MBA ASAP ECONOMICS

MICRO, MACRO, MANAGERIAL, & BEHAVIORAL

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THE VALUE OF UNDERSTANDING ECONOMICS

Economics is a subject that is highly relevant to our everyday lives.

In the past three centuries, our understanding of economics has been instrumental in lifting the bulk of humanity out of abject poverty and a life that was nothing but nasty, brutish, and short.

The study of economics started with the Industrial Revolution in the mid-1700s. Suddenly there were factories. Entrepreneurs organized labor, machines, and power to manufacture products. These large-scale enterprises took investment money (capital) to create.

The first person to understand what was going on and put it on a conceptual footing was Adam Smith. He published

his grand opus "The Wealth of Nations" in 1776, the same year Thomas Jefferson composed the Declaration of Independence in the U.S.

THE PRIMARY PROJECT of economics has been to try and understand how productivity increases lead to wealth generation. And how to optimize this process to lift the most people out of poverty and provide them with better lives and opportunities.

THE IDEAL HAS BEEN to make economics a science like physics and chemistry using math as its structure and framework. There have been remarkable strides in this direction that have provided deep insights into economic activity. Still, so far, economics has proved too messy to conform to formulas and equations that have predictive power.

ECONOMICS IS a *social science* like political science and sociology. Economics deals with decisions about the allocation of resources. Economics provides a conceptual framework for understanding the decisions of firms and consumers.

THE DREAM TO ENGINEER, optimize, and predict economic behavior and trends, has proven elusive. Laurence Peter, of the famous Peter principle, said,

> "An economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen today."

Economics has explanatory power after the fact but no predictive power.

With that caveat about the limits of economics to predict the future, let's explore what we do know about the nature of economic activity and behavior.

Economics can be divided into four categories:

- Micro
- Macro
- Managerial
- Behavioral

Let's look at the basics of each category in turn, starting with microeconomics.

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MICROECONOMICS

Microeconomics made Easy

Macroeconomics is about the interactions and aggregate behavior of all the individual actors in the economy. To understand the big picture, we first need to understand who all the individuals act. That is the realm of microeconomics.

Microeconomics is about the behavior, decisions, and choices of individuals. There are four main parts of microeconomics:

- Individual Behavior
- Supply and Demand
- Theory of the Firm
- Competition

There are two main assumptions made in classical economics:

- That we are rational actors and we always optimize our allocation decisions
- Resources are scarce, and allocating them most efficiently is critical

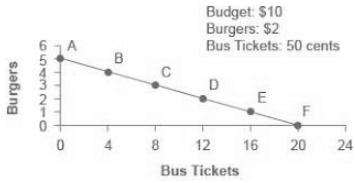
Both these assumptions are being challenged with more nuanced thinking as everything becomes digital.

Individual Behavior

We are considered completely rational entities like Spock regarding our purchasing decisions and budget allocations in classical economics.

Our behavior is graphically represented by a budget constraint line and our preference curve. We optimize our buying power relative to our preferences, where the two meet tangentially at a point on the budget line.

First, the budget constraint line graphs the different choice mixes between two goods, in this case, bus tickets and burgers.



ride the bus or eat a burger

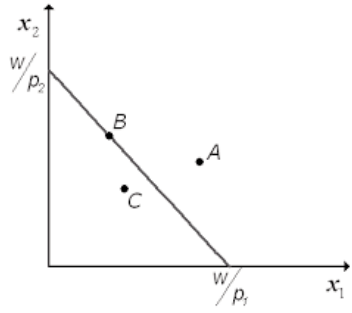
NATION-STATES, as well as individuals, need to make these allocations and purchasing decisions between different goods. The decision is sometimes referred to as "guns or butter" when referring to countries and describes the decision to spend on military or domestic programs. Here is what Investopedia says:

> Guns versus butter is the classic example of the production possibility frontier. It models the relationship between a nation's investment in defense and civilian goods. In this model, a government has to choose between two options when spending its finite resources.

THE NEWS IS CONSTANTLY RECORDING contests on these issues between government officials and politicians.

