Part I
Introduction

Credit risk analysis is an art as well as a science. It is a science because the analysis is based upon established principles emanating from a body of knowledge and sound logic. Individual skill and the way the principles are applied constitute the art element.

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Credit Basics

Historically credit is good, if used wisely. However, there are numerous instances where both lenders (and creditors) and borrowers (or debtors) and even global economies suffer because of credit. The main reason is traceable to poor credit risk analysis and inadequate credit risk management. The purpose of this book is to delve into the realm of credit risk analysis and management in depth so that both lenders and borrowers can make the best use of credit for the common good.

Credit prudently used can create wealth and bring overall prosperity to the economy. Accordingly, credit, nowadays, is pervasive and is a common feature of all global economies. The only places from which it would be probably absent would be among the hunter/gatherer tribes in the deep jungles of Africa, South America or Asia or in similar tribes still living in primitive conditions.

Look around, observe your newspapers, magazines, television or radio or the billboards on highways – you can see invitations to participate in credit. Manufacturers of automobile and consumer durable goods offer credit directly or through their finance subsidiaries at low interest rates or offers instalment schemes with easy repayment terms. Credit card issuers attempt to persuade almost everybody to live on credit and at least some of the credit card holders find themselves living beyond their means and almost in perpetual debt.

Individuals borrow to meet their immediate requirements of physical needs such as house, furniture, car, consumer durable goods or to meet consumption expenditure such as marriage expenses, education or holidays. Business borrows to make investments to facilitate expansion or to meet working capital requirements, amongst others. Governments borrow to keep themselves afloat and hope to repay them from future tax revenues or further loans. Central government and big businesses borrow from abroad, which if not managed properly, can plunge the debtor country into an inevitable foreign exchange crisis, as has been seen in the 1997 Far East Asian Crisis and 2001 Argentina Crisis. The sub-prime lending crisis in the US (2008) and the Greek debt crisis (2010) and Spanish debt crisis (2012) are also linked to credit risks.

While the policy makers and officials scramble to find solutions with the least impact on the economy during such crises, it may be noted that these issues are often complex in nature and reflect the incredible power of financial and credit markets to systematically affect people from all walks of life. The level of credit extended and enjoyed by borrowers has far reaching implications for the economy. The lending, credit and regulatory policies that govern the financial sector and the levels of acceptable debt by the corporate sector require not only adequate monitoring but also sound understanding of the nature of credit risk. Insufficient knowledge of credit risk or its underestimation will result in distress to both lenders and borrowers who will suffer legal cases, bad debts, losses, to name just a few of them.

No doubt credit is ubiquitous and all important in the proper day-to-day functioning of the economy. Any disruption to the credit flow in the economy will have serious consequences for the economy itself.[1] As we will see in the rest of the book, credit is the life blood of business activities and the economy. Hence, the importance of credit risk and credit risk management.

1.1 MEANING OF CREDIT

Credit had a role to play from the early days of civilization. Nowadays credit implies monetary or monetary equivalent transactions. However, given the more accurate and realistic definition of credit, it includes non-monetary and/or barter transactions. Roughly, we can define credit as ‘A transaction between two parties in which one (the creditor or lender) supplies money, goods, services or securities in return for a promise of future payment by the other (the debtor or borrower). Such transactions normally include the payment of interest to the lender.’[2]

The second part of this definition is interesting, it shows that credit is not cost free. The creditor parts with the resources because he has the incentive – either directly or indirectly. The incentive is required because the lender has an opportunity cost – he can deploy the resources elsewhere gainfully. Accordingly, for the sacrifice of this opportunity, the lender expects a return, which is normally known as interest. Over history, how much a lender can charge as interest has been under dispute prompting certain segments of society to view interest as an evil. However, it is an undeniable fact that interest is a type of cost of capital, charged by lenders, who do not have the right to enjoy the fruits of ownership. Another way of looking at interest is that it is equivalent to rent. Just as the owner or supplier of the building will charge rent, the interest is the rent charged by the supplier of credit or debt capital. While excessive or imprudent borrowings can be catastrophic, cost of capital cannot be blamed for the imprudence.

