

The commercial banks act as the intermediaries between the depositors and borrowers. They accept deposits from the depositors and advance loans to the borrowers. In addition to that, banks perform a highly important and dynamic function. They are capable of creating credit or deposits and thereby can have a highly significant effect upon the supply of money and the general level of economic activity. In the present chapter, a study will be attempted of the mechanism through which banks create credit or deposits.

1. MEANING OF CREDIT CREATION

Like the other business firms, the commercial banks seek to maximise their profits. The basic functions of a typical banking firm is to accept deposits and to advance loans. When the commercial bank accepts deposits, there is an addition to the cash reserves of the banks. These cash resources are utilised by the commercial banks to provide loans or advances or the overdraft facility to the customers with the object of earning interest. However, banks never hand over cash to the borrowers. They open an account in the name of the borrowers and allow them the facility of making withdrawals from those accounts. It means the banks issue claims against themselves or they create demand deposits on the basis of the amount of cash originally received by them. In this process, banks create deposits on the one hand and advance loans or credits on the other at the same time. This ability or capacity of the banks to bring about an expansion of credit or deposits is termed as the process of credit creation. With a small amount of cash in hand or the primary deposits, the banks create the deposits or credit many times more than

the initial or primary deposits. This multiple expansion of deposits or credit signifies the credit creation. In the words of R.S. Sayers, "Banks are not merely the purveyors of money but also, in an important sense, manufactures of money." Halm said, "The creation of derivative deposits is identical with what is commonly called the creation of credit." The derivative or secondary deposits are the deposits created by the commercial banks on the basis of initial cash holding or the primary deposits. According to Newlyn, "Credit creation refers to the power of commercial banks to expand secondary deposits either through the process of making loans or through investment in securities."

A controversy arose in this connection whether banks do really create credit or not. In this regard, the writers like Hawtrey, Robertson, J.M. Keynes, Sayers and Halm expressed the view that the modern banks are capable of multiple expansion of credit or deposits in the economy. However, the writers like Walter Leaf and Edwin Cannan held the view that a bank can not lend more than the amount of its deposits. What the banks actually do is that they only lend the money that the depositors had entrusted to them. They likened a commercial bank to a cloak-room. Suppose 100 members visit a night club regularly. Each one of them brings one umbrella each and deposits it with the attendant of the cloak room. The attendant knows by his experience that only 10 members demand umbrellas in an hour. Now if he rents out 90 umbrellas and earns some money, does it mean that he created 90 umbrellas. The answer to this question, is clearly 'no'. Similarly, a banker lends out funds that he receives as deposits. Just as the attendant can not lend out more umbrellas than had been entrusted to him, similarly the most reckless banker cannot lend out more money than

his own money plus the money deposited by others with him. So the banks do not create credit, they simply lend out other people's money entrusted to them.

The Cannan-Leaf criticism of theory of credit creations is, in fact, not valid. The analogy of umbrella with deposits is not true. The attendant of the clock room gives over umbrellas to the members going out of the club but bank never actually gives up cash. The borrower is never paid the amount in cash. A current account is opened in the name of borrower and he is allowed to operate the account by issuing cheques. Same amount of cash is used for opening more and more accounts by the bank repeatedly. Consequently, bank is definitely in a position to create deposits or credit many times more than the original or primary deposits received by it. Hence commercial bank is not merely a lender of money but the producer or creator of money. In addition, the aggregate deposits of the banking system in any country are invariably much larger than the currency with the public. That also is a pointer to the fact that commercial banks can bring about multiple expansion of deposits or credit.

Just as a small increase in primary deposits can cause multiple expansion of deposits and credit, so a small decline in the amount of primary deposits can lead to a multiple contraction of credit or deposits.

2. PROCESS OF CREDIT CREATION

The commercial banks are capable of creating deposits or credit many times more than the primary deposits, *i.e.*, the deposits originally received from their customers. The relevant question in this connection is what is the process or mechanism through which there can be a multiple expansion of deposits or credit.

The process of credit creation can be discussed in two situations (i) When there is only one bank and (ii) When there are more than one bank or the banking system as a whole.

I. Single Bank Credit Creation

If there is the existence of only one bank in the economy, there can be the possibility of multiple expansion of deposits or credit.

Assumptions :

The single bank credit creation can be explained

under the following assumptions :

(i) There is one bank in the economic system. It has the objective of maximising its profits like any rational business firm.

(ii) The cash-reserve ratio to be maintained by the bank is, say 10 percent.

(iii) The bank does not hold cash reserves in excess of the prescribed ratio of 10 percent.

(iv) There is no drain of cash out of the bank. It implies that the borrowers do not withdraw cash and hold it with themselves.