THIS NEXT GRAPH shows three points related to optimizing our purchasing decisions. A is beyond our budget line, so it is out of our realm of possibilities. We can't purchase that

amount of both goods. C is below our budget line, so it is not the most efficient use of our resources. B is on the line, and just like Goldilocks, it is just right. Any point on the line is best depending on our preferences for the two goods.

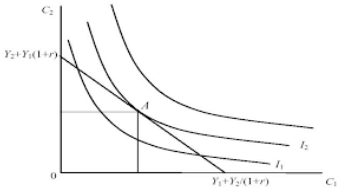


B is the one for me

Here is the budget line with a preference curve sitting on it. Preference curves are downward sloping and convex due to diminishing returns. Diminishing returns means that for each item we consume, our marginal utility for that item decreases relative to the next one we will consume. For example, the first piece of pizza tastes excellent, and we devour it, but by the eighth slice, we have lost our enthusiasm for the ninth slice.

For that preference curve, the point where it touches the budget line is the optimal use of our purchasing power. This graph shows how classical economics models individual

behavior and calculates the optimal quantity purchased relative to an individual's preferences.



point A is just right

Alfred Marshall came up with this idea in the 1890s. It is brilliant and compelling. The math and graphical representations of capitalism that Alfred Marshall initiated have had an enormous impact on the prestige of capitalism as scientifically sound. Communist economics never achieved such mathematical rigor, and that has undermined its theoretical stature.

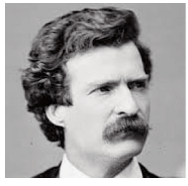
The assumption of rationality and optimization in purchasing decisions makes the math clean. And that is the function abstractions perform in science. They tidy up the messy reality by fudging the truth.

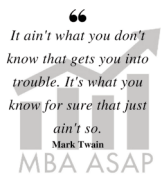
Like Pablo Picasso said,

> "Art is a lie that tells the truth."

It reminds me of the physicist who is trying to help a dairy farmer maximize milk production. He studies the situation and begins his analysis to the farmer: "assume a spherical cow..." It ends up abstracting away too much of the factual information.

BUT JUST BECAUSE the theory isn't true doesn't make it not useful. We just can't rely on it uncritically.





THE ECONOMIC ASSUMPTION of pure rationality is also not true, as the stuff collecting dust in my closet and garage can attest. I have bought a lot of things I don't use. We all make many impulsive purchases that are not optimal. Our consumer economy depends on it, and marketers exploit our vulnerability to be manipulated. We will examine this in detail in the Behavioral Economics chapter.

BEHAVIORAL ECONOMICS TAKES psychology and our cognitive biases into account to create a more nuanced picture of our habits and patterns. Behavioral economics seeks to uncover the limits of our rational economic behavior. They call it "bounded rationality."

Supply and Demand

Economics sheds light on the magic of market coordination. Adam Smith first described it as the invisible hand: there is no authority allocating goods and services other than market prices that buyers and sellers agree on.

Here is Mr. Smith writing in 1776:

> They are led by an invisible hand to make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions. It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest.

The market mechanism at work in deciding prices and the distribution of goods is Supply and Demand.

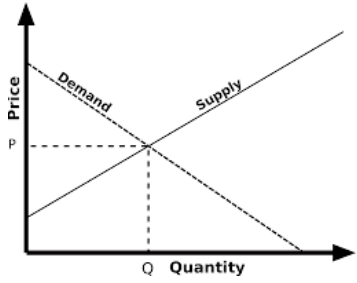
Let's break the concept of graphing Supply and Demand down by thinking about a familiar product you buy in your daily life.

How about pizza!

. . .

Demand is a function of how many people or customers are interested in purchasing a particular product or service. Many dimensions affect your decision to buy a pizza: quality, delivery, timeliness, taste, etc. But the one we will be concerned about (and plot on a graph) is probably dear to your heart (and purse): **price**. Consider your purchasing decision: if a pizza costs $30, you probably are not going to buy too many of them. If it costs $1.50, you may eat nothing but pizza until you get sick of it.

Most everyone else thinks about the pizza purchase decision the same way. The Demand graph is the sum of everybody's decisions to purchase based on price.