Of course, interest rates that do not justify the underlying economic realities and result in deprival of economic assets of the borrower are exploitation and a strategy followed by bigger powers. The East India Company ensured dependency of some its vassal states in India by lending them large sums of money at exorbitant interest rates. The book *The Honourable Company* by Mr John Keay, describes loans by the East India Company to the Nawab of Arcot at exorbitant interest rates of 20–25%. This ensured not only the indebtedness of the Nawab to the company but the revenues of the Carnatic also found their way into the East India Company without all the hassle and recrimination.

The novel *Money Changers* by Arthur Hailey depicts loan sharks in the US, who charge excessive interest rates and their collection technique is purely muscle power. This category of suppliers of credit, who exist in almost all countries, do not belong to mainstream suppliers of capital and their actions do not serve any social justice or contribute to the economic progress of the public. No court of law will approve their ridiculous interest rates or their collection methods. However, the main reason for their existence is akin to the Stock Market Theory called the Greater Fool Theory. This theory refers to the buyers of stock/shares at ridiculously high prices (inflated valuations) with the hope of finding somebody who will buy them at an even higher price! Similarly are those who borrow at exorbitant rates.

[1] US President Herbert Hoover in a speech during 1932 stated ‘Let me remind you that credit is the lifeblood of business, the lifeblood of prices and jobs’.

[2] Definition from *Encyclopaedia Britannica*.

The probability of using the credit productively is very low, but not impossible, at least theoretically.

So, the borrower is responsible for the debt service obligations and should be aware of the consequences of the borrowings. So the caveat is 'Let the borrower be aware'.

Naturally, a small percentage of debtors won't pay back the credit as promised, sometimes even sending the creditor into bankruptcy. But the majority of debtors meet their commitments. That is why the World Economy survives. Credit losses or bad debts occur in both finance and non-finance businesses. The reasons vary. In certain cases, if the credit is extended to crooks, it is a bad debt from inception. However, the bulk of credit losses happen because of genuine business failures. The reasons vary from increase in competition, new technology, substitutes, increase in prices, decline in demand, over-estimation of demand, over-supply position in the market, government regulations, union problems, mismanagement, death of key persons, business cycles, over-ambitious projects, financial losses, excessive leverage, concentrated exposure, defective diversification and so on. A proper credit risk analysis will bring to light the probability of credit loss arising out of genuine business factors.

There are situations where the creditor ends up losing even if the debtor settles the dues on time. Three such situations are described below:

- One instance is inflation. If the rate of inflation exceeds interest rates, the suppliers of credit are badly affected. In such situations, inflation actually redistributes money from lenders to borrowers. If interest rates are 10% and inflation is 20%, the saver will lose 10% of the real value of the savings. However, the banks and other financial intermediaries do not lose much in an inflationary situation because they in turn pass on the reduction in purchasing power to the depositors. (Moreover, the central bank of any economy will increase the interest rates, to bring down the inflationary pressure by dampening the credit off-take.)
- In the second instance of devaluation of a foreign currency, in which the debt is denominated, the creditor loses to the extent of the rate of devaluation. For instance, during the 2001 crisis, the devaluation of the Argentinian currency, the peso, had taken its toll in many banks in the US, Spain and leading exporters to that country. Accordingly, a US creditor who had a receivable of one million Argentinian pesos in early 2002 (when the peso had parity with the dollar) would find the value in dollars plunging from $1 million to $333K in a period of six months. Banks and financial intermediaries would have suffered losses if they were holding open their own exposures in Argentinian pesos.
- Another instance will be non-compliance with anti-money laundering measures implemented by the central banks of most of the countries. Money laundering is a menace of the modern day world, hence the importance of Know Your Customer (KYC) policies and procedures. In most cases the loss will be through the penalties imposed by the respective authorities if the institution aids or abets money laundering activities knowingly or unknowingly. Similarly, if sanctions are imposed on certain countries, then dealing with or lending to the customers in such countries can also spell trouble and result in losses.

