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Vitebsk State Technological University

ECONOMIC VALUATION OF BUSINESS

Activity Book
for students of the specialties
1-25 01 07 “Economic and management at the enterprise”
6-05-0311-02 “Economic and management”

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The activity book is the methodological basis for conducting practical classes in the discipline Economic Valuation of Business for specialties 1-25 01 07 “Economic and management at the enterprise” and 6-05-0311-02 “Economic and management”. The activity book contains tasks and problems on the topics of the academic discipline, as well as a list of recommended special literature for further study. The worksheets are intended for deep immersion in the studied problems of Economic valuation of Business.

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INTRODUCTION

This activity book draws on leading-edge academic thinking; its purpose is practical application. It aims to demystify the field of valuation and to clarify the linkages between strategy and finance.

We believe that clear thinking about valuation, and skill in using valuation to guide business decisions, are prerequisites for success. Students as future CEOs, business managers, and financial managers alike do not always understand value well enough. But they must understand it if they are to do their jobs well and fulfill their responsibilities.

We hope to lift the veil on valuation by explaining, step-by-step, how to do it well. We spell out valuation frameworks that we use in our consulting work as an auditor, and we bring these frameworks to life with detailed case studies that highlight the practical judgments involved in developing and using valuations. Most important, we discuss how to use valuation to make good decisions about courses of action for a company.

This activity book will help VSTU students and future business managers better understand how to:

- Decide among alternative business strategies by estimating the value of each strategic choice.
- Develop a corporate portfolio strategy, understanding which business units a corporate parent is best positioned to own, and which might perform better under someone else's ownership.
- Assess major transactions, including acquisitions, divestitures, and restructurings.
- Improve a company's performance management systems to better align an organization's various parts to create value.
- Design an effective capital structure to support the corporation's strategy and minimize the risk of financial distress.

PRACTICAL CLASSES
on the topic “What Is a Business Valuation” (4 Hours)

The purpose of the classes: to study the essence and basic terms of business valuation.

Reminder: A business valuation is the process of determining the economic value of a business.

Problem 1. Please fill in the blanks in table 1 by indicating the essence and describing the main concepts of business valuation.

Table 1 – Basic terms and main concepts of business valuation.

What Is Economic Value?	
Is Business valuation used to determine the fair value of a business for a variety of reasons including sale value, establishing partner ownership, taxation, and even divorce proceedings?	

Table 1 – Basic terms and main concepts of business valuation (Continued)

Please describe the meaning of the following terms such as: Sale value, Establishing partner ownership, Taxation, Divorce proceedings	
What Is a Business Valuation?	

Table 1 – Basic terms and main concepts of business valuation (Continued)

What is a company valuation?	
What Does Business Valuation Tell You?	

Table 1 – Basic terms and main concepts of business valuation (Continued)

In what cases a business valuation is often to be used?	
What does Business valuation methods include looking at:	

Table 1 – Basic terms and main concepts of business valuation (Continued)

What does it mean market cap, earnings multipliers, or book value? Describe in detail, please	
Can the tools used for valuation vary among evaluators, businesses, and industries?	

Table 1 – Basic terms and main concepts of business valuation (Continued)

A business valuation might include an analysis of the company's: • Management • Capital structure • Future earnings prospects • Market value. Is this right? Please describe in a short way every position.	
Is estimating the fair value of a business both an art and a science?	

Table 1 – Basic terms and main concepts of business valuation (Continued)

Can choosing the right method and appropriate inputs be subjective or vary based on industry standards?	
Is choosing the right method and appropriate inputs subjective or objective in their nature?	
Can the Valuation process also involve intangible elements of a company's value such as goodwill? Please describe what goodwill is	

PRACTICAL CLASSES
on the topic "Methods of Valuation. Market Capitalization" (4 Hours)

The purpose of the classes: to study the essence, concepts and basic terms of business valuation methods; to study how to calculate the value of business in practice.

Problem 1. Please fill in the blanks in table 1 by indicating the essence and describing the main concepts of Market capitalization.

Table 1 – Basic terms and main concepts of Market capitalization business valuation method.

	Answer
What is the Market Capitalization?	
What are Misconceptions about Market Caps?	
What Factors Alter a Company's Market Cap?	

Table 1 – Basic terms and main concepts of Market capitalization business valuation method (Continued)

What Does a High Market Cap Tell You?	
Does Market Cap Affect Stock Price?	

Table 1 – Basic terms and main concepts of Market capitalization business valuation method (Continued)

What Is the Importance of Market Cap?	
The Bottom Line of Market Cap	

Problem 2. Please mark in table 3 the right (wrong) answers on the essence and main concepts of Market Capitalization business valuation method.

Table 2 – About Market Capitalization.

	Yes	**No**
Market capitalization represents the total market value of all a company's shares.		
It is sometimes referred to as market cap.		
This value is not fixed		
It will fluctuate as the price of shares rises and falls and it depends on how many outstanding shares a company currently has.		
It can be found by multiplying the number of outstanding shares by the price per share.		
Is Market capitalization the simplest method of business valuation?		
It's calculated by multiplying the company's share market price by its total number of shares outstanding.		
Market capitalization doesn't account for debt a company owes that any acquiring company would have to pay off.		
It doesn't account for cash on hand that would offset that debt.		