We graph Supply and Demand on two axis: the horizontal axis is Quantity: this is how many pizzas get purchased in aggregate at each Price; Price is the vertical axis.

The Demand curve (even though it is usually represented as a line, we call it a curve) has a downward slope, which

means that less Quantity is sold at high prices, and at low prices, more are sold.

The Supply curve is the amount that providers will make at a specific price. The curve is the sum of what happens to Quantity at all these different price points.

The way to think about Supply is: if pizzas are selling at $30 apiece, lots of folks will think about getting into the pizza business because they feel they can make lots of money. And if pizzas are selling at $1.50, many pizza makers will abandon the business because they are losing money. So more Quantity is supplied to the market at higher prices and less at lower prices.

These two lines, Supply and Demand, make an X on the graph. They intersect where the market balances. This point is where enough are sold to satisfy both the demand for pizza and the Supply of pizza. That point is the market equilibrium and determines the Quantity and the price at which the market clears.

3

MACROECONOMICS

Microeconomics and Macroeconomics

Economics is traditionally categorized into two broad subfields: Micro and Macro. Microeconomics is the study of how individuals and companies make decisions and interact. Macroeconomics is the study of economy-wide phenomena. For example, macroeconomists study the impact of government spending, borrowing, taxes, unemployment rate, and alternative policies to raise growth and living standards.

MICROECONOMICS AND MACROECONOMICS are closely intertwined but are separate.

BECAUSE CHANGES in the economy arise from the decisions of individuals, to understand macroeconomic developments, we need to consider the associated microeconomic decisions.

. . .

For example, a macroeconomist might study the effect of a cut in the federal income tax on producing different goods and services. To analyze this issue, they consider how the tax cuts affect the decisions of individuals about how much to spend on various goods and services.

In theory, we should be able to aggregate up micro-economic activity and create a model of macro activity. But, so far, economists have not figured out how to directly link the two subfields.

Money is the connective tissue in all economic activity. So let's examine the nature of money and its role in the economy.

The economic system we apply these concepts to is called Capitalism.

Capitalism

Capitalism is a modern economic system where goods and services are sold for profit. The exchange between buyer and seller is called the market. In a capitalist economy, the parties in a transaction determine the price at which assets, goods, and services are exchanged.

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Capitalism is characterized by: capital accumulation, competitive markets, and wage labor.

Capitalism has existed under various forms of government and in different times, places, and cultures. Following the demise of feudalism, capitalism became, and has remained, the dominant economic system in the Western world.

Characteristics of Market Systems:

- Private property
- Freedom of enterprise and choice
- Self-Interest
- Competition
- Markets and prices

The Meaning of Money

Money is a Link Between the Past, Present, and Future

> "The importance of money flows from it being a link between the present and the future."
>
> John Maynard Keynes

Who controls the past, controls the future. Who controls the present, controls the past. Money is the link.

. . .

Keynes is one of the most influential economists of all time. As a result, an entire school of economic thought is named Keynesian after him and his insights. For example, in the quote above, he describes money and interest rates as creating the link between the present and the future. The quote will become clearer as we examine money and its role.

Money and interest rates are how the banking system and the stock market work.

Let's look at this relationship in more detail as it forms the basis of macroeconomics.

Macroeconomics

Here is a quick summary of the big picture side of capitalist enterprise.

Capitalism is arguably the best way to organize ventures as it provides a disciplined approach to delivering something people want and need.

Of course, capitalism has its flaws and requires oversight and guardrails to operate effectively, efficiently, and fairly. But the benefits of the market mechanism of Supply and Demand are unparalleled in providing innovation and allocation of goods and services.

. . .

AND MONEY MAKES the capitalist system go round.

Money

It's all about the money, ain't a damn thing funny.

MONEY IS what we count and keep track of first and foremost

in our personal lives. As my mom says, if your output is more than your input, your upkeep is your downfall.

MONEY IS how we keep score in business. Money is what we measure and what gets measured gets managed.

A SUCCESSFUL BUSINESS model is all about making more than you spend.

