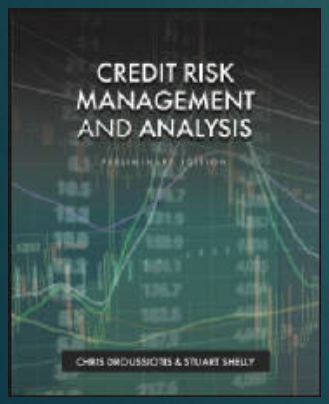
Chapter 1: Credit Basics, History and role



Chapter 1

"Credit Risk Management & Analysis"

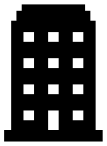
MONEY BANKING, THE FED, INVESTMENTS AND CREDIT

RETAIL INVESTORS (STOCKS & BONDS)

INVESTMENT ANALYSIS

SECURITIES REGULATORS
Securities Exchange Commision (SEC)
Financial Industry Regulatory Authority (FINRA)

FINANCIAL & VALUATION ANALYSIS



INVESTMENT BANKS

CORPORATION

BALANCE SHEET		INCOME STATEMENT
ASSETS	LIABILITIES	Revenue Gross Profit EBITDA Net Income
	Trade Payables Loans Bonds	CASH FLOW STATEMENT
	EQUITY Prefered Common	Working Capital Investment Activities Financing Activities

FEDERAL RESERVE (Monetary Policy)

LBO ANALYSIS

PRIVATE EQUITY FIRM

U.S. TREASURY (Fiscal Policy)

COMMERCIAL BANKS

CREDIT ANALYSIS

MERGERS & ACQUISITIONS ANALYSIS

COMPANIES

BANK REGULATORS
Office of the Comptroller of the Currency (OCC)
Federal Depository Insurance Corporation (FDIC)

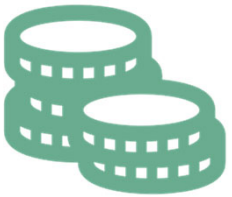
RATING AGENCIES

First Pre-Requisite:
Time Value of Money Concepts Overview

Time Value of Money Concepts

One-Time Investment

Annuities or Even Annual Cash flows



Uneven Annual Cash Flows

One-Time Investment

Four Variables:

- **Future Value (The expected money you will get in the future)**
- **Present Value (money you invest today)**
- **Interest Rate**
  - **Growth of your money**
  - **Discount Rate**
  - **Cost of Capital**
  - **Opportunity Cost**
  - **Holding Period Return (HPR)**
  - **Internal Rate of Return (IRR) or Rate of Return (ROR)**
- **Time**

Calculating Future Value

What is the future value of $1,000 after 3 years if the interest rate is 5% compounded annually?

FV: Formula Method

- After 1 year:

  $FV_1 = PV(1 + r) = \$1{,}000(1.05) = \$1{,}050.00$

- After 2 years:

  $FV_2 = \$1{,}050.00(1.05) = \$1{,}102.50$ or
  $FV_2 = PV(1 + r)^2 = \$1{,}000(1.05)^2 = \$1{,}102.50$

- After 3 years:

  $FV_3 = 1{,}102.50(1.05) = \$1{,}157.63$ or
  $FV_3 = PV(1 + r)^3 = \$1{,}000(1.05)^3 = \$1{,}157.63$

- After t years (general case):

  $$\mathbf{FV_t = PV(1 + r)^t}$$

Future Values: General Formula

- $FV = PV(1 + r)^t$
  - FV = future value
  - PV = present value
  - r = period interest rate, expressed as a decimal
  - t = number of periods (time)
- Interest factor = $(1 + r)^t$
- To find future values

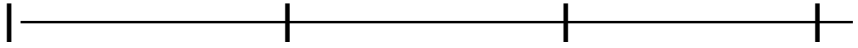
FV: Using Excel's Financial Technology

- Type the formula
- Use a dialogue box
  - Click on Formulas > Financial > FV.
  - Fill in the Rate, number of periods (Nper), periodic payments (Pmt), and present value (Pv). Click OK.
- Type the function
  - **=FV(rate, nper, pmt, pv, type)**

FV: Three Methods

Investment	$= CF_0 =$	-$1,000.00
Interest rate	$= I =$	5.00%
No. of periods	$= N =$	3

Periods: 0 1 2 3



Cash Flow Time Line: -$1,000 FV = ?

Step-by-Step Approach: $1,000 → $1,050.00 → $1,102.50 → $1,157.63

Formula Approach: $FV_N = PV(1 + I)^N$

$FV_N =$ $1000(1.05)^3 =$ $1,157.63

Excel Approach:

FV function:	$FV_N =$	=FV(rate, nper, pmt, pv, type)
Fixed inputs:	$FV_N =$	=FV(0.05, 3, 0, -1000) = $1,157.63
Cell references:	$FV_N =$	=FV(C3, C4, 0, C2) = $1,157.63

Calculate Present Value

- We can use the future value formula to find the present value.
  - $FV = PV(1 + r)^t$
  - Rearrange to solve for **$PV = FV / (1 + r)^t$**
- To find present values

Present Values – Example

Suppose when you were born, your parents wanted to begin saving for your college education and they estimated that after 17 years you would need $150,000. If they felt confident that they could earn 8% per year, how much did they need to invest when you were born?