Whilst the risk that a borrower (whether individual or corporate) may default on obligations is known as Credit Risk, the risk that a foreign government may fail to honor the credit related obligations is defined as Sovereign Risk. It may be noted that the legal remedies in the event of sovereign risk are limited. Hence when extending credit to a business firm located in a foreign country, it is better to ascertain the level of sovereign risk, than to study the credit risk of the business firm.

1.2 ROLE OF CREDIT

Idle economic resources can be effectively put into use through credit. Borrowers who do not have enough resources to pursue an activity can borrow the resources, which can be returned to the lender after having achieved the objective. There is a practical difficulty for those with surpluses to identify potential borrowers. This is where financial intermediaries come in. Broadly, banks and other financial intermediaries collect economic resources – mainly in the form of deposits – from the public and engage in intelligent lending. Financial intermediaries play an important role in any economy. From a macroeconomic perspective, the main function of the financial system in any country is to mobilize resources for economic growth. The financial intermediaries not only intermediate between savers and investors but set economic prices of capital, in line with the monetary policy of the nation.

Financial intermediaries play a vital role in making the credit available. Those financial institutions like banks who can retake the loan proceeds given to one party from another can in fact increase the credit availability in the economy. This is called 'credit creation' by banks. Please see the Appendix for details.

Prudent use of credit results in economic growth of borrowers, which in turn leads to the overall economic well-being of the society and ultimately the country. Credit stimulates both household consumption and business investment. Hence, a national credit policy is an important tool used to encourage industrial development and business investments, thereby creating employment opportunities and improving the standard of living of the general population. As purchasing power increases, people will tend to spend more on consumer goods and this will stimulate further economic growth. Remember how Allan Greenspan attempted to accelerate credit off-take, especially after 9/11, by slashing the interest rates to the lowest in the last 40 years.

Usually the state of the credit markets will reflect the relative health of a larger economy as well. Often the prevailing interest rates and risk appetite for various grades[3] of credit risk are some of the indicators of the state of the credit markets.

1.3 CREDIT MARKET

The credit markets dwarf the equity markets. An equity market crisis usually impacts a limited number of financial players; however a credit crisis often shakes the foundations of the economy. However, since both equity market and credit markets are part of larger capital market, sometimes both markets may move together.

A business firm or a large corporation or multinational company finds that the market can absorb even if production is doubled. But they do not have enough funds to expand the operation. What is the easy solution? Similarly, if you want to buy a car or travel abroad but you currently do not have sufficient cash in hand, what would you do? The answer is probably to approach a bank or financial institution or ask the supplier of the good or service to extend credit. Governments are also active in credit markets. Many governments act through their central bank and buy and sell credit to meet their funding needs.

The demand for credit is ubiquitous, as the economic agents feel scarcity – while pursuing unlimited wants with limited resources. Borrowers or users of credit can be classified into

[3] The credit risk varies from least risky (e.g. treasury bonds) to very high risk (e.g. junk bonds). We will examine various grades of credit risk later in the book.

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different categories. Whilst classification varies depending on the context, the most commonly followed binary categorization is – Personal Credit[4] and Business Credit.

The granting of credit to commercial customers (business credit) is more complex than personal credit. This is because commercial borrowers are engaged in a much wider range of activities and their needs for credit vary according to the nature and size of their operation. Business credit is the most common, but for which world trade and the economic progress of mankind would have been impossible. Demand for business credit emanates from companies, partnerships, sole proprietorships, clubs and associations, of different nature, size and intentions. They usually obtain credit through person(s) acting on their behalf. Businesses are of different types with differing requirements depending upon the nature of their activity. Accordingly, the type of funding required by an airline is different from the funding required by the retailer in your locality. Similarly, the credit may be required for the short term, medium term or long term.