Even if you are losing money with a strategy of gaining market share, the present value of that increased future market share needs to be more than the dollars you are spending today to capture it. That is the only rationale that makes economic sense.

Finance

Corporate Finance, in its broadest sense, encompasses everything that has to do with money in business. It includes accounting, funding, spending and investing in assets, and budgeting.

Accounting

Goethe rapturously described accounting this way:

> "Double entry bookkeeping is one of the most beautiful discoveries of the human spirit."

Accounting produces Financial Statements. There are ten steps in the accounting process. The process starts by recording individual transactions and ends by aggregating all the transactions into Financial Statements.

Funding

Funding has to do with the right-hand side of the balance sheet: debt and equity. Debt, also called a loan, is Money you borrow with a contract to pay it back and collateralized by the assets. Equity, also called stock, is Money invested in exchange for an ownership share in the company.

There is straight debt and equity and lots of hybrid financial instruments that blend attributes of the two. For example, you can have senior and junior debt that prioritizes the claims on the assets, you can have debt that is convertible into common stock, you can have common and preferred stock.

These are all negotiated with investors and bankers, and the money they raise is used to acquire the assets listed on the left-hand side of the balance sheet.

Discounting Cash Flows

There is a time value to Money. A dollar today is worth more than the promise of a dollar two years from now. The time value of Money manifests as interest rates.

That is what an interest rate is. An interest rate is an amount an investor requires to use their Money and compensate for time and perceived risk.

Time is Money.

Corporate Finance tools calculate the present value by discounting future cash flows. I'll talk a bit more about this in the Future section below.

Investing

In business, you need to know which income-producing assets to purchase and which projects to pursue. Financial decision-making tools like Net Present Value and Internal Rate of Return are used to analyze and choose between alternatives. They are used to analyze and measure value. They are valuation techniques.

Finance is all about the sources and uses of funds and keeping track of how those decisions are performing.

The Past

Accounting and Financial Reporting are retrospective activities. They provide a detailed account of what has happened. It's the rearview mirror.

Ratio Analysis

Ratios are a way to compare accounting information. It can be over time or across companies. Ratios gauge performance by comparing if the numbers are getting better or worse. Ratios help you uncover the direction things are going.

HORIZONTAL RATIO ANALYSIS is over time. Vertical ratio analysis is comparing one company to another. Using ratios normalizes the numbers, so you are comparing apples to apples. It eliminates size differences.

WHAT GETS MEASURED GETS MANAGED, so measure what matters.

The Present

Current financial statements represent a picture of where the company is today. It's a picture of how the company has performed in the most recent reporting period. Financial statement reporting is how the present connects to the past in business.

Financial Statements

There are three basic financial statements:

- Balance Sheet
- Income Statement
- Cash Flow Statement

They are interconnected, and financial data and information flows from one financial statement through the others.

The present is connected to the future in business through interest rates or discount rates. These take into account all the uncertainty and risks inherent in the business's future prospects.

Let's look at the Keynes quote again,

> "The importance of money flows from it being a link between the present and the future."
>
> John Maynard Keynes

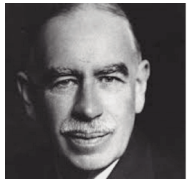
Is it starting to make more sense?

Future

Financial Projections are the best guesses about what the company will do and how it will perform going forward. Projections are the view through the windshield.

Pro Formas

Financial projections are sometimes called pro formas because they are presented in the form of financial statements.



"*The importance of money flows from it being a link between the present and the future*"

John Maynard Keynes

Let's tie it all together.

Valuation

We use discount rates to discount future cash flow projections back into today's dollars. The Present Value of Future cash flows is essentially the valuation of the enterprise.

In publicly traded stocks, the present value of future cash flows is guessed and estimated by all the participants (investors) in the market for that stock. Stocks are bought and sold in an auction format based on investors'

best guesses of the present value of the future cash flows.

Budgets

Yesterday's tomorrow is today.

Budgets are the best guesses about how much money will come into a company through sales and how much will go out via expenses.

We make Budgets to estimate and anticipate revenues and costs for the next year.