Present Values – Example 2

Suppose when you were born, your parents wanted to begin saving for your college education and they estimated that after 17 years you would need $150,000. If they felt confident that they could earn 8% per year, how much did they need to invest when you were born?

150,000 , 17 years 8.0% = 150,000 / (1.08)^17 = 40,540.34

PV: Using Excel's Financial Technology

- Type the formula
- Use a dialogue box
  - Click on Formulas > Financial > PV.
  - Fill in the Rate, number of periods (Nper), periodic payments (Pmt), and future value (Fv). Click OK.
- Type the function
  - **=PV (rate, nper, pmt, fv, type)**

Calculating the Interest Rate

You are looking at an investment that will pay $1,200 in 5 years if you invest $1,000 today. How much interest does this investment earn?

Calculating the Interest Rate

You are looking at an investment that will pay $1,200 in 5 years if you invest $1,000 today. How much interest does this investment earn?

Starting with FV = PV (1+i)^t

1,200 = 1,000 (1+i)^5

1,200/1,000 = (1+i)^5

[(1,200/1,000)^1/5] – 1= i

[(1.2)^0.20] – 1 = 1.0371 – 1 = 0.0371

i = 3.71%

$$r = \left(\frac{\text{FV}}{\text{PV}}\right)^{\frac{1}{t}} - 1$$

Interest Rate using Excel

- Type the formula
- Use a dialogue box
  - Click on Formulas > Financial > RATE.
  - Fill in the, number of periods (Nper), periodic payments (Pmt), present value (pv), and future value (Fv). Click OK.
- Type the function
  - **= RATE(nper, pmt, pv, fv, type, guess)**

Calculate Time

You want to purchase a new car and you are willing to pay $20,000. If you can invest at 10% per year and you currently have $15,000, how long will it be before you have enough money to pay cash for the car?

Calculate Time

You want to purchase a new car and you are willing to pay $20,000. If you can invest at 10% per year and you currently have $15,000, how long will it be before you have enough money to pay cash for the car?

FV = $20,000, r = 10%, PV=15,000 t=?

$$t = \frac{ln\left(\frac{FV}{PV}\right)}{ln(1+i)}$$

FV = PV (1+i) ^t

20/15 = 1.1^t

ln(20/15) = ln (1.1)^t) ln (20/15)/ ln (1.1) = ln (1.33)/ ln (1.1) = 0.287/0.095 = 3.02

T = 3.02 years

Calculating Time using Excel

- Type the formula
- Use a dialogue box
  - Click on Formulas > Financial > NPER.
  - Fill in the Rate, periodic payments (Pmt), present value (pv), and future value (Fv). Click OK.
- Type the function
  - **=NPER(rate, pmt, pv, fv, type)**

Reviewing One-Time Investment

Variable 1: FUTURE VALUE

$$FV = PV\ (1 + i)^t$$

where FV is the future value of the investment, PV is the present value of the investment or the initial investment, i is the expected interest rate or rate of return of the investment, and t is time to realize such investment.

Variable 2: PRESENT VALUE

$$FV = PV\ (1 + i)^t, \textit{ then } PV = \frac{FV}{(1+i)^t}$$

As an example, assuming the investor targets an investment that is expected to receive $133.10 in 3 years, representing a 10% interest or expected return (sometimes referred to as the discount rate), the investment required today will be calculated as follows:

$$PV = \frac{FV}{(1+i)^t} = \frac{133.10}{(1+.10)^3} = \frac{133.10}{1.331} = 100$$

Reviewing One-Time Investment

Variable 3: INTEREST RATES

If the investor knows the amount they are planning to invest today, and targets a specific investment payoff at a set time in the future, then the investor can rearrange the formula to calculate the interest (i) or discount rate that he or she will earn, as follows:

Starting at FV = PV $(1 + \mathrm{i})^{\mathrm{t}}$, *then* $(1 + \mathrm{i})^{\mathrm{t}} = \frac{\mathrm{FV}}{\mathrm{PV}}$, and

$$\mathrm{i} = \left(\frac{FV}{PV}\right)^{\frac{1}{t}} - 1$$

As an example, let's assume the investor invests $100 today and targets an investment that expects to receive $133.10 in 3 years. What will the annual rate of return be on such an investment?

$$\mathrm{i} = \left(\frac{FV}{PV}\right)^{\frac{1}{t}} - 1 = \left(\frac{133.10}{100}\right)^{\frac{1}{3}} - 1 = (1.331)^{\frac{1}{3}} - 1 = 1.10 - 1 = 0.10 = 10\%$$

Reviewing One-Time Investment

Variable 4: TIME

If the investor knows the amount that they are planning to invest today, then sets a target payoff amount in the future and assumes a given rate of return, then he or she can calculate how long it will take to achieve the target. The time (t) to realize the targeted return is calculated by rearranging the formula as follows:

Starting at FV = PV $(1+\mathrm{i})^{\mathrm{t}}$, *then* $(1+\mathrm{i})^{\mathrm{t}} = \frac{\mathrm{FV}}{\mathrm{PV}}$, then adding ln on both sides, you get $\ln(1+\mathrm{i})^{\mathrm{t}} = \ln(\frac{\mathrm{FV}}{\mathrm{PV}})$, *t* $[\ln(1+i)] = \ln(\frac{\mathrm{FV}}{\mathrm{PV}})$, *and*

$$\mathrm{t} = \frac{ln\,(\frac{FV}{PV})}{ln(1+i)}$$

- As an example, assume the investor invests $100 today and wants to find out how long it will take for the investment to reach $133.10 if invested at an annual rate of return of 10%. The time to reach the targeted future value of such investment is calculated as follows:
- $\mathrm{t} = \frac{ln\,(\frac{FV}{PV})}{ln(1+i)} = \frac{ln\,(\frac{133.10}{100})}{ln(1+0.10)} = \frac{ln\,(\frac{133.10}{100})}{ln(1+0.10)} = \frac{ln\,(1.331)}{ln(1.100)} = \frac{0.2859}{0.0953} = 3$ years

Annuity Investment

In Annuities we are adding the 5th variable (Annual Payment)

Here are the five Variables

- **Present Value (money you invest today)**
- **Future Value (The expected money you will get in the future)**
- **Interest Rate**
  - **Growth of your money**
  - **Discount Rate**
  - **Holding Period Return (HPR)**
  - **Internal Rate of Return (IRR) or Rate of Return (ROR)**
- **Time**
- **Payment (Even Monthly, Even Annual Payment)**

Annuities or Even Annual Cash flows

Variable 1: FUTURE VALUE ANUITY (FVA)

FVA = CF + CF (1 + i) + CF (1 + i) (1 + i), or FVA = CF ($\frac{(1+i)^t-1}{i}$)

For example, if an investor invests $100 per year for 3 years and expects a 10% rate of return, then the value of such investment when it is cashed out in 3 years will be calculated as follows:

FVA = CF ($\frac{(1+i)^t-1}{i}$) $= 100 \left(\frac{(1+0.10)^3-1}{.10}\right) = 100 \left(\frac{(1.10)^3-1}{.10}\right) =$

$100 \left(\frac{1.331-1}{.10}\right) = 331.00$

Annuities or Even Annual Cash flows

Variable 2: PRESENT VALUE ANUITY (PVA)

The present value of an annuity (PVA) can be calculated as follows:

$$\text{PVA} = \frac{CF}{(1+i)^1} + \frac{CF}{(1+i)^2} + \frac{CF}{(1+i)^3} + \ldots\ldots + \frac{CF}{(1+i)^n}, \text{ or PVA } \mathbf{= CF}\ \left[\frac{1-\frac{1}{(1+i)^t}}{i}\right]$$

For example, if an investor expects to receive $100 per year for 3 years, then what is the present value for an investment if the investor expects to receive a 10% annual rate of return? The calculation of the present value of such an investment is as follows:

$$\text{PVA} = \text{CF}\ \left[\frac{1-\frac{1}{(1+i)^t}}{i}\right] = 100\ \left[\frac{1-\frac{1}{(1+.10)^3}}{.10}\right] = 100\ \left[\frac{1-\frac{1}{1.331}}{.10}\right] = 248.69$$

Excel based formulas for one-time and annuity investments:

For calculating all five variables for annuities including the present value, future value, rate of return, time and cash flows or payments (represent set additional payments received during the investment) use the following Excel formulas:

= PV (rate, years, payment, future value) or =*pv(rate,nper,pmt,fv)*

=FV (rate, years, payment, -present value) or =*fv(rate,nper,pmt,pv)*

=Rate (years, payment, - present value, future value) or =*rate(nper,pmt,pv,fv)*

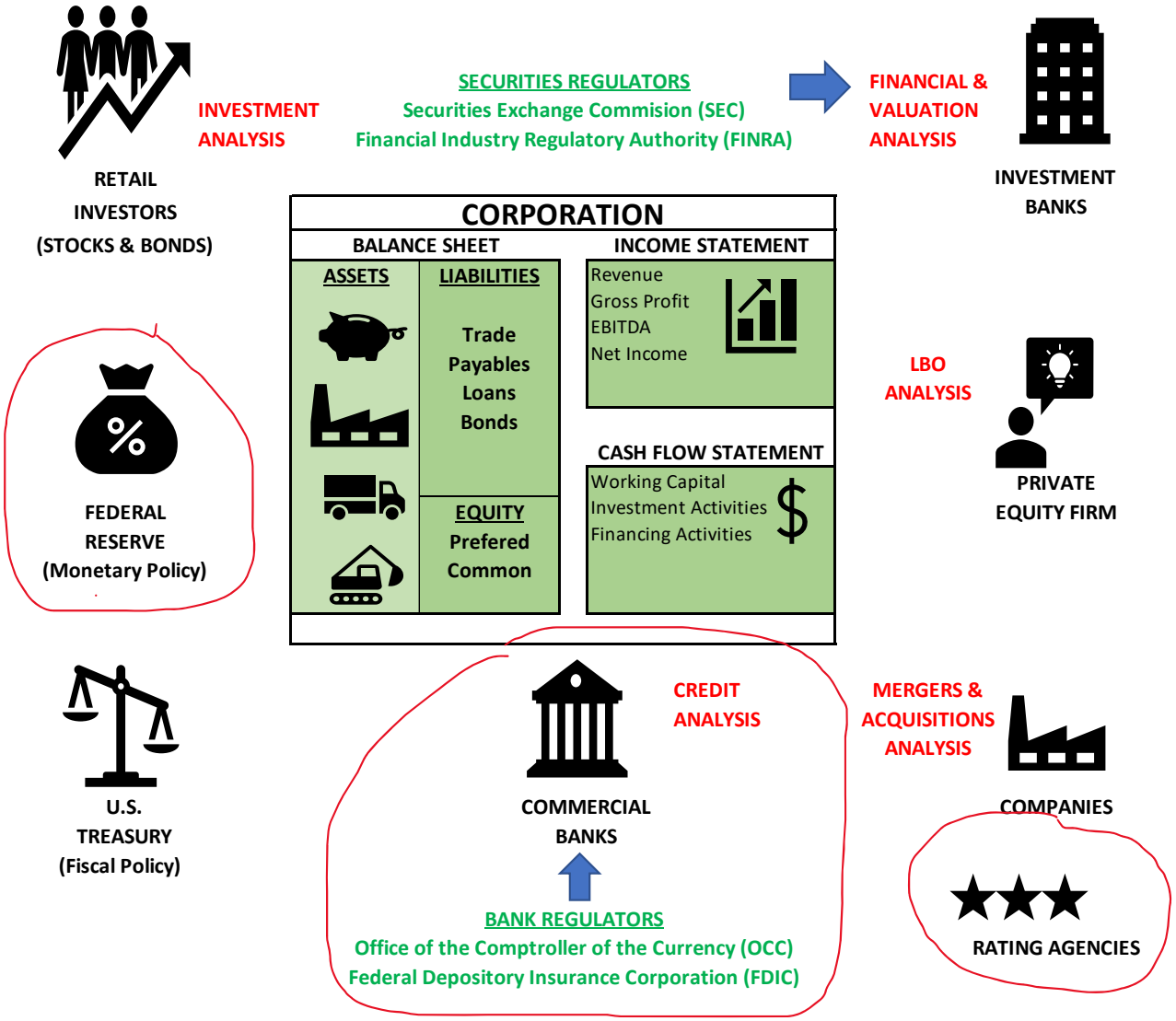
=Nper (rate, payment, - present value, future value) or =*nper(rate,pmt,pv,fv)*

= Pmt (rate, years, -present value, future value) or =*pmt(rate,nper,pv,fv)*

Uneven Annual Cash Flows

- If the investment expected to produce uneven annual cash flows to the investor, called payments, for a set time, using the same expected rate of return, then the investment is calculated differently. The present value of such cash flows is the sum of all the future cash flows discounted back at a given expected rate of return, as follows:
- PV = $\frac{CF_1}{(1+i)^1} + \frac{CF_2}{(1+i)^2} + \frac{CF_3}{(1+i)^3} + \cdots \frac{CF_t}{(1+i)^t}$ …. $PV = \sum \frac{CF_t}{(1+i)^t}$
- For example, if an investor expects to receive $95 the first year, $92 the second year, and $105 the third year, what is the present value for such an investment if the investor expects a 10% annual rate of return? The calculation of the present value of such investment is as follows:
- PV = $\frac{CF_1}{(1+i)^1} + \frac{CF_2}{(1+i)^2} + \frac{CF_3}{(1+i)^3} = \frac{95}{(1+0.10)^1} + \frac{92}{(1+1.10)^2} + \frac{105}{(1+1.10)^3} =$
- $86.36 + 76.03 + 78.89 = 241.28$

Intro to Corporate Banking and Credit Analysis



MONEY BANKING, THE FED, INVESTMENTS AND CREDIT

Central Banks and Monetary Policy

- Countries use a "Central Bank" to implement and administer their monetary policy – controlling interest rates and money supply
- The US uses its Federal Reserve Banking System (the Fed) in conjunction with the US Treasury
  - Money Supply refers to the amount of a country's currency that is available for the payment of goods and services as well as for the repayment of debt.
  - Most of the Money Supply is not actually in the form of physical notes but rather is recorded in the form of mortgages, US Treasuries, and Deposits and Loans.
  - Monetary Policy, which refers to the governance of interest rates
  - Money Supply, impacts liquidity (available funds), the flow of money, and the cost of borrowing, all of which has implications for inflation.
  - Decreases Money Supply by issuing debt (Bills <=1 year, Notes between >1, <10 years, Bonds longer than 10 years, the most popular are 10 and 30) and Increases Money Supply by Buying Treasuries, which also lowers rates
  - Inverse relationship between Price and Rate

Role of Regulators, Bank Equity, and Capital Adequacy

- Regulators ensure the Safety and Soundness of US banking institutions, primarily for the protection of the depositors
- OCC – Office of the Comptroller of the Currency): primary regulator
- FDIC – Federal Depository Insurance Corporation: Insures bank deposits up to $100,000 per account (not necessarily owner of account)
- Bank Charters:
  - OCC – Federal (Savings Associations) and National (National Banks)
  - State Charter – State Comptrollers
- The Capital Adequacy Ratio (CAR) of Risk Based Capital (Tier 1 Capital and Tier 2 Capital) to Risk Weighted Assets (RWA):