(v) The holding of time deposits by the customers remains unchanged.

(vi) The banking habits of the people are developed.

(vii) The borrowers are willing to borrow funds and the bank is willing to lend funds.

Suppose person A deposits initially Rs. 1000 with the banks. This is the primary deposits of the bank. As the bank knows by experience that all the depositors never approach the bank for withdrawing cash at the same time, it will keep a proportion of its deposits in the form of cash for meeting the cash demand of the depositors. It is supposed that the cash reserve ratio is 10 percent. The bank will keep 10% of the primary deposit, *i.e.*, Rs 100 as cash reserve and the remaining amount of Rs. 900 will be advanced as loan to person B. The bank will not give cash to person B. It will open current account in the name of B amounting to Rs. 900 and allow him to make withdrawals through cheques. Thus bank has created a derivative deposits of Rs. 900. To cover this deposit the bank will keep a cash reserve of Rs 90 (*i.e.*, 10% of Rs 900) and remaining amount of Rs. 810 will be given as loan to another customer C. Again another current account of Rs 810 will be opened in the name of C and cheque book will be issued to him for making withdrawals. This deposit of Rs 810 is another derivative deposit. Now bank will again keep a cash reserve of Rs. 81 (*i.e.*, 10% of Rs. 810) to meet the cash demand of person C. The remaining amount of Rs. 729 will be advanced as loan to person D. Again a current account of Rs. 729 will be opened in favour of person D. This deposit of Rs. 729 is another derivative deposit created by the bank. This process will go on. Ultimately the total amount of primary deposits will accumulate to Rs 1000 + 900 + 810 +

Table 1 - Single Bank Credit Creation

Person	Primary Deposits (in Rs.)	Cash Reserves $r = 10\%$	Advances (in Rs.)	Derivative Deposits (in Rs.)
A	1,000 (Initial Primary Deposit)	100	900	900
B	900	90	810	810
C	810	81	729	729
D	729	72.90	656.10	656.10
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
Total	10,000	1,000	9,000	9,000

729 + Rs 10,000. The total amount of derivative deposits becomes Rs. 900 + 810 + 729 + = Rs. 9,000. The total amount of cash reserves with the bank will become Rs. 100 + 90 + 81 + 72.90 + = Rs. 1000 and it will be exactly equal to the initial primary deposit of Rs. 1000. Thus the commercial bank brings about the increase in total deposits by Rs. 10,000 due to initial primary deposit of Rs 1,000 i.e., the total deposits increase by 10 times the initial deposit or credit is shown through Table 1.

Balance Sheet Approach

It is possible to explain the process of single bank credit creation through the balance sheet approach. It is again supposed that the bank initially receives primary deposit of Rs. 1,000 and the cash reserve ratio is 10 percent.

Table 2 – Balance Sheet of Bank X

Liabilities		Assets	
Primary Deposits	Rs. 1,000	Cash	Rs. 1,00
		Minimum Required Cash Reserve	Rs. 100
		Excess Cash Reserve	Rs. 900

As bank advances loan of Rs 900 and creates derivative deposit of Rs. 900, The balance sheet is as follow :

Table 3 – Balance Sheet of Bank X

Liabilities		Assets	
Primary Deposits	Rs. 1,000	Cash	Rs. 1,000
Derivative Deposits	Rs. 900	Loans	Rs. 900

II. Multiple Bank Credit Creation

In an economic system, there can be the existence of a number of banks. Just as a single bank can bring about multiple expansion of deposits or credit, so all the banks in a banking system can together bring about multiple expansion of deposits or credit.

Assumptions :

The process of multiple bank credit creation can be explained under the following assumptions :

- (i) There are banks P, Q, R and S in the banking system.
- (ii) The required cash-reserve ratio is 10 percent. Each bank is required to keep 10 percent of its deposits in the form of cash reserves.
- (iii) Initially the bank P receives a primary deposits of Rs. 1,000.
- (iv) The loan amount drawn by the customer of one bank is deposited in full in another bank of the system. It means there no drain of cash out of the system.

- (v) No bank keeps excess cash reserves.
- (vi) The holding of time deposits with banks remains unchanged.
- (vii) The banking habits are developed.
- (viii) The central bank does not enforce any credit restrictions.
- (ix) There are normal business conditions in the economic system.