1.4 CREDIT – ADVANTAGES AND DISADVANTAGES

The discovery and control of fire has brought several benefits to mankind and it touches the day-to-day life of almost every human being. However, unless fire is used carefully, it can be disastrous. Like fire, if used cautiously, credit is useful to mankind. It brings benefits not only to the lender and user but to the entire economy as well. However, on the other hand, misuse of the credit will bring woes. Let us look at the advantages of credit to the borrower, which propels the demand for credit.

1.4.1 Merits of Credit

Successful businesses, individuals and government use credit. Usually, credit growth in the overall economy goes hand in hand with economic growth.

1.4.1.1 Wealth Creation and Maximization

Credit is a vital part of the financial management of almost all entities engaged in economic activity – whether government, business enterprises or private individuals. Whilst the purpose of this book is to deal with the credit risks of commercial credit, it seems appropriate to mention that even governments borrow money much along the lines of business credit. Such loans are expected to be repaid from future government revenue (taxation, customs and other revenue) or foreign aid. It is common knowledge that in many of the countries these

[4] The borrowing needs of individuals vary according to their financial status. The individuals may be salaried employees/self-employed i.e. people who have their own business or agriculture/professionals such as doctors, solicitors or architects etc. Their need to borrow money could be for purposes such as: buying a house/car/furniture/home appliance, repairing or improving a house/getting married/holidays/starting a new business/setting up a practice in the case of professionals/children's education etc.

In general, the demand for credit by individuals may be categorized into three types. Low-income people – the demand for credit by this group of people is often limited since they normally keep a close balance between incomings and outgoings. Conversely, they may attempt to borrow to satisfy consumption needs, which they cannot afford on limited income. This category of borrowers ought to be very cautious in using credit unless they are able to identify alternate repayment sources. Middle-income people – the demand for credit by this group tends to be much greater. This group may have significant financial assets (deposits/shares etc.), but they tend to show a preference for borrowing for the purchase of consumer durables rather than liquidating some of their savings. They have realized that borrowing can be used not only as a way of meeting emergencies but also as a means for improving their standard of living. For affluent people, credit provides additional flexibility and access to liquidity, especially if their financial wealth is locked in long-term investments, real estate or otherwise.

borrowings are siphoned off by the ruling elite and indirectly the burden falls on the shoulders of the common man in the respective countries. So, a nation can become prosperous only if the resources – including the credit (funds) borrowed – are gainfully deployed to yield a satisfactory economic return. If the borrowing nations use credit without corruption and inefficiency, it will not only result in more economic goods, enhancing the standard of living, but will ease the burden on the population for additional revenue through direct and indirect taxation.

If used wisely, credit helps in multiplying wealth much faster and beyond the existing resources of a nation/business enterprise/individual. The reasoning and logic is simple enough. While the cost of a credit facility is fixed and if the borrower/user of credit can deploy it at a return higher than the cost of credit, the difference results in wealth creation for the borrower. For example, if you borrow $10,000 @10% cost and deploy it for 25% return you end up with a wealth of $1,500/-. This fundamental concept has found its application in many financial theories of leverage. We will look more closely into it later in this book when we discuss financial risks. Productive employment of credit calls for good governance/management.

1.4.1.2 Tax Planning Tool

The cost of borrowings is tax deductible, which preserves a proportionate portion of wealth from tax. Individuals also borrow credit as a tax-planning tool. In several nations across the world, income tax legislation allows the deduction of interest and instalments on housing loans obtained by the salaried classes and self-employed.

Companies and business add value not only by value differential, but also through the tax advantage of borrowed funds. For example, suppose ABC Ltd starts operations with a project cost of $100m, fully funded by equity on which it earns Profit before Interest and Tax (PBIT) of $25m after the first year of operations. Assuming a tax rate @ 50%, the net profit attributable to shareholders would be $12.5m with a Return on Equity (ROE) of 12.5%. Think what happens if 50% is borrowed @10%. After meeting the interest costs of $5m, the PBT would be $20m on which tax of $10m to be paid. Attributable net profit to shareholders would be $10m with a ROE of 20%. Notice the sudden jump in ROE due to the leverage effect.