Problem 3. Please find the source data for calculating the market capitalization of the companies listed in the Table 3 on the Internet and calculate their market capitalization (on the date of practice training)

Table 3 – Initial data and computing of some companies market capitalization

	Number of shares outstanding	**Market Share price**	**Market capitalization**
Apple Inc.			
BMW			
Huawei			
SAMSUNG			
Geely			
Ford Motors			
Wall-Mart			
Sony			

Problem 4. Market Cap calculations on the base of Digital Currency

Hint: Because new digital currency offerings theoretically thin the value of existing coins, tokens, or shares, a different market cap formula can be used to calculate the market cap for all authorized shares or tokens. Analysts use diluted market cap to understand potential changes to a security, token, or coin's price.

The diluted market cap formula is:

Diluted Market Cap = Current Share Price · Total Number of Shares Authorized

Assume Bitcoin trades at $_________per coin (please find on the Internet and use the current Bitcoin rate on the date of practical classes), with 19.1 million Bitcoin already issued. The total number of potential Bitcoin that may be minted is 21 million. Therefore, Bitcoin's market cap calculations are:

Market Cap = $_____________________· 19.1 million =
$________________________________billion

Diluted Market Cap = $_________________________________· 21 million =
$_____________________________________ billion

PRACTICAL CLASSES
on the topic "Times Revenue Method" (5 Hours)

The purpose of the classes: to study the essence, concepts and basic terms of the **Times Revenue** business valuation method; to study how to calculate the value of business in practice.

HINT: The Times-Revenue Method: How to Value a Company Based on Revenue

Problem 1: Please fill in the blanks in table 1 by indicating the essence and describing the main concepts of Market capitalization.

Please answer in detail (only full answer will take into account).

Table 1 – What Is the Times-Revenue Method

	Answer
What Is the Times-Revenue Method?	
Does the times-revenue method determine the maximum value of a company as a multiple of its revenue for a set period?	

Table 1 – What Is the Times-Revenue Method (Continued)

Does the multiple vary by industry and other factors but it is typically one or two?	
Times-revenue valuation will vary from one industry to the next due to the sector's growth potential. Does that make comparing companies misleading?	
Is this method not always a reliable indicator of the value of a firm?	

Table 1 – What Is the Times-Revenue Method (Continued)

Does revenue mean profit and does an increase in revenue always translate into an increase in profits?	
Is this method having the benefit of being easy to calculate, especially if the company already has a set of financial statements with reliable revenue totals?	

<u>Problem 2.</u> Understanding the Times-Revenue Method. Please fill in the blanks in table 2 by indicating the essence and describing the main concepts of Market capitalization.

Please mark in table 2 the right (wrong) answers on the essence and main concepts of the Time-revenue business valuation method.

Table 2 – Understanding the Times-Revenue Method

	Yes	No
Does the times-revenue method determine the maximum value of a company as a multiple of its revenue for a set period?		
Might the value of a business be determined for various reasons, including financial planning or preparation for selling the business?		
It can be challenging to calculate the value of a business, especially if the value is largely determined by potential future revenues.		
The times-revenue method attempts to value a business by valuing its cash flow.		
The times-revenue method is used to determine a range of values for a business. The figure is based on actual revenues over a certain period (for example, the previous fiscal year).		
A multiplier provides a range that can be used as a starting point for negotiations.		
The multiplier used in business valuation depends on the industry.		
Small business valuation often involves finding the absolute lowest price someone would pay for the business, known as the "floor." This is often the liquidation value of the business's assets. Then, a ceiling is set. This is the maximum amount that a buyer might pay, such as a multiple of current revenues.		
Once the floor and ceiling have been calculated, the business owner can determine the value, or what someone may be willing to pay to acquire the business. The value of the multiple used for evaluating the company's value using the times-revenue method is influenced by a number of factors including the macroeconomic environment and industry conditions.		
The times-revenue method is also referred to as the multiples of revenue method.		

Problem 3. Who Can Benefit From the Times-Revenue Method.

Please mark in table 3 the right (wrong) answers on the benefiters from the Times-Revenue business valuation method.

Table 3 – Benefiters from the Times-Revenue Method

	Yes	No
Is the times-revenue method ideal for young companies with earnings that are volatile or non-existent?		
Do you agree companies that are poised to have a speedy growth stage, such as software-as-a-service firms, will base their valuations on the times-revenue method?		
The multiple used might be higher if the company or industry is poised for growth and expansion.		
Since the companies are expected to have a high growth phase with a high percentage of recurring revenue and good margins, they would be valued in the three- to four-times-revenue range.		
The multiplier might be one if the business is slow-growing or doesn't show much growth potential.		
A company with a low percentage of recurring revenue or consistently low forecasted revenue, such as a service company, may be valued at 0.5 times revenue.		

