which keep product market at equilibrium, becomes negatively sloped (Fig.-1).

Bond market equilibrium: denoted by BB function

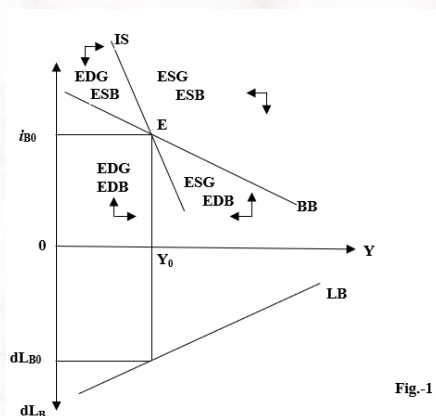
$$\beta(1 - r)(1 - c)(1 - \theta)Y = I(i_B, \varepsilon) \dots (2)$$

Here, β =Fraction of liquidity the commercial banks decide to hold in bonds, r =Required

reserve ratio, $(1 - r)$ = excess reserve ratio , $(1 - c)$ = MPS ; so the left-hand side of eqn (2) shows the demand for bond in the market and the right-hand side shows the supply of bonds.

Here, $\beta = \beta\{(i_B - i), \gamma\}$ (3) where i = interest on loan extended by banks, i_B = interest rate on bond issued by the private firms, and hence if $(i_B - i) > 0$ then the banks would try to allocate more of its portfolio towards bond purchase and β will rise. Again, here Y denotes the risk appetite of the banks and therefore an increase in Y would mean an increase in β .

Now, other things remaining unchanged, if there is an increase in Y then private savings will rise, and if we assume that all these savings are deposited in commercial banks then it would cause new deposits in banks. Then portfolio allocation of the banks towards bonds (i.e. banks' investment in bonds) will rise and this will lead to excess demand for bonds. So, bond price (B_p) will rise, and since $B_p = \frac{1}{i_B}$, so i_B will fall. Thus, in bond market also we get a negative correlation between i_B and Y . Here, the BB curve, showing different combinations of i_B and Y which keep the bond market at equilibrium, also becomes negatively sloped(Fig.-1).



However, for having simultaneous equilibrium in both goods and bond market and for the stability of that equilibrium, the BB curve must be flatter than the IS curve (Fig.1). The combinations (i_B, Y) to the right of IS function would indicate excess supply in goods market (ESG), and (i_B, Y) combinations to the left of IS would imply excess demand in goods market (EDG). Similarly, (i_B, Y) combinations to the right of BB

function would indicate excess supply in bond market (ESB), and (i_B, Y) combinations to the left of BB would imply excess demand in bond market (EDB). Thus, any (i_B, Y) combination situated off the general equilibrium point E would gradually converge to the equilibrium value (Fig.-1).

Now, the **leverage function of the banks** can be stated as follows:

$$dL_B = I(\varepsilon) - (1 - \beta)(1 - r)(1 - c)(1 - \theta)Y \dots\dots\dots (4)$$

Here, $I(\varepsilon)$ denotes the demand for loan financed investment by the private firms, and the supply of new loans that banks can make is indicated by $(1 - \beta)(1 - r)(1 - c)(1 - \theta)Y$

Thus, other things remaining the same, an increase in Y would cause a fall in dL_B indicating a negative relation between Y and dL_B . (Fig.-1). However, if the private firms become over optimistic about their return from any particular investment, then the demand for loan financed investment by the private firms will rise and the banks would be inclined to extend more credit. So, at each level of Y, the leverage function would shift upward (Fig.-2), and the banks become more leveraged.

But if those investment projects do not perform well then the net worth of those firms will fall. In that case, incidences of NPA rise with the banks. Then the banks may offload their portfolio from loan finance and may even invest less in bonds (in eqn.2, β will fall). So, there will be excess supply bonds in the bond market, and at each level of Y, i_B will rise causing an upward shift in the BB curve. So, given the IS function, equilibrium Y will fall and i_B will rise. However, with a fall in Y, [we assume that after a fall in β and rise in $(1 - \beta)$, fall in Y in eqn 4 outweighs the rise in $(1 - \beta)$] the banks will tend to be more leveraged and the financial crisis becomes more acute (Fig.-2).

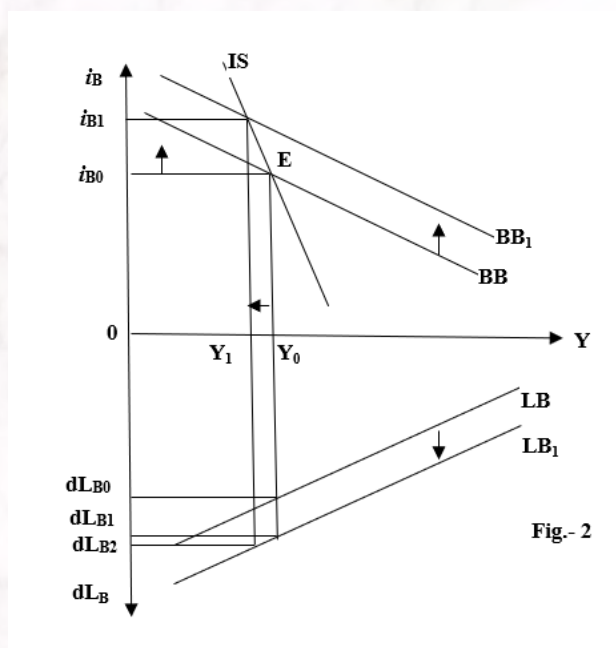


Fig.- 2

Conclusion

Seen from a broader economic perspective, determining the policy-mandated levels of leverage is a trade-off between the risk of reducing lending and investing in several projects, and the risk of creating an over-abundance of credit within the economy. When too much credit is made available, the risk for efficiency losses magnifies. Scarcity of credit can, however, be beneficial for allocating purposes as lenders or the commercial banks become particularly concerned about the risk and return on their investments when not all ventures can be granted credit. On the other hand, credit shortages can also hinder the economy from achieving its full potential. If less lending is granted to the private sector, risky projects with good prospects would remain unrealised because of the prohibitively high costs associated with venture capital financing. Thus, the leveraging mechanism of the commercial banks assumes a great importance in our present day economy both at the local and global levels which are characterized by increased risk and volatility in returns from assets. However, the prudence in risk management in the banking sector should not only be bounded by the legally defined norms but it should also be an integral element of banking culture in a growing economy like India.

References:

1. *Bernanke, Ben S (1983): 'Non-Monetary Effects of the Financial Crisis in the Propagation of the Great Depression', National Bureau of Economic Research, Working Paper No.1054, January, Cambridge.*
2. *Diamond, Douglas W & Dibvig, Philip H (1983): 'Bank Runs, Deposit Insurance and Liquidity', Journal of Political Economy, Vol.91, No.3*
3. *Friedman, Milton, and Anna J. Schwartz (1963): 'A Monetary History of the United States 1867-1960', Princeton: Princeton U. Press.*
4. *Rastogi, Anupam B & Rao, Vivek (2014): 'Capital Requirements for Indian Banks: An Empirical Analysis', Asian Development Bank (ADB) South Asia Working paper Series, No.31, November*
5. *RBI (2022): Financial Stability Report, Chap-II: 'Financial Institutions: Soundness & Resilience', June*
6. *RBI (2016-17): Report on Trend and Progress of Banking in India, Chap-II: Global banking Developments.*
7. *RBI (2019-20): Report on Trend and Progress of Banking in India, Chap-IV: Operations and Performances of Commercial Banks.*