If individuals borrow to create assets it will improve their wealth. Most individuals who borrow to build or purchase houses or residential units, usually find that the market value of the house (after several years) has outstripped the gross repayment obligations of the housing loan.

1.4.1.3 Convenience

The owners need not bring all the funds to run the show. Often the first generation entrepreneurs who commence a new line of activity may find it difficult to amass enough funds to start and run the business. Hence, they turn to debt, which is a convenient method of raising funds, and which can be returned later.

1.4.1.4 Business Control

When confronted with the choice of type of capital, many entrepreneurs prefer debt capital because they can retain control over the business. In the case of equity capital, the new shareholders have the right to ownership privileges, effectively reducing the existing owners’ control over business. Secondly, while with borrowings the existing owners can enjoy the full benefits of the business after meeting the fixed finance obligations, additional equity capital would mean that the new owners will partake in the whole benefits accrued from business.

1.4.1.5 Socio-Economic Advantages

There are many advantages to the society and the country emanating from business lending. As the business borrows more and spends, the local society/economy is benefited as more demand is created. This activity – borrowing and spending or investing by the economic participants in an economy – is self-reinforcing because the increased spending results in more income, rising profits and higher net worth of businesses which in turn results in higher capacity to borrow, which encourages banks and lending institutions to lend more, increasing the spending and investments further in the economy. All this will result in higher employment creation and improved standards of living. Overall, the business spending on credit has far reaching implications for the country's economy, which can drive up the demand for goods and services, accelerating economic growth. However, credit induced growth needs to be monitored closely by the government and monetary authorities (usually the central bank and finance ministry) as it carries bubble risk. We will discuss more about credit bubbles in later chapters.

1.4.2 Demerits of Credit Usage

Using credit is not without disadvantages. Major demerits are:

1.4.2.1 Reduced Profitability

As far as business credit is concerned, it is true that if the ROI exceeds the borrowing costs, leverage is beneficial to borrowers. On the flip side, when the ROI is lower than borrowing costs, the business will suffer from lower profitability.

1.4.2.2 Default and Bad Reputation

One of the main disadvantages of relying on credit is the inability of the borrower to meet the obligations on time. If the business runs at below breakeven then additional funds/cash need to be brought in from other sources to meet the interest obligations, and it is better not to speak of the principal portion. Any default will not only result in compounding of the interest burden; but most of the financing institutions levy charges such as penalty interest, etc., adding to the woes. So, instead of improving shareholder value, it can destroy value. Ultimately, the business entity will find itself out of business or with negative publicity. Trust will be lost. Unpaid financial institutions and suppliers and other non-FI creditors will take action that will bring a bad name to the obligor in business circles.

1.4.2.3 Bankruptcies

Almost all bankruptcies are caused by the creditors pressurizing the borrower to pay up. Bankruptcies are not good for the creditors either, as they cause credit losses, impacting their profitability. Nonetheless bankruptcies occur and are universal. Some famous or infamous bankruptcies are CRB Capital (India), Yokokawa Securities (Japan) Daewoo (Korea), WorldCom, Enron, Global Crossing, Lehman Brothers (US) etc. In the environment of globalization and opening up of markets, corporate management challenges and increasing competition, along with prudent credit usage, become even more important.

1.4.2.4 Propensity to Over-spend

The main disadvantage for users of credit is the tendency to over-spend beyond their means. Many individuals, nowadays, with easy availability of credit from credit cards or other sources of credit are tempted to 'keep up with Joneses' otherwise known as the 'demonstration effect'. It is not unusual to read in newspapers about people committing suicide because of debt burden. Similarly, during times of easy availability of credit many successful businesses over-leverage themselves to diversify into riskier sectors (e.g. real estate and/or financial investments) or unfamiliar territory, and suffer subsequently during the sector downturn or failure of new ventures.