Problem 4. Criticism of the Times-Revenue Method

Please mark in table 4 the right (wrong) answers on the features of the Times-Revenue business valuation method

Table 4 – Features of the Times-Revenue Method

	Yes	No
The times-revenue method is not always a reliable indicator of the value of a firm. This is because revenue does not mean profit. The times-revenue method fails to consider the expenses of a company or whether the company is producing positive net income.		
An increase in revenue does not necessarily translate into an increase in profits. A company may experience 10% year-over-year growth in revenue, yet the company may be experiencing 25% year-over-year growth in expenses.		

Table 4 – Features of the Times-Revenue Method (Continued)

Valuing a company only on its revenue stream fails to consider what it costs to generate its revenue.		
To get a more accurate picture of the current real value of a company, earnings must be factored in. Thus, the multiples of earnings, or earnings multiplier, preferred to the multiples of revenue method.		
The times-revenue method can be calculated forward or backward. You can divide the purchase price by annual revenue to arrive at the multiple, or you can multiple annual revenues by a desired times-revenue target to arrive at a potential target price.		

Some additional and useful information. Example of Times-Revenue Method

In fiscal year 2021, X (formerly Twitter) reported annual revenue of $5.077 billion. Annual revenue for grew from 2020 to 2021 by over $1.3 billion.

In 2022, Elon Musk announced his intention to acquire the company for $44 billion. This decision was later reversed and solidified via Securities and Exchange Commission filings.
The acquisition occurred at a company valuation of approximately 8.7 times-revenue. This means that at an acquisition price of $44 billion, Musk paid 8.7 times the annual revenue of X ($5.1 billion).

The company's net annual loss for the same period demonstrates a glaring weakness of the times-revenue model. In 2021, it incurred an annual loss of $221 million, its second consecutive year of negative profit. Although the times-revenue valuation method indicates a value of 8.7, the method fails to consider that the company was not a profitable company at the time.

As a postscript, X recorded $4.4 billion in revenue in 2022, an 11 % decline. Its estimated loss for the year was $152 million. That number presumably reflects some of the severe cost-cutting initiated by Musk after his takeover but also could include some of the estimated cost of repaying the $13 billion in loans Musk took out in order to finance the purchase.

In April 2023, it ceased to exist as a separate corporate entity and was merged into X Corp., a wholly-owned subsidiary of X Holdings Corp., which is owned by Musk.

Do you agree with Elon Musk decision? Share your own opinion (and describe why Yes or No).

____
____
____
____
____

Problem 5. Some features of the Times-Revenue Method Implementation

Please fill in the blanks in table 5 by indicating the main features of Times-Revenue Market capitalization Method.

Table 5 – What Is the Times-Revenue Method

	Answer
How Do You Calculate Times-Revenue?	
What Is a Good Times-Revenue Multiple?	

Table 5 – What Is the Times-Revenue Method (Continued)

How Is the Times-Revenue Method Used?	
Is a Low Times Multiple Bad?	

Table 5 – What Is the Times-Revenue Method (Continued)

The Bottom Line of the times-revenue method of valuing a company	

PRACTICAL CLASSES
on the topic "Earnings Multiplier" (4 Hours)

The purpose of the classes: to study the essence, concepts and basic terms of the Earnings Multiplier business valuation method; to study how to calculate the value of business in practice.

HINT 1: The earnings multiplier may be used instead of the times revenue method to get a more accurate picture of the real value of a company because a company's profits are a more reliable indicator of its financial success than sales revenue. The earnings multiplier adjusts future profits against cash flow that could be invested at the current interest rate over the same period. It adjusts the current P/E Ratio to account for current interest rates.

HINT 2: DEFINITION
The price-to-earnings ratio compares a company's share price with its earnings per share. Analysts and investors use it to determine the relative value of a company's shares in side-by-side comparisons.

Problem 1: Please fill in the blanks in table 1 by indicating the essence and describing the main concepts of the earnings multiplier.

Table 1 – What Is the Price-to-Earnings (P/E) Ratio

	Answer
The price-to-earnings (P/E) ratio is…	

Table 1 – What Is the Price-to-Earnings (P/E) Ratio (Continued)

A high P/E ratio could mean that a company's stock is …	
Companies with no earnings or are losing money don't have a P/E ratio because ….	
The two most used P/E ratios are forward and trailing P/E.	

Table 1 – What Is the Price-to-Earnings (P/E) Ratio (Continued)

P/E ratios are most valuable when comparing similar companies in the same industry or for a single company over time	
Limitations of Using the P/E Ratio	

Table 1 – What Is the Price-to-Earnings (P/E) Ratio (Continued)

Alternatives to P/E Ratios	
What Is a Good Price-to-Earnings Ratio?	

Table 1 – What Is the Price-to-Earnings (P/E) Ratio (Continued)

Is It Better to Have a Higher or Lower P/E Ratio?	
What Is the Difference Between Forward P/E and Trailing P/E?	

Table 1 – What Is the Price-to-Earnings (P/E) Ratio (Continued)

What Does a P/E Ratio of 15 Mean?	
What Are the Limitations of the P/E Ratio?	