BASEL III CAPITAL ADEQUACY			
Tier 1 Capital	Common Equity Retained earnings Non-Cumulative Preferred Non-Redeemable Preferred	Tier 1 Capital	6.0%
Tier 2 Capital	Hybrid Equity (Preferred not in Tier 1) Subordinated Debt Other Reserves	Tier 1 & 2 Capital	8.0%
Capital Conservation Buffer	Other conservative reserves to assist withstanding major cycles	Tier 1 & 2, and Buffer	10.5%

Corporate Banking:
CAMELS Bank Ratings

- The OCC regulates banks and performs regular reviews of banks, with the largest banks under constant regulatory review, due mainly to their massive size and risk in the event of a negative outcome. Bank regulators have developed a rating scale from 1 to 5, where 1 is the highest and 5 being the lowest, wherein the regulators measure banks against various operational, qualitative, and quantitative attributes. The rating systems is an acronym called CAMELS, which stands for:
- **C**apital Adequacy – discussed previously.
- **A**sset Quality – discussed above – see ACL.
- **M**anagement
- **E**arnings
- **L**iquidity – interest rate sensitivity and ability to convert assets to cash.
- **S**ensitivity – to certain risk exposures
- The regulators of banks provide lists of banks and their respective CAMELS ratings, however, will oddly not provide any insight into the basis for the ratings nor details behind how each bank ranked on each attribute.
- Any bank with a rating below 2 is considered troubled

Corporate Banking:
Credit Analysis Overview

- **Credit vs Investment:**
- **Credit comes from the Latin word meaning to "trust", in that someone providing credit is trusting that the person borrowing the money will pay them back on the terms that have been established – the "Money terms".**
- **Investment refers to a participation in the risk and rewards of the venture or project. The original Latin root means to "clothe or provide substance to." Investing involves a return based on the risk of the project.**
- **Fixed Income involves the provision of credit and the levels of Trust being taken and given, and for what return or compensation for time and perceived risk associated with the granting of trust. Risk of the return of the credit advance pursuant to the money terms agreed to:**
- **Money Terms: Amount, Compensation (Interest), Repayment Schedule, Maturity, (and Collateral)**
- **Time Value of Money: Risk-free rate**
- **Compensation for Risk: Credit Spread**

Corporate Banking
Loan Money Terms

- **Amount:**
- The amount of money borrowed, which is typically the "Face" amount of the loan, note, or bond
- **Interest Rate:**
- The annual rate paid (accrued) each year to compensate for the time value of money and risk
- **Repayment Schedule: (Amortization Schedule)**
- Date certain, schedule of payments of interest and principal over the life of the loan
- **Maturity:**
- Date of final repayment in full of the loan plus accrued interest and penalties and any other fees
- **Collateral:**
- The security for the loan (house, car, equipment, intangible assets, etc.)

Corporate Banking:
TVM concepts can be used to calculate Loans as well

LOAN

i. Principal (Loan Amount) plus Risk-Free Interest for each period the Principal is outstanding until its return equals the Future Value of the initial principal Amount

ii. P = Principal

iii. i_r = risk-free interest rate per annum

iv. n = number of periods

v. FV = Future Value of original Principal Amount

vi. $FV = P * (1 + i_r)^n$ (1.1)

We then add a Risk Premium (i_{rp}), to compensate for the assessed credit risk: risk (probability) of default, and loss given the event of default – including all costs and net of recoveries

v. $FV = P * (1 + (i_r + i_{rp}))^n$ (1.2)

Most Bonds have semi-annual interest payments, having a payment frequency (f) of 2 per annum

v. $FV = P * (1 + (i_r + i_{rp})/f)^{n*f}$ (1.3)

Corporate Banking:
Repayment (Amortization) Schedule

- **Fixed Constant Principal Payments: Straight Line**
- Each repayment of principal reflects a given equal amount per period
  - P = A / (Term * f): [P = Principal Payment Amount]
- **Fixed Sculpted, Balanced or Uneven Principal Payments:**
- The payments of principal are fixed and known, yet are different from period to period, presumably to accommodate for varying cash flows of the borrower
- **Balloon Payments:**
- A large fixed payment to be made some period in the future, after a grace period or a term of reduced payments. The Balloon payment may be the final maturity payment.
- **Fixed P&I (Principal & Interest):**
- Mortgage – payments in arrears, no payment at time zero
  - **$P\&I = A / ((1- (1 / (1+i)^n)) / i)$** **(1.4)**
- Lease Schedule – payments in advance – first payment made at time zero
  - **$P\&I = A / (((1- (1 / (1+i)^{(n-1)})) / i) +1)$** **(1.5)**