Suppose bank P initially receives a primary deposit of Rs. 1,000. It keeps a cash reserve of Rs 100 (i.e., 10 per cent of Rs. 1,000) to meet the cash demand of the depositor. The remaining amount of Rs 900 it advances as loan to some customer. It opens a current account in the name of that customer and issues a cheque book to enable him to make withdrawals. Thus bank P creates a derivative deposit of Rs. 900. The cheque issued by this customer gets deposited in bank Q. Thus bank Q receives a primary deposit of Rs. 900. It will keep a cash reserve of Rs. 90 (i.e., 10 percent of Rs. 900) and remaining

that customer and issues a cheque book to him for making withdrawals. The cheque drawn by him for Rs. 729 gets deposited with bank S. Now the bank S receives a primary deposits of Rs. 729. This bank keep a cash reserve of Rs 72.90 (i.e., 10 percent of Rs. 729) and the remaining amount of Rs 656.10 is advanced as loan to some customer. A current account is opened in the name of that customer. Thus bank S creates a derivative deposit of Rs. 656.10. This process goes on. Ultimately the total increase in deposits amounts to Rs 1000 + 900 + 810 + 729 + 656.10 + ... = Rs. 10,000. The cash reserves with the banking system become Rs. 100 + 90 + 81 + 72.90 + ... Rs. 1,000. The total amount of derivative deposits becomes equal to Rs 900 + 810 + 729 + 656.10 + ... = Rs. 9,000. Thus the total deposits increase by 10,000 due to initial increase in primary deposits of the amount of Rs. 1,000. In this way, according to this illustration, the increase in total deposits is 10 times the initial increase in primary deposits.

The process of multiple bank credit creation analysed above can be shown through Table 4.

Table 4 - Multiple Bank Credit Creation

Banks	Primary Deposits (in Rs.)	Cash Reserves $r = 10\%$	Advances (in Rs.)	Derivative Deposits (in Rs.)
P	1,000 (Initial Primary Deposit)	100	900	900
Q	900	90	810	810
R	810	81	729	729
S	729	72.90	656.10	656.10
—	—	—	—	—
—	—	—	—	—
—	—	—	—	—
Total	10,000	1,000	9,000	9,000

amount of Rs 810 is extended as loan to some customer. Thus bank Q creates a derivative deposit of Rs. 810. This customer issues a cheque of Rs. 810 which gets deposited with bank R. So bank R receives a primary deposit of Rs 810. This bank keeps a cash reserve of Rs. 81 (i.e., 10 percent of Rs 810) and advances as loan of Rs 729 to some customer and opens a current account is favour of

Balance Sheet Approach

The process of multiple bank credit creation can be explained through the balance sheet approach. It is supposed that there are four bank P, Q, R and S. Initially bank P receives the primary deposits of Rs. 1,000 and the cash reserve ratio is 10 percent.

Table 5 – Balance Sheet of Bank P

Liabilities		Assets	
Primary Deposits	Rs. 1,000	Cash	Rs. 1,000
		Minimum Required Cash Reserve	Rs. 100
		Excess Cash Reserve	Rs. 900

Initially bank P receives primary deposit of Rs. 1,000. Out of the cash of Rs. 1,000, the minimum required cash reserve is Rs. 100 and there is excess cash reserve of Rs. 900. As this bank creates the derivative deposit of Rs. 900, its balance sheet can be depicted as :

Table 6 – Balance Sheet of Bank P

Liabilities		Assets	
Primary Deposits	Rs. 1,000	Cash	Rs. 1,000
Derivative Deposits	Rs. 900	Loans	Rs. 900

The customer borrowing Rs. 900 issues a cheque which gets deposited with bank Q. Now this bank receives a primary deposit of Rs. 900. Its balance sheet is given as under :

Table 7 – Balance Sheet of Bank Q

Liabilities		Assets	
Primary Deposits	Rs. 900	Cash	Rs. 900
		Minimum Required Cash Reserve	Rs. 90
		Excess Cash Reserve	Rs. 810

Bank Q receives a primary deposit of Rs. 900. Out of the amount of cash of Rs. 900, the minimum required cash reserve is Rs. 90 and the remaining amount of cash of Rs. 810 is the excess

reserve. As bank Q creates a derivative deposit of Rs. 810. The balance sheet of bank Q can be depicted as

Table 8 – Balance Sheet of Bank Q

Liabilities		Assets	
Primary Deposits	Rs. 900	Cash	Rs. 900
Derivative Deposits	Rs. 810	Loans	Rs. 810

The customer taking loan from bank Q issues a cheque which gets deposited with bank R. Now bank R receives a primary deposit of Rs. 810. The balance sheet of bank R is given as.