Table 1 – What Is the Price-to-Earnings (P/E) Ratio (Continued)

The Bottom Line of the P/E Ratio	

Problem 2. Please mark in table 2 the right (wrong) answers on the features of the calculation of P/E Ratio

Table 2 – About P/E Ratio Formula

	Yes	**No**
P/E Ratio Formula and Calculation are as follows: P/E Ratio = Market value per share/Earnings per share		
P/E Ratio Formula and Calculation are as follows: P/E Ratio = Earnings per share/Market value per share		
The price-to-earnings (P/E) ratio is the proportion of a company's share price to its earnings per share.		
A high P/E ratio could mean that a company's stock is overvalued or that investors expect high growth rates.		

Table 2 – About P/E Ratio Formula (Continued)

Companies with no earnings or are losing money don't have a P/E ratio because there's nothing to put in the denominator.		
The two most used P/E ratios are forward and trailing P/E.		
P/E ratios are most valuable when comparing similar companies in the same industry or for a single company over time.		
Analysts and investors review a company's P/E ratio to determine if the share price accurately represents the projected earnings per share.		

Problem 3. Please calculate P/E ratio for the following companies in table 3.

Table 3 – Initial data for calculating P/E Ratio

Companies	**Share Market price on the calculation date**	**Earnings per Share**	**P/E ratio**
Apple Inc.			
BMW			
Samsung			
Ford Motors			
Wall-Mart Co.			
Huawei			
Geely			

Who was the winner in 2023? (Your opinion) ______________________

____

PRACTICAL CLASSES
on the topic "Discounted Cash Flow (DCF) Method" (5 Hours)

The purpose of the classes: to study the essence, concepts and basic terms of the Discounted Cash Flow (DCF) business valuation method; to study how to calculate the value of business in practice.

HINT 1: The DCF method of business valuation is similar to the earnings multiplier. This method is based on projections of future cash flows, which are adjusted to get the current market value of the company. The main difference between the discounted cash flow method and the profit multiplier method is that it considers inflation in calculating the present value.

Problem 1: Using the information below the Table 1, determine the features of the DCF based models and select the most interesting to you for assessing business.

Table 1 – Frameworks for DCF-Based Valuation

Model	Measure	Discount factor	Assessment
Enterprise discounted cash flow			
Economic profit			

Table 1 – Frameworks for DCF-Based Valuation (Continued)

Adjusted present value			
Capital cash flow			
Equity cash flow			

Measure: Free cash flow, Economic profit, Free cash flow, Capital cash flow, Cash flow to equity.

Discount factor: Weighted average cost of capital, Weighted average cost of capital, Unlevered cost of equity, Unlevered cost of equity, Levered cost of equity.

Assessment: Works best for projects, business units, and companies that manage their capital structure to a target level. Explicitly highlights when a company creates value. Highlights changing capital structure more easily than WACC-based models. Compresses free cash flow and the interest tax shield in one number, making it difficult to compare performance among companies and over time. Difficult to implement correctly because capital structure is embedded within cash flow. Best used when valuing financial institutions.

The most interesting model for DCF-Based Valuation for me is the ____

Problem 2. Please mark in table 2 the right (wrong) answers on the features of the **Discounted Cash Flow (DCF)**

Table 2 – What Is Discounted Cash Flow (DCF)

	Yes	**No**
Discounted cash flow (DCF) is a valuation method that estimates the value of an investment using its expected future cash flows. Analysts use DCF to determine the value of an investment today, based on projections of how much money that investment will generate in the future.		
Discounted cash flow can help investors who are considering whether to acquire a company or buy securities.		
Discounted cash flow analysis can also assist business owners and managers in making capital budgeting or operating expenditures decisions.		
Discounted cash flow analysis helps to determine the value of an investment based on its future cash flows.		
The present value of expected future cash flows is calculated using a projected discount rate		
If the DCF is higher than the current cost of the investment, the opportunity could result in positive returns and may be worthwhile.		

Table 2 – What Is Discounted Cash Flow (DCF) (Continued)

Companies typically use the weighted average cost of capital (WACC) for the discount rate because it accounts for the rate of return expected by shareholders.		
A disadvantage of DCF is its reliance on estimations of future cash flows, which could prove inaccurate.		

Problem 3. Please mark in table 3 the right (wrong) answers on the features of how does **Discounted Cash Flow (DCF)** work

Table 3 – How Does Discounted Cash Flow (DCF) Work

	Yes	**No**
Discounted cash flow analysis finds the present value of expected future cash flows using a discount rate.		
Investors can use the present value of money to determine whether the future cash flows of an investment or project are greater than the value of the initial investment. In other words, is the money this investment is likely to generate in the future higher than what will be invested right now? If it is, the investment will be profitable and is worth considering. If it is not, the investment isn't a good idea.		
Discounted cash flow analysis is used to estimate the money an investor might receive from an investment, adjusted for the time value of money.		
The time value of money assumes that a dollar that you have today is worth more than a dollar that you receive tomorrow because it can be invested. As such, a DCF analysis can be useful in any situation where a person is paying money in the present with expectations of receiving more money in the future.		
For example, assuming a 5 % annual interest rate, $1 in a savings account will be worth $1.05 in a year. Similarly, if a $1 payment is delayed for a year, its present value is 95 cents because you cannot transfer it to your savings account to earn interest.		
To conduct a DCF analysis, an investor must make estimates about future cash flows and the end value of the investment, equipment, or other assets.		