Corporate Banking:
Typical Corporate Loan and Bond Debt Schedule

AK Steel Holding Corporation

Debt Schedules

Debt Schedule	Years	Rate	12/31/2021	12/31/2022	1/1/2024	12/31/2024	12/31/2025	12/31/2026	1/1/2028	12/31/2028	12/31/2029
Bank Loan - Term Loan B	7	S+4.0%									
Outstanding			1,233.0	1,183.0	1,108.0	1,008.0	883.0	733.0	533.0	-	-
Scheduled Principal Payments (P)				**50.0**	**75.0**	**100.0**	**125.0**	**150.0**	**200.0**	**533.0**	**-**
Interest Payments (I)				83.2	85.8	91.4	83.2	72.8	60.5	44.0	-
Total Payments (P+I)				133.2	160.8	191.4	208.2	222.8	260.5	577.0	-
SOFR			2.25%	2.75%	3.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%
SOFR Increase				0.50%	0.50%	1.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Spread				4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Interest Rate				6.75%	7.25%	8.25%	8.25%	8.25%	8.25%	8.25%	8.25%
Corporate Bonds	8	8.5%									
Outstanding			617.0	617.0	617.0	617.0	617.0	617.0	617.0	617.0	-
Scheduled Principal Payments (P)				-	-	-	-	-	-	-	617.0
Interest Payments (I)				52.4	52.4	52.4	52.4	52.4	52.4	52.4	52.4
Total Payments (P+I)				52.4	52.4	52.4	52.4	52.4	52.4	52.4	669.4
Interest Payments				135.7	138.2	143.9	135.6	125.3	112.9	96.4	52.4
Principal Payments				50.0	75.0	100.0	125.0	150.0	200.0	533.0	617.0
Total Debt Payments				185.7	213.2	243.9	260.6	275.3	312.9	629.4	669.4
Total Debt Outstanding				1,800.0	1,725.0	1,625.0	1,500.0	1,350.0	1,150.0	617.0	-

Corporate Banking:
Typical Mortgage Type Payment Schedule

Debt Schedules													
Debt Schedule	**Years**	**Rate**	**12/31/2021**	**12/31/2022**	**1/1/2024**	**12/31/2024**	**12/31/2025**	**12/31/2026**	**1/1/2028**	**12/31/2028**	**12/31/2029**	**12/31/2030**	**12/31/2031**
Mortgage													
Outstanding			300,000	276,149	251,105	224,809	197,198	168,206	137,765	105,802	72,241	37,001	0
Mortgage Payment (P+i)				38,851.4	38,851.4	38,851.4	38,851.4	38,851.4	38,851.4	38,851.4	38,851.4	38,851.4	38,851.4
Scheduled Principal Payments (P)	10			23,851.4	25,043.9	26,296.1	27,610.9	28,991.5	30,441.1	31,963.1	33,561.3	35,239.3	37,001.3
Interest Payments (I)		5.00%	fixed	15,000.0	13,807.4	12,555.2	11,240.4	9,859.9	8,410.3	6,888.3	5,290.1	3,612.0	1,850.1

Corporate Banking:
Reserves - Allowance for Credit Losses

- **Risk Weighted Assets (RWA - refers to the value of a bank's assets as adjusted for reserves**.
  - "Reserves" refers to the concept of the bank making a reserve for potential future credit losses.
- **Allowance for Credit Losses (ACL) was developed after the Global Financial Crisis (GFC) of 2008**.
  - ACL is an accounting concept, providing for a "contra asset" account (credit balance), which reduces the gross value of balance sheet assets by a credit loss provision in much the same way accumulated depreciation estimates the declining value of property plant and equipment by creating a contra asset reducing the net carrying value of the fixed assets of an enterprise.
  - ACL was developed to replace the old notion of Allowance for Loan and Lease Losses (ALLL)
  - **Current Estimate of Credit Losses (CECL)** - current period accruals
    - Developed from "bottoms up analysis at loan level" – NAAH, not really, but almost!

Corporate Banking:
Bank Asset Rating Categories

- **All commercial banks, credit agencies, and institutions that lend money to corporations, focus on the following five areas of analysis when rating the Borrower and the loan based on the probability of default.**
- Loan-to-value (LTV) or debt capitalization ratio: This ratio, expressed as a percentage, compares the enterprise debt to its' total capital, or total value of the asset or business. It is important to look at each tier of credit in the capital structure to examine priorities and collateral interests.
- Leverage ratio of debt to EBITDA or EBIT: This leverage ratio, or debt to cash flow ratio, is one of the most popular ratios to used analyze the solvency and credit quality of a company.
- Coverage ratios describing the Borrower's ability to service either Interest alone or the combination of Interest and Principal, include EBITDA / interest and cash flow (EBITDA) to debt service (Principal and Interest):
- Cash flow forecasts, typically using a 30% *haircut* to base projections:
- Customized operating ratios based on the company's business that which can be cyclical or seasonal or depend on commodity pricing

Bank Asset Rating Categories

- Based on how each borrower and loan is assessed against the ratios and measures, most banks use a rating scale for their internal portfolio risk management. An example of which is below:

RATING SYSTEM (EXTERNAL AND INTERNAL)				
S&P	Moody's	Fitch		Drou's Banking Internal Rating ('DIR') system
AAA	Aaa	AAA	INVESTMENT GRADE	DIR1
AA+	Aa1	AA+		DIR2
AA	Aa2	AA		DIR3
AA-	Aa3	AA-		DIR4
A+	A1	A+		DIR5
A	A2	A		DIR6
A-	A3	A-		DIR7
BBB+	Baa1	BBB+		DIR8
BBB	Baa2	BBB		DIR9
BBB-	Baa3	BBB-		DIR10
BB+	Ba1	BB+	NON-INVESTMENT GRADE (LEVERAGE)	DIR11
BB	Ba2	BB		DIR12
BB-	Ba3	BB-		DIR13
B+	B1	B+		DIR14
B	B2	B		DIR15
B-	B3	B-		DIR16
CCC+	Caa1		DISTRESS	DIR17
CCC	Caa2	CCC		DIR18
CCC-	Caa3			DIR19
CC	Ca	CC		DIR20
C		C		DIR21
D	C	RD/D	**Default**	DIR22