Table 9 – Balance Sheet of Bank R

Liabilities		Assets	
Primary Deposits	Rs. 810	Cash	Rs. 810
		Minimum Required Cash Reserve	Rs. 81
		Excess Cash Reserve	Rs. 729

As bank R receives a primary deposit of Rs. 810, it keeps minimum required cash reserve of Rs. 81 and the remaining cash amounting to Rs. 729 is the excess reserve. As bank R creates the derivative deposit of Rs. 729, the balance sheet of this bank can be shown as :

Table 10 – Balance Sheet of Bank R

Liabilities		Assets	
Primary Deposits	Rs. 810	Cash	Rs. 810
Derivative Deposits	Rs. 729	Loans	Rs. 729

The loan of Rs. 729 is received by the customer from bank R. The cheque issued by him gets deposited with bank S. Thus bank S receives a primary deposit of Rs. 729. Now the balance sheet of bank S is as under :

Table 11 – Balance Sheet of Bank S

Liabilities		Assets	
Primary Deposits	Rs. 729	Cash	Rs. 729
		Minimum Required Cash Reserve	Rs. 72.90
		Excess Cash Reserve	Rs. 656.10

The bank R extends a loan of Rs 656.10 to some customer. It opens current account in favour of this customer. Thus it creates a derivative deposit of Rs. 656.10. Its balance sheet can be now depicted as :

Table 12 – Balance Sheet of Bank S

Liabilities		Assets	
Primary Deposits	Rs. 729	Cash	Rs. 729
Derivative Deposits	Rs. 656.10	Loans	Rs. 656.10

The process of multiple credit creation by the entire banking system can now be shown through Table 13.

Table 13 – Credit Creation by the Whole Banking System

Banks	Liabilities (in Rs.)	Cash Reserves (in Rs.)	Loans or Derivative Deposits (in Rs.)
P	1000	100	900
Q	900	90	810
R	810	81	729
S	729	72.90	656.10
—	—	—	—
—	—	—	—
Total	10,000	1,000	9,000

It is thus clear that the initial primary deposit of Rs 1,000 leads to an expansion of total deposits by Rs. 10,000 i.e., 10 times the initial primary deposit.

Similarly, if there is decrease in the initial primary deposits, there can be a multiple contraction or destruction of deposits.

3. CREDIT CREATION AND CREDIT MULTIPLIER

The process of credit creation in the banking system results in a multiple expansion of credit. The magnitude by which total deposits increase due to a small increase in primary deposits is determined by the size of credit multiplier.

If the change in primary deposits is (δD) and the cash reserve ratio in γ , the total change in deposits (δM) is given by the following series :

$$\delta M = \delta D + (1 - \gamma) \delta D + (1 - \gamma)^2 \cdot \delta D + (1 - \gamma)^3 \delta D + \dots + (1 - \gamma)^{n-1} \cdot \delta D \quad \dots(i)$$

Multiplying equation (i) by $(1 - \gamma)$

$$(1 - \gamma) \delta M = (1 - \gamma) \delta D + (1 - \gamma)^2 \cdot \delta D + (1 - \gamma)^3 \cdot \delta D + (1 - \gamma)^4 \cdot \delta D + \dots + (1 - \gamma)^n \cdot \delta D \quad \dots(ii)$$

Subtracting (ii) from (i)

$$\delta M - (1 - \gamma) \delta M = \delta D - (1 - \gamma)^n \cdot \delta D$$

$$\delta M (1 - 1 + \gamma) = \delta D [1 - (1 - \gamma)^n]$$

$$\gamma \delta M = [1 - (1 - \gamma)^n] \delta D$$

$$\delta M = \frac{[1 - (1 - \gamma)^n]}{\gamma} \delta D$$

As n approaches infinity, the term $(1 - \gamma)^n$ tends to approach zero and, therefore, the above expression can be written as

$$\delta M = \frac{1}{\gamma} \cdot \delta D \quad \dots(ii)$$

If $\delta D = \text{Rs. } 10,000$ and $\gamma = 0.10$

$$\delta M = \frac{1}{0.10} \times 10,000 = 10 \times 10,000 \\ = \text{Rs. } 1,00,000$$

In the equation (iii) given above, $\frac{1}{\gamma}$ is credit multiplier (K_c), which in the above illustration is equal to $\frac{1}{\gamma} = \frac{1}{0.10} = 10$.

The credit multiplier can be defined as the ratio of total change in deposits (δM) to the change in primary deposits (δD).

$$\delta M = \frac{1}{\gamma} \cdot \delta D$$

$$\text{or } \frac{\delta M}{\delta D} = \frac{1}{\gamma}$$

$$\therefore K_c = \frac{1}{\gamma} = \frac{\delta M}{\delta D}$$

Since in the above illustration, the size of K_c is 10, the small increase in primary deposits amounting to Rs. 10,000 causes an increase in total deposits by 10 times *i.e.*, by Rs 1,00,000

Since credit multiplier $K_c = \frac{1}{\gamma}$, it means the credit multiplier is the *inverse function* of cash reserve ratio (γ). Higher the cash-reserve ratio, higher is the size of credit multiplier and consequently larger is the magnitude of credit creation and vice-versa.