Table 3 – How Does Discounted Cash Flow (DCF) Work (Continued)

The investor must also determine an appropriate discount rate for the DCF model, which will vary depending on the project or investment under consideration. Factors such as the company or investor's risk profile and the conditions of the capital markets can affect the discount rate chosen.		
If the investor cannot estimate future cash flows or the project is very complex, DCF will not have much value.		
For DCF analysis to be useful, estimates used in the calculation must be as solid as possible. Estimating too highly will result in overvaluing the eventual payoff of the investment. Likewise, estimating too low may make the investment appear too costly for the eventual profit, which could result in missed opportunities.		

<u>Problem 4.</u> Please mark in table 4 the right (wrong) answers on the features of the formula for **Discounted Cash Flow (DCF)**

Table 4 – The formula for DCF is:

	Yes	**No**
DCF = CF1/(1 + r)1 + CF2/(1 + r)2 + CFn/(1 + r)n where: CF1 = The cash flow for year one CF2 = The cash flow for year two CFn = The cash flow for additional years *r* = The discount rate		
DCF = (1 + r)1CF1 + (1 + r)2CF2 + (1 + r)nCFn where: *CF*1 = The cash flow for year one *CF*2 = The cash flow for year two *CFn* = The cash flow for additional years *r* = The discount rate		

Hint: Discounted Cash Flow Formula

The formula for DCF is:

DCF = (CF/(1+r)^1) + (CF/(1+r)^2) + (CF/(1+r)^3) + ... + (CF/(1+r)^n)

Where:

CF = Cash Flow in the Period

r = the interest rate or discount rate

n = the period number

This discount rate in DCF analysis is the interest rate used when calculating the net present value (NPV) of the investment. It represents the time value of money from the present to the future. You can find the discount rate over time on the Internet

Hint: Some additional useful information.

How Do You Calculate DCF?

Calculating the DCF involves three basic steps. One, forecast the expected cash flows from the investment. Two, select a discount rate, typically based on the cost of financing the investment or the opportunity cost presented by alternative investments. Three, discount the forecasted cash flows back to the present day, using a financial calculator, a spreadsheet, or a manual calculation.

What Is an Example of a DCF Calculation?

You have a discount rate of 10 % and an investment opportunity that would produce $100 per year for the following three years. Your goal is to calculate the value today – the present value – of this stream of future cash flows. Since money in the future is worth less than money today, you reduce the present value of each of these cash flows by your 10 % discount rate. Specifically, the first year's cash flow is worth $90.91 today, the second year's cash flow is worth $82.64 today, and the third year's cash flow is worth $75.13 today. Adding up these three cash flows, you conclude that the DCF of the investment is $248.68.

Example 2 of DCF (sophisticated)

When a company analyzes whether it should invest in a certain project or purchase new equipment, it usually uses its weighted average cost of capital (WACC) as the

discount rate to evaluate the DCF. The WACC incorporates the average rate of return that shareholders in the firm are expecting for the given year.

For example, say that your company wants to launch a project. The company's WACC is 5 %. That means that you will use 5 % as your discount rate.

The initial investment is $11 million, and the project will last for five years, with the following estimated cash flows per year.

Using the DCF formula, the calculated discounted cash flows for the project are as follows.

Year	Cash Flow	Discounted Cash Flow (nearest $)	Net present value (NPV)
1	$1 million	$952,381	
2	$1 million	$907,029	
3	$4 million	$3,455,350	
4	$4 million	$3,290,810	
5	$6 million	$4,701,157	
In all	$16 million	$13,306,727	$13,306,727 – $11 million = $2,306,727

Adding up all of the discounted cash flows results in a value of $13,306,727. By subtracting the initial investment of $11 million from that value, we get a **net present value (NPV)** of $2,306,727.

The positive number of $2,306,727 indicates that the project could generate a return higher than the initial cost – a positive return on the investment. Therefore, the project may be worth making.

If the project had cost $14 million, the NPV would have been – $693,272. That would indicate that the project cost would be more than the projected return. Thus, it might not be worth making.

Problem 5. Please calculate discounted cash flows for the project of HUAWEI

Using the Huawei financial reporting for 2019–2023, please calculate its **Discounted Cash Flow and Net present value (NPV)**

Table 5 – Initial data for calculating Discounted Cash Flow and Net present value (NPV) for HUAWEI

Period	**Cash Flow**	**Discounted Cash Flow (nearest $)**	**Net present value (NPV)**
2019			
2020			
2021			
2022			
2023			
In all			

Hint: **r** or the interest rate or discount rate please take from the annual financial reporting, as well as all the necessary data for calculation process.

Problem 6. Calculate discounted cash flows for the project of Apple Inc.

Using the Apple financial reporting for 2019–2023, please calculate its **Discounted Cash Flow and Net present value (NPV)**

Table 6 – Initial data for calculating Discounted Cash Flow and Net present value (NPV) for Apple

Period	**Cash Flow**	**Discounted Cash Flow (nearest $)**	**Net present value (NPV)**
2019			
2020			
2021			
2022			
2023			
In all			

Hint: **r** or the interest rate or discount rate please take from the annual financial reporting, as well as all the necessary data for calculation process.