Corporate Banking:
Basic Bank Loan Products

- **Bank commercial lending products may be categorized in one of two types primarily constructed around the nature of the assets they are collateralized with:**
  - Short-term working capital revolving credit facilities
  - Equipment, real estate, or corporate term loans (based on enterprise values)
- Working Capital Facilities
  - *Revolving credit facilities:* because they are self-liquidating, are paid down through cash collections and reborrowed constantly
    - Often structured with a Lockbox _ account control agreement – requiring collections o be controlled and "swept" agsint the loan outstandings
      - Orange County Lamborghini example
    - Secured by Inventory and Receivables
  - *ABL – Business Credit Structures*
    - Rigorous asset level monitoring and auditing, and strict controls over cash, lockbox and sweeps
  - *Receivables Factoring:* discussed in Chapter 15
  - *Merchant Cash Advances:* discussed in Chapter 15

Corporate Banking:
Basic Bank Loan Products

- Wholesale Banking and Syndicated Credit Facilities:
  - Larger borrowers or those where an ABL structure isn't required or suitable – see Tyson Foods Case Study
- Term Credit Facilities: typical bank duration is 3-7 years, other than certain mortgages secured by generic real estate (office buildings, etc, not factories)
  - *Equipment Term Loans:*
    - Specialized equipment lending against fungible equipment assets such as medical equipment or trucks (often in the case of sole proprietorships using SBA (Small Business Administration) loans
  - *Mortgage Term Loans:*
    - Term loans secured by real property, unless fungible such as office buildings, will likely be shorter term loans -5-7 years, and lower advance LTVs
  - *Corporate Term Loans:*
    - Most corporate term loans fall into this category, low LTV secured by all fixed assets and often all assets in a single collateral pool along with the working capital revolving credit facility (revolver)

Basic Bank Loan Products

- *Stretch Senior term loan:*
  - Secured by all assets, LTVs possibly higher than typical, requiring extra risk premium
- *Term Loan A, B, C:*
  - The differentiation of tranches of senior term loans may simply designate the maturity spectrum each tranche covers but may also represent different loan agreements and different types of holders or lenders.
- *Second Lien Term Loan:*
  - A second lien loan is one that may or may not have a primary perfected lien on assets uniquely to that loan, but rather has a second lien security interest in collateral which other lenders may have a primary security interest.
- *Subordinated Term Loan:*
  - While a second lien or springing lien term loan has a subordinated interest and claim against collateral ahead of trade creditors and other constituents such as employees or customers, a Subordinated Lender has specifically relegated themselves by their credit agreements to a subordinated position, which may be secured, but most often is not, to ensure the trade creditor positions are not impaired. Subordinated debt may be a structural requirement of the borrowers' trade creditors and have nothing to do with the leverage or other indebtedness of the company.

Corporate Banking:
Commercial Finance – Equipment Finance

- Appropriate for Asset Intensive Borrowers – Initial loans against Original equipment Costs (OEC), High LTV, 3-7 years
- Equipment loans are often provided by the Commercial Finance or Leasing units within banks or non-bank Commercial Finance companies such as Stonebriar Commercial Finance or Encina Commercial Finance. Leasing as a product is discussed in Chapter 13 later in this book.
- Rigorous monitoring and establishment of procedures to ensure the equipment is adequately maintained by the borrower to protect the value of the collateral. In many cases equipment lenders will install remote tracking devices on equipment and may also install controlled "shut-off" switches to enable the lender to control a borrower's use and access to equipment.
- Commercial equipment finance requires specialized monitoring and unique asset valuation skills, and the lenders often have substantial secondary sales marketing activities supporting the end-of-life monetization of equipment as collateral.
- End-of-life (EOL) analysis is important to lending against equipment assets, and constantly reviewing the collateral condition and value against current market replacement costs and the decay curve of the collateral – the declining value of a new piece of equipment over its useful life.
- Commercial Finance lenders are concerned about replacement cost of equipment as a protection of their collateral value – decay curve of its depreciating market value is important
- Best performing asset class in the global financial crisis (GFC)

Corporate Banking:
Parties to a Credit Agreement

- Two primary parties to a credit agreement: (1) Borrower, and (2) Lender. There may be others such as documentation agent, collateral agent, trustee (in securitizations and syndications) and asset audit firm (in ABL and Commercial Finance).
- *Borrower:* The Borrower is the commercial business or enterprise which is seeking to borrow debt capital to fund their operations, acquire a building, facilities, equipment, inventory, or another business, or simply to support their growth. The attributes of the Borrower are essential to the structure and nature of the credit Facility developed and underpin the rate the bank will charge for the risk they are taking.
- Borrower Risk:
- i) Collateral
- ii) Creditworthiness of Borrower
  - Investment grade v. non-investment grade
  - Historical financial performance
    - Revenues
    - EBITDA – Earnings Before Interest Depreciation and Amortization
    - DSCR – Debt Service Coverage ratio
- iii) Management
- iv) Competition
- v) Customers