Unexpected drying up of future inflows – say loss of a job, fall in income from business, sudden delay in collection of receivables, accumulation of unsold inventories – can result in repayment defaults and associated costs such as penal interest and finally confiscation of the collateral, if any, plus the associated damage to personal prestige. Similarly, contingent and unexpected events such as earthquakes, accidents, wars, rebellion etc., can strain the cash available for repayments. Such 'black swan' events cannot be wished away. Since no accurate estimation of these events is possible, businesses/individuals/households should always be conservative while borrowing.

1.4.3 Is Wealth Creation Through Use of Credit Easy and Simple?

Whilst successful use of credit is common across the world, many nations and businesses have found that the 'debt trap' is too deadly. Argentina, Greece, Enron, Bear Stearns, and Lehman Brothers are a few examples during the early 21st century. Annually a number of individuals commit suicide or businesses become bankrupt because of imprudent use of credit – it reflects lack of adequate credit knowledge and skills. Excessive imprudent credit can be harmful to the economy itself.

An interesting case of business credit going beyond the limits which can be harmful to the country is Japan in the 1980s and 1990s. Too much credit will have inflationary pressures. During the mid-1980s most Japanese companies borrowed to create additional capacities, for which there was little demand. At the same time, a real estate boom flourished in Japan fuelled by bank borrowings. As the expanded companies found little demand for augmented capacity, they found the repayment of the loans taken for expansion difficult. As the real estate boom began to descend, the real estate dealers who borrowed to buy up the properties also found themselves cash strapped. In both cases, the repayment of the borrowings was tardy and sluggish, which, along with the cumulative and compounding interest burden, sent many companies and real estate dealers into bankruptcy. In turn the lending institutions had to book huge credit losses, triggering a series of collapses of banks/financial institutions, leaving thousands of stakeholders in the mire. As you might have already guessed, although credit is a useful tool for the economy and meets several needs and demands of the population, it is a double edged sword. That is why the central bank authorities of the country are always vigilant in controlling credit flow in the economy. In capital scarce countries, it is of more importance as the scarce capital has to be channelled to the priority needs of the economy.

Another interesting case is the US before the credit crisis of 2008. We will discuss more about this later in the book.

To put it briefly, whether it is business, or managing a country or personal wealth creation, the way that limited resources are managed has a significant impact. Maximization of wealth through optimal utilization of resources is the true objective of financial management, in any context. The credit has contractual obligations, however it can result in additional value to the owners/shareholders (and hence impact wealth maximization positively) if the cost of credit or borrowing is lower than the return for which the borrowed resources are deployed.

Debt within limits is safe and will definitely add value, contributing positively towards wealth maximization.

1.5 SUPPLIERS OF CREDIT

During a walk around the cities, towns and even some of the remote areas of a country you will see suppliers of credit such as commercial banks, non-banking finance companies, private financiers and others. The traders and manufacturers and service providers also extend credit to their buyers, normally called 'trade credit'. Whilst financial intermediaries extend money as credit with a condition to repay in money, trade credit is available in the form of goods and services, but to be settled mostly in monetary form. In any economy the suppliers of credit vary from individual moneylenders to mammoth institutions. Suppliers of credit can be briefly classified as follows:

(a) **Commercial Banks**: Commercial banks are among the important suppliers of credit in any country. They are central to the banking system and constitute an integral sub-system of the financial system and channel small savings from households for deployment in the corporate sector. Commercial banks are the largest suppliers of short-term finance for business requirements in all countries although the structure of the banking system may be different from country to country. However, the role of a central bank is important in all countries to regulate the operations of commercial banks.

    Credit risk is vital to the survival of commercial banks and hence one of the primary concerns of commercial banks and regulators. Given the importance of public confidence in the banking sector governments always want to keep commercial banks in good health. So, governments are highly concerned about the credit risk exposure of the banking sector. That is why the level of bad credit assets or non-performing assets is always measured and monitored on an ongoing basis.

    Usually commercial banks are less likely to extend long-term loans and financing, given the short-term nature of most of the deposits. However, in certain cases and on a very selective basis commercial banks do undertake long-term credit exposures.