Problem 7. Calculate discounted cash flows for the project of Geely

Using the GEELY financial reporting for 2019–2023, please calculate its **Discounted Cash Flow and Net present value (NPV)**

Table 7 – Initial data for calculating Discounted Cash Flow and Net present value (NPV) for GEELY

Period	**Cash Flow**	**Discounted Cash Flow (nearest $)**	**Net present value (NPV)**
2019			
2020			
2021			
2022			
2023			
In all			

Hint: **r** or the interest rate or discount rate please take from the annual financial reporting, as well as all the necessary data for calculation process.

Problem 8. Calculate discounted cash flows for the project of XIAOMI

Using the XIAOMI financial reporting for 2019–2023, please calculate its **Discounted Cash Flow and Net present value (NPV)**

Table 8 – Initial data for calculating Discounted Cash Flow and Net present value (NPV) for XIAOMI

Period	**Cash Flow**	**Discounted Cash Flow (nearest $)**	**Net present value (NPV)**
2019			
2020			
2021			
2022			
2023			
In all			

Hint: **r** or the interest rate or discount rate please take from the annual financial reporting, as well as all the necessary data for calculation process.

Problem 9. Like any other form of financial analysis, there are advantages and disadvantages to using discounted cash flow analysis.

Please mark in table 9 the right (wrong) answers on the **Advantages and Disadvantages of Discounted Cash Flow Analysis**

Table 9 – Advantages and Disadvantages of Discounted Cash Flow Analysis.

	Yes	**No**
Advantages:		
• Investment evaluation		
• Applicable to variety of projects		
• Adjustable scenarios		
Discounted cash flow analysis can provide investors and companies with a reasonable projection of whether a proposed investment is worthwhile.		
It is an analysis that can be applied to a variety of investments and capital projects where future cash flows can be reasonably estimated.		
Its projections can be tweaked to provide different results for various what-if scenarios. This can help users account for different projections that might be possible.		
Disadvantages		
• Involves estimates		
• Unforeseen economic changes		
• Shouldn't be used in isolation		

Table 9 – Advantages and Disadvantages of Discounted Cash Flow Analysis (Continued)

The major limitation of discounted cash flow analysis is that it involves estimates, not actual figures. So the result of DCF is also an estimate. That means that for DCF to be useful, individual investors and companies must estimate a discount rate and cash flows correctly		
Furthermore, future cash flows rely on a variety of factors, such as market demand, the status of the economy, technology, competition, and unforeseen threats or opportunities. These can't be quantified reliably. Investors must understand this inherent drawback for their decision-making.		
DCF shouldn't necessarily be relied on exclusively even if solid estimates can be made. Companies and investors should consider other, known factors as well when sizing up an investment opportunity. In addition, comparable company analysis and precedent transactions are two other, common valuation methods that might be used.		
The Bottom Line		
Discounted cash flow is a valuation method that estimates the value of an investment based on its expected future cash flows. By using a DFC calculation, investors can estimate the profit they could make with an investment (adjusted for the time value of money). The value of expected future cash flows is first calculated by using a projected discount rate.		
If the discounted cash flow is higher than the current cost of the investment, the investment opportunity could be worthwhile.		

Problem 10. Is Discounted Cash Flow the Same As Net Present Value (NPV)? Please mark in table 10 the right (wrong) answers.

Table 10 – Is Discounted Cash Flow the Same As Net Present Value (NPV)

	Yes	**No**
Discounted cash flow and net present value are not the same, though the two are closely related.		
NPV adds a fourth step to the DCF calculation process. After forecasting the expected cash flows, selecting a discount rate, discounting those cash flows, and totaling them, NPV then deducts the upfront cost of the investment from the DCF.		
For instance, if the cost of purchasing the investment in our above example were $200, then the NPV of that investment would be $248.68 minus $200, or $48.68.		

PRACTICAL CLASSES
on the topic "Book Value: Definition, Meaning, Formula, and Examples"
(4 Hours)

Hint: The book value is the value of shareholders' equity in a business as shown on the balance sheet statement. The book value is derived by subtracting the total liabilities of a company from its total assets.

The purpose of the classes: to study the essence, concepts and basic terms of the **Book Value** business valuation; to study how to calculate the value of business in practice.

Problem 1. What is the Book Value assessment. Please mark in table 1 the right (wrong) answers.