Corporate Banking:
Parties to a Credit Agreement

- Lender: Banks private lenders and non-bank lenders, such as Commercial Finance companies or Business Credit providers
  - skills in an industry or with managing and monitoring an asset class, such as rail cars or truck trailers, beer kegs or marine containers.
  - Banks, as discussed previously are constrained by their regulatory construct

Corporate Banking:
Banking Units

- Origination and Relationship Management
  - Industry Groups
  - Geographic Groups
  - Wholesale Banking
  - Middle Market Banking
- Product Specialists: LBO, Leasing, ABL, Project Finance, Venture Credit, Commercial Paper, etc.
- Credit & Underwriting – approves the loans and manages the potfolio, including CECL and ACL
- Operations - Asset Management, Monitoring, and Reporting (AMMR) – manages the book of loans
- Finance & Treasury – funds the banks balance sheet
- Audit & Review

- Syndications and Asset Sales
- Capital Markets
- Investment Banking
- Wealth Management

Corporate Banking:
Credit Underwriting and Structuring

- Complete various internal documentation of a credit review process
  - Initial Client Evaluation Questionnaire – background on client
  - *Management Capability and Moral Standing Review:* Client Acceptance Memo – CAM template – foundational critical gating preqialifcation of potential borrower, size, industry, location, business (years in business and business model), assets as collateral, and character of borrower
  - *Historical Financial Performance Review:* Business Plan Evaluation and Assessment Memo – BEAM template – historical financial analysis and financial forecast with pro-forma financial statements and debt capital as contemplated
  - *Collateral Review:* - BEAM
  - *Business Plan Review:* - BEAM
  - *Credit Underwriting and Structuring Review*: - BEAM
  - Investment Screening Memo – ISM template – which ultimately becomes the Investment Committee Memo, when it is taken to committee for approval

Corporate Banking:
Credit Underwriting and Structuring

- Debt Capacity Analysis
- Revolving Credit Capacity:
  - Inventory aging analysis by type – Raw Materials, WIP and finished Goods.
  - Inventory Turns (COGS / Inventory)
  - Seasonality – a review of the seasonality of sales demand cycles will enable the lender to establish the inventory variability throughout the year and the needs for having more inventory in one period than another to ensure adequate supplies to fulfil customer orders and the manufacture of finished goods to fulfill customer orders.
  - Manufacturing cycle
  - Raw materials commodity risk and exposure, and substitution availability and marketability (including access to remote locations)
  - Freight into manufacturing or distribution warehouses
  - Accounts Receivable
    - Quality
    - Aging – collectability
    - Revenue and collections cycle
- Maximum Debt Capacity Analysis: Establish the predictable recurring EBITDA levels to refine the determination of the maximum available indebtedness of the enterprise. The capacity may be dependent on the type of credit instruments and structure contemplated – see Tyson foods case study
- Term Debt Capacity Analysis: Derived from the Maximum debt Capacity less the revolver – Note: the Revolver is both "self-liquidating" (best lenders assets) and does not require amortization – so maximize this first!

Corporate Banking:
Loan Covenants

- To establish early warning signs
- To ensure cash flow performance and repayments are made according to the borrower and lender agreed undertakings.
- Typical Performance Covenants include the following:
  - Minimum EBITDA
  - Minimum Equity
  - Minimum EBITDA to Interest of
  - Minimum EBITDA to Principal and Interest ("Debt Service") – called a Debt Service Coverage Ratio (DSCR)
- Various reporting and governance covenants as well as maxmimum indebtedness and minimum cash and equity are also common
- Investment Grade loans often have no collateral and no covenants
  - Global Crossing
  - Enron
  - LBO Structures

Corporate Banking:
Asset Management, Monitoring & Reporting (AMMR)

- "Inspect What You Expect"
- The responsibility of the AMMR function is to monitor and report in each borrower's performance on a regular basis, paying particular attention to and reporting on, their performance against their business plan as encapsulated in the BEAM and ISM and the Covenants stipulated and agreed to in the loan documents.
- HBJ Case Study:
  - In the 1980s, when the standards of LBOs and reporting functionality of AMMR was evolving, a large leveraged recapitalization of Harcourt Brace Jovanovich (HBJ) was completed and the AMMR function was not upheld until the last minute with dramatic and extreme results. HBJ had covenanted to sell its excess real estate surrounding its headquarters in Orlando, FL, as well as to undertake various other asset sales such as the sale of its "Farmer's Almanac" and Insurance units. HBJ also owned SeaWorld at the time. About one year after the defensive recapitalization, led by JP Morgan (acquired by Chase and now, JP Morgan Chase), with Sub Debt placed by First Boston (now Credit Suisse First Boston), HBJ and JP Morgan informed the bank participants of a bank meeting at NYU in two weeks. After a flurry of activity reviewing the years performance belatedly, by the LBO group at Bank of America (BofA), the meeting was held with over 100 bankers present, including small contingent from BofA and their loan participation buyers (mostly international banks). HBJ had not complied with any of its asset sales covenants and yet was informing the large group of bankers, without any prior information, of dramatically lower EBTIDA levels, pending default and a request for a repayment restructuring! The BofA team immediately interrupted the meeting, alerting the attendees to the issues. The bank meeting was halted and within weeks HBJ had sold not only its excess real estate but also its insurance and magazine businesses and was proceeding to sell SeaWorld. All these actions resulted in massive corrective actions protecting the lenders.