(b) **Term Lending/Development Institutions**: As the name indicates, their main function is to extend term loans, project finance and meet other long-term finance needs of the corporate sector. Most governments have their own State Finance Corporations, to promote industrial development. Development institutions in Japan and Korea played a prominent role in industrializing and ushering in the economic prosperity. Realizing its importance many nations in the world have formed development institutions.

(c) **Public Debt Market**: Whilst developed countries have a matured Public Debt Market, in developing countries it is now in its growth phase. Large, established and usually listed public companies with enough credibility and financial standing bypass the banking sector and seek financing directly from the capital market, by way of bonds, debentures or commercial papers. Usually such debt issues require mandatory rating by credit rating agencies. After the debt issue, the rating agencies continue to monitor the financial position of the company. However, during the post Enron/WorldCom/Lehman Brothers period, rating agencies, especially those in the US, face wariness from the public.

(d) **Other Institutions in Credit Financing**: A host of other entities undertake credit financing, as part of their normal operations. Housing finance companies, hedge funds, non-banking subsidiaries of major MNCs (e.g. the financing arm of automobile majors such as BMW), etc. are some of the significant players in this segment. Insurance companies have a large pool of resources at their disposal, which are also deployed in a variety of lending/investment activities. Non-Banking Financial Institutions (NBFIs) also play an active role in lease and hire-purchase financing. Mutual funds also deploy varying amounts of money in credit markets depending upon its nature – e.g. Fixed Income Mutual Funds.

(e) **Trade Credit**: Another source of credit is the supplier/trader/manufacturer who offers credit for short periods, ranging from 30/120 days. Whilst in monopoly situations, the seller can impose stricter terms such as ‘cash in advance’, competition compels liberal credit terms, as a major source of competitive advantage. Trade credit is used by both domestic and foreign suppliers, with the latter having a tendency to protect it through letters of credit. Trade credit is one of the tools of sales promotion techniques. As we will later see in ‘Industry Analysis’ (Chapter 6) the credit terms prevalent in an industry are a function of the ‘bargaining power’ of suppliers and buyers. However the choice whether to extend credit to a particular customer is a pure credit decision.

Different categories of suppliers of international credit exist. The world of international suppliers of capital (both debt and equity) is vast and sometimes bewildering given the massive resources at their disposal. Both rich closely-held private companies (such as the Rothschild family) and multilateral institutions are active in international credit. Well known multilateral institutions include the World Bank, IMF, IDA, ADB, IFC, multinational banks and governments. Given the foreign exchange flows involved, over-reliance on international credit can bring havoc as has been proven by the repetitive instances of economic collapses around the world, in our recent memories. Whilst in the 1980s and early 1990s the whole of Latin America suffered, during 1997/98 it was the turn of the tiger economies of the Far East and in 1998/99 both Turkey and Russia had to bear the brunt. India too had a close brush with such a situation in 1991.The story of 2002 was Argentina while in 2010 it was the turn of Greece.

1.6 CREDIT RISK STUDY

There is a common element across all the categories of suppliers of credit discussed above – the need to study the creditworthiness of borrowers or counterparties or the need for credit risk analysis.

What is ‘creditworthiness’? It denotes checking whether the prospective borrower is worthy to receive credit. It is similar to the term ‘seaworthiness’ of a ship, which is a normal clause in marine insurance policies. Just as a ship lacking ‘seaworthiness’ carries significant risk of sinking at sea, a person, or a business firm or a company who is not ‘creditworthy’ has a high propensity to default on credit. As we will see later, the study of creditworthiness has macroeconomic implications, which if not properly studied by the economic participants, may lead to a financial/economic/credit crisis. The perception that the risk analysis involved in credit is less difficult than the alternative investments (Equity, Venture Capital, etc.) is quickly dispelled if one understands the complexities of credit. The lessons of the collapse of banks/financial intermediaries in Japan (1990s), the US (1930s and 2008) and other countries, under the weight of bad credit assets (credit losses) highlight the significance of credit risks and the need for sound understanding of the principles of credit risk analysis and credit management.