Table 1 – Understanding Book Value

	Yes	**No**
Book value is the value of a company's assets after netting out its liabilities. It approximates the total value shareholders would receive if the company were liquidated.		
Book value may also be referred to as net worth.		
Book value is often different from a company's market value.		
The figure that represents book value is the sum of all of the line item amounts in the shareholders' equity section on a company's balance sheet. As noted above, another way to calculate book value is to subtract a business' total liabilities from its total assets.		
There is also a book value used by accountants to value the assets owned by a company. This differs from the book value for investors because it is only used internally for managerial accounting purposes.		
Book value per share (BVPS) and the price-to-book (P/B) ratio are utilized in fundamental analysis.		
A book value per share that's lower than the market price for the share may indicate that a stock is overvalued.		
Shareholders' equity is a section on a company's balance sheet that displays the shareholders' claim on assets after liabilities have been accounted for.		
Book value is used in and with other financial ratios to help investors value a company		

Table 1 – Understanding Book Value (Continued)

Book value is calculated by adding the values of preferred stock, common stock, Treasuries, additional paid-in capital, accumulated other comprehensive income (or loss), and retained earnings.		
Some companies include in "Total Stockholders' Equity" unrealized gains or losses, capital surplus or cumulative adjustments, and many other line items, depending on the industry a company operates in and its internal accounting procedures.		
Book value has uses for investors when compared to the company's market value, book value can indicate whether a stock is underpriced or overpriced,		

Hint 2: Book Value Uses

Book value is also included in some financial ratios that can help investors size up a company's financial health.

Hint 3: Book Value per Share

Why It is Called "Book Value"

The term "book value" is derived from accounting lingo, where the accounting journal and ledger are known as a company's books. In fact, another name for accounting is bookkeeping.

Book value per share (BVPS) is the per-share book value. Investors can calculate it easily if they have the balance sheet of a company of interest. Investors can compare BVPS to a stock's market price to get an idea of whether that stock is overvalued or undervalued.

Formula to calculate:

To get BVPS, you divide the **figure for total *common* shareholders' equity by the total number of outstanding common shares.** To obtain the figure for total common shareholders' equity, take the figure for total shareholders' equity and subtract any preferred stock value. If there is no preferred stock, then simply use the figure for total shareholder equity.

BVPS = (Total Shareholder Equity - Preferred Stock) / Total Common Shares Outstanding

Therefore, if a company had $21 million in shareholders' equity (and no preferred stock) and two million outstanding common shares, its book value per share would be $10.50:

BVPS = $21 million / 2 million

BVPS = $10.50

If the market price for a share is higher than the BVPS, then the stock may be seen as overvalued.

There is a difference between outstanding and issued shares, but some companies might refer to outstanding common shares as issued shares in their reports.

Problem 2. Calculate Book value per share (BVPS)

Using the Financial reporting of some corporations for 2023, please calculate their Book value per share (BVPS)

Table 2 – Initial data and calculation of Book value per share (BVPS)

Company	Total Shareholder Equity	Preferred Stock	Total Common Shares Outstanding	Book value per share (BVPS)
Apple Inc.				
Samsung				
Sony				
BMW				
Wall-Mart				

Hint 3: Price-to-Book (P/B) Ratio

Price-to-book (P/B) ratio as a valuation multiple is useful when comparing similar companies within the same industry that follow a uniform accounting method for asset valuation. It can offer a view of how the market values a particular company's stock and whether that value is comparable to the BVPS.

The ratio may not serve as a valid valuation basis when comparing companies from different sectors and industries because companies in other industries may record their assets differently. As a result, a high P/B ratio would not necessarily be a premium valuation, and conversely, a low P/B ratio would not automatically be a discount valuation when comparing companies in different industries.

The price-to-book ratio is simple to calculate. Just divide the market price per share by the book value per share.

P/B Ratio = Market Share Price / Book Value per Share

In the previous example, the BVPS was $10.50. Therefore, if the company's shares had a current market value of $13.17, its price-to-book ratio would be 1.25:

P/B Ratio = $13.17 / $10.50;   P/B Ratio = 1.25

The figure of 1.25 indicates that the market has priced shares at a premium to the book value of a share. Some may consider this to mean a stock is overvalued.

Problem 3. Calculate Price-to-Book (P/B) Ratio

Using the Financial reporting of some corporations for 2023, please calculate their **Price-to-Book (P/B) Ratio.**

Table 3 – Initial data and calculation of Price-to-Book (P/B) Ratio

Company	**Market Share Price**	**Book value per share (BVPS)**	**Price-to-Book (P/B) Ratio**
Apple Inc.			
Samsung			
Sony			
BMW			
Wall-Mart			

What Does a Price-to-Book (P/B) Ratio of 1.0 Mean?

A P/B ratio of 1.0 indicates that the market price of a share of stock is exactly equal to its book value. For value investors, this may signal a good buy since the market price generally carries some premium over book value.

The Bottom Line. Book value is the value of a company’s total assets minus its total liabilities. In other words, it is equal to total shareholders' equity. A company's market value will usually be greater than its book value because the market price incorporates investor's thoughts and calculations about intangible assets such as intellectual property, human capital, and future growth prospects. Value investors look for relatively low book values (using metrics like P/B ratio or BVPS) but otherwise strong fundamentals in their quest to find undervalued companies.

PRACTICAL CLASSES
on the topic "Liquidation Value" (4 Hours)

The purpose of the classes: to study the essence, concepts and basic terms of the **Liquidation Value** business valuation; to study how to calculate the value of business in practice.

Problem 1. What is the Liquidation Value assessment. Please mark in table 1 the right (wrong) answers.

Table 1 – Understanding Liquidation Value.