4. LIMITATIONS UPON CREDIT CREATION

It is true that commercial banks can increase deposits to a large extent but this increase in deposits is, by no means, infinite. There are specific limitations on the commercial banks power to create deposits. These limitations are as follows :

(i) **Cash reserve ratio** : The legal minimum cash reserve ratio determines the magnitude of the credit multiplier and the total change in deposits varies

inversely with the magnitude of the cash-reserve ratio. Even if the banking system is inclined to expand deposits, a higher cash-reserve ratio will greatly curtail the capacity of the banks to expand credit.

(ii) **Amount of cash** : The infinite expansion of deposits cannot be possible since the banks "cannot create credit out of thin air". The amount of cash available with the banks specifically limits the capacity of the banks to make investments or to make advances to the borrowers.

(iii) **Liquidity preference** : The liquidity preference on the part of the general public also limits the capacity of the banks to expand deposits. If the people have a strong preference for cash and there is a net drain of cash from the banks, the credit expansion capacity of the commercial banks will be correspondingly curtailed. If we assume that the ratio of cash withdrawn by the depositors to the total deposits (d) is, say 10% or 0.10, a primary deposit (dD) of Rs. 10,000, given the cash-reserve ratio (γ) at 0.10, will bring about deposit expansion to

$$\delta M = \frac{1}{\gamma + d} \cdot \delta D \\ = \frac{1}{0.10 + 0.10} \times 10,000 = \frac{1}{0.20} \times 10,000 \\ = 5 \times 10,000 = \text{Rs. } 50,000$$

Earlier we studied that the deposit expansion, ignoring the liquidity preference, is 10 times the primary deposits. But now it is found out that the magnitude of credit multiplier $\left(\frac{1}{\gamma + d}\right)$ is only 5 because the deposit expansion is restricted by the preference for cash.

(iv) **External drain** : It is assumed in the process of credit creation that the amount of cash that the commercial banks acquire in the form of primary deposits continues to remain with them. Bank never makes payment to the borrowers in the form of cash. If some amount of cash flows out of bank, it is called as the external drain. Such drain of cash will reduce the cash resources of the bank and consequently their ability to expand credit or deposits will get reduced.

(v) **Additional cash reserve** : The deposit expansion may also be restricted, if the commercial banks decide to hold cash in excess of the legal minimum cash-reserve requirements. If we assume that the ratio of the additional cash reserves in excess of the cash-reserve ratio to total deposits (c) is 0.15, the magnitude of the credit multiplier will

$$\text{be determined by } \frac{1}{\gamma+c} = \frac{1}{0.10+0.15} = \frac{1}{0.25} = 4.$$

Given this magnitude of variable c , the deposit expansion will be four times the primary deposits and not ten times the primary deposits as discussed earlier.

If $\gamma = 0.15$, $d = 0.15$ and $c = 0.15$, the credit

multiplier will be determined as $\frac{1}{\gamma+d+c}$ where γ ,

d and c are the leakages from the deposit expansion stream and the magnitude of the credit multiplier

$$(K_c) \text{ will be } \frac{1}{0.10+0.10+0.15} = \frac{1}{0.35} = \frac{20}{7} = 2.86.$$

In this situation, an initial deposit of Rs. 10,000 will cause an expansion in total deposits by only Rs. $10,000 \times 2.86 = \text{Rs. } 28,600$.

(vi) **Desire for borrowing** : If the commercial

banks are willing to advance loans but the borrowers are not willing to get loans due to recession or some other reason, it will not be possible for the commercial banks to expand deposits or credit in any large measure.

(vii) **Nature of securities** : The commercial banks always extend credit against securities. If sound and acceptable securities are not available to the commercial banks in a large measure, it is not possible for them to expand credit or deposits.

(viii) **Central bank policy** : The extent by which the commercial banks will expand credit is conditioned by the policy of the central bank. When the central bank is out to restrict the supply of money, the commercial banks are under tremendous pressure and they cannot obviously expand credit to any significant extent.

(ix) **Attitude of commercial banks** : The deposit expansion finally depends upon the willingness of the commercial banks to extend credit. For instance, during the period of depression, the banks have got sufficient cash reserves. Even the central bank wants the commercial banks to expand credit but the fear of losses discourages the banks from extending credit to the individuals and the business firms.