Credit risk analysis is more than establishing creditworthiness. In fact, creditworthiness is a vague term. There are ranges of creditworthiness, the proper grasp of which is critical to understand the probability and quantum of credit losses. Secondly, just as in other return/risk relationships, the level of pricing to be charged on credit is determinable only if the underlying credit risk is properly evaluated. Thirdly, often the relationship between the creditor and borrower is long standing, especially in banks and other financing institutions. Most of the suppliers of credit are also interested in the upside business potential of the customer although the downside risk is a vital consideration of credit risk analysis.

Given the multifarious nature of credit risk the modern techniques of credit analysis deploy a variety of tools to study and understand its various ramifications. We will see the repertoire of techniques/tools useful to study credit risk in the ensuing chapters. Now let us consider the essentials of ‘Credit Risk Analysis’, the topic of the next chapter.

APPENDIX: CREDIT CREATION

Banks can create credit virtually out of thin air! This is because of the fact that the credit extended by the banking system, in most cases, comes back to the banking system. Of the deposits received, banks, after maintaining the legal minimum reserves (stipulated by the central bank to ensure liquidity of the banks) the remaining portion can be extended to the public as credit. Since the bulk of the monetary transactions are routed through banks, the amount extended as credit will come back to the banking sector as deposits, which enable the banks to extend further credit, although no additional currency has been printed.

The following example demonstrates the concept better:

> Example: Mr A, Mr B, Mr C, Mr D and Mr E deal only with XYZ Bank Ltd, which is required to maintain 10% reserve ratio on deposits. On 1 May 20X3 XYZ Bank received a deposit of 10,000/-. Mr A applied for credit on the same day and was provided with 9000/- after setting aside 10% as reserve ratio. Mr A used the credit to buy a TV from Mr B, who deposited the amount with XYZ Bank the next day. The bank kept aside 10% and extended credit to Mr C who applied for 8100/-, and used it to buy a stereo from Mr D, who also similarly decided to deposit it with XYZ Bank. The bank once again set aside 10% reserve on the deposit and lent 7290/- to Mr E.

As is evident from the above, XYZ Bank was able to create three credit deals totalling 24,390/- (9,000+8,100+7,290) from a single initial deposit of 10,000/-.

Although the subsequent credit facilities are reduced because of the 10% reserve requirement, it is evident that the bank can ‘create credit’ more than once from a one-time deposit! The chain of credit transactions and resultant deposits will continue until the reserve requirement makes it impossible to provide further credit. In this case, by that time the total credit transactions of XYZ would add up to 90,000/-, i.e., exactly nine times as large as the original cash deposits of 10,000. The following chart depicts the situation clearly.

Serial No.	Deposits	Reserves	Advances
1	10,000	1,000	9,000
2	9,000	900	8,100
3	8,100	810	7,290
4	7,290	729	6,561
5	6,561	656	5,905
6	5,905	590	5,314
7	5,314	531	4,783
.	...	...	...
.	...	...	...
n	...	...	...
Total	**100,000**	**10,000**	**90,000**

The amount of credit the banking system can create with a single initial deposit, can be calculated by the following formula:

$$\text{Credit Creation} = \frac{\text{Initial Deposit } (1 - r)}{r}$$

where r = reserve ratio.

Although the exact credit creation by banks is determined by a variety of factors such as convention, central bank reserve requirements, general market conditions and demand for loans etc., normally the banks can create credit to the extent of 5 to 6 times their original deposits (500 to 600%).

QUESTIONS/EXERCISES

1. What are the advantages and disadvantages of using credit?
2. Do you believe credit is the life blood of the economy? Please elaborate.
3. Which market is bigger – the equity market or the credit market – and why?
4. Who are the major suppliers of credit? Name a few international credit institutions.
5. What is meant by credit risk analysis?
6. Do you believe traders and manufacturers also require credit risk analysis before they extend credit to their customers? Please elaborate.
7. What is meant by sovereign risk?
8. What do you mean by Credit Creation by banks?