	Yes	**No**
There are generally four levels of valuation for business assets: market value, book value, liquidation value, and salvage value. Each level of value provides a way for accountants and analysts to classify the aggregate value of assets. Liquidation value is especially important in the case of bankruptcies and workouts.		
Liquidation value does not include intangible assets such as a company's intellectual property, goodwill, and brand recognition. However, if a company is sold rather than liquidated, both the liquidation value and intangible assets determine the company's going-concern value. Value investors look at the difference between a company's market capitalization and its going-concern value to determine whether the company's stock is currently a good buy.		
Not every asset can be sold for what was paid for it or what is still due on the note to buy that asset. Businesses look at the recovery rate on an asset-by-asset basis. Cash would have a 100% recovery rate. Accounts receivable, inventory, and plant equipment would have a lower recovery rate. These rates tallied together will provide an estimated recovery value of a company in case of liquidation.		
Potential investors will assess the liquidation value of a company before investing. Investors want to know how much of their funds would be returned in the event of bankruptcy.		
Liquidation value is the net value of a company's physical assets if it were to go out of business and the assets sold.		
The liquidation value is the value of company real estate, fixtures, equipment, and inventory. Intangible assets are excluded from a company's liquidation value.		

Table 1 – Understanding Liquidation Value (Continued)

Liquidation value is usually lower than book value, but greater than salvage value.		
Liquidation value is the net cash that a business will receive if its assets are liquidated and its liabilities are paid off today.		
Liquidation value is determined a company's assets such as real estate, fixtures, equipment, and inventory. Intangible assets are excluded from a company's liquidation value.		
Assets are sold at a loss during liquidation because the seller must gather as much cash as possible within a short period.		

Problem 2. Understanding Liquidation Value Method. Please mark in table 2 the right (wrong) answers.

Table 2 – Understanding Liquidation Value Method.

	Yes	**No**
The **liquidation value method** is a financial approach used to determine the **value** of a company in the context of mergers and acquisitions (M&A).		
The **liquidation value method** involves assessing the worth of a company based on the assumption that it will be sold in a forced **liquidation** scenario, where assets are sold quickly and at a discount		
When performing liquidation valuations, there are certain assumptions that must be made in order to ensure accuracy. These include that the liquidation scenario is known and agreed upon by all parties, the process is efficient and transparent, market conditions are stable, costs are reasonable and predictable, and the valuation date is consistent and relevant. Additionally, it must be ensured that there are no legal, regulatory, or contractual obstacles that may affect the sale or distribution of proceeds, no market manipulation or collusion that may affect the price or demand, and no hidden or contingent liabilities that may arise during or after liquidation.		
The calculation of liquidation value is used in financial instrument valuation to simulate the worst-case scenario when a company or business goes bankrupt. It is also used when a healthy company considers undergoing a merger, putting itself up for sale, or applying for credit from its investors or debtor.		

Table 2 – Understanding Liquidation Value Method (Continued)

Liquidation value can be calculated by removing the value of all assets and liabilities of a company from its financial report. The subtraction of liabilities from assets will give investors the liquidation value. When working with liquidation value calculations, an investor should exclude the intangible assets, such as goodwill, brand recognition, and intellectual property.		

Problem 3. Market vs. Book vs. Liquidation vs. Salvage. Find the differences between Market, Book and Salvage value. Please mark in table 3 the right (wrong) answers.

Table 3 – Understanding the differences between Market, Book and Salvage value.

	Yes	**No**
Market value typically provides the highest valuation of assets although the measure could be lower than book value if the value of the assets has decreased due to market demand rather than business use.		
The book value is the value of the asset as listed on the balance sheet. The balance sheet lists assets at the historical cost, so the value of assets may be higher or lower than market prices. In an economic environment with rising prices, the book value of assets is lower than the market value. The liquidation value is the expected value of the asset once it has been liquidated or sold, presumably at a loss to historical cost.		
The salvage value is the value given to an asset at the end of its useful life; in other words, this is the scrap value.		
Liquidation value is usually lower than book value but greater than salvage value. The assets continue to have value, but they are sold at a loss because they must be sold quickly.		

Some useful additional information. Example of a Liquidation

Liquidation is the difference between some value of tangible assets and liabilities. As an example, assume liabilities for company A are $550,000.

Also, assume the book value of assets found on the balance sheet is $1 million, the salvage value is $50,000, and the estimated value of selling all assets at auction is $750,000, or 75 cents on the dollar.

The liquidation value is calculated by subtracting the liabilities from the auction value, which is $750,000 minus $550,000, or $200,000.

Calculation Example

Unlimited Ltd. listed a market capitalization of $500 million on the stock exchange. The company also reported liabilities totaling $150 million and a book value of $400 million. The appraiser estimates the value of Unlimited's assets at $380 million in the auction market.

The liquidation value of Unlimited Ltd. is $230 million, found by subtracting $150 million in liabilities from $380 million in auction value.

Additional Resources

Thank you for reading this guide to Economic Valuation of Business. My mission is to help you advance your career and become a world-class financial modeler. To keep learning and developing your knowledge base, please explore some of additional relevant resources.

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Activity Book

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