Publicly traded companies call these estimates "guidance" when they announce them to investors and analysts each quarter.

As the year unfolds, we compare Budgets to the actual revenues and expenses. Any differences (called variances) are then examined and explained.

Budgets, actuals, and variance analysis are basic management techniques.

For all the above reasons and examples, money is how we keep score in Business. Apply the same skills to manage your budget and lifestyle. After all, you are a business.

Green Grease Makes the World Go Round

Green grease makes the world go round. Money is how business transacts and sustains itself. Money is the vehicle

for how a company operates. Sales gauge how customers perceive your value proposition.

Bills need paying, supplies purchased, funds raised, and salaries met. Running a business is all about Revenues (sales), Expenses (costs), and Net Income (profit/loss). This flow of money is organized and measured by accounting. The goal is to sell things for more than they cost you to make or get. It's simple, but not easy.

Money is also the basis of how individuals and families operate. There is an enterprise aspect to private life in the form of getting and spending money. We earn, save, invest, and spend. (See the next section for more on this)

Money flows between people (consumers) and businesses (producers).

The Circular Flow System is a model of getting and spending. People are both consumers and producers. They consume goods and services they purchase with the money they earn. They earn money by supplying their resources – land, labor, capital, and entrepreneurship – to businesses that use those resources to produce goods and services.

It's easy to get seduced and caught up in the desire to make lots of money. We mistake money as the way to get the pres-

tige and command the respect we seek. We are status-seeking animals.

DON'T GIVE in to these less than virtuous motives and add to the consumer frenzy in less than meaningful ways.

KEEP a proper perspective on what money is and can do. Check out this quote from the novel Atlas Shrugged.

> "So you think that money is the root of all evil?" said Francisco d'Anconia. "Have you ever asked what is the root of money? Money is a tool of exchange, which can't exist unless there are goods produced and people able to produce them. Money is the material shape of the principle that people who wish to deal with one another must deal by trade and give value for value."
>
> Ayn Rand Atlas Shrugged 1957

MONEY IS A MEANS, not an end. Money doesn't buy happiness, but it does buy freedom. Money provides the freedom to do what you want when you want. And it gives the ability to say no to things you don't want to do.

MAINTAINING a perspective on money as a tool and not pursuing it for its own sake takes vigilance.

The Four Aspects of Money

The Fundamentals of Financial Literacy

Many of us have a fraught relationship with money. We want it, we fear it, we are anxious we will run out. Did I mention we want it? We want money, but we may not be clear on getting it, keeping it, and growing it.

If you want to become financially secure and worry-free, you must clearly understand what money is and what it is not. Money is a means, not an end. You can't buy happiness, love, and satisfaction.

Money will not solve your problems. If you plan on how to use and deploy money, it can be the means to solve problems, end worry, sleep better, and enjoy life.

> "Money is a good servant but a bad master."
> Sir Francis Bacon

To have a financial plan, you must clearly understand the four characteristics of money and your relationship to them.

You can separate your relationship to money into four aspects. They are:

- Earning
- Spending
- Saving
- Investing

Earning

You can earn more by getting a raise at work, getting a better-paying job, or starting a side hustle. Get out of any ruts. Don't be complacent in your job. Look for other opportunities that you would enjoy and that pay more. Ask for a raise.

DON'T RELY on just the money from your job. The average millionaire has seven revenue streams.

Get creative. You can drive for Uber and Lyft, rent out an extra room on Airbnb, sell stuff you no longer need or want on eBay. Write a book and publish it on Amazon, or start a blog or podcast. Sell crafts on Etsy.

Spending

Many times we sleepwalk through a lot of our daily spending. We are hypnotized by advertising and marketing and manipulated into making less than scrutinized mindful purchases. Review your spending habits and look to eliminate the things you don't need or enjoy.

DON'T BUY crap you don't need. Cancel subscriptions and other monthly recurring expenses that you don't need. Keep the small splurges that make your day delightful.

Saving

Redirect the money you have reclaimed from the scrutiny of your spending. Save that money.

HAVE a plan and a target goal for saving. Save for multiple financial goals like buying a car, home down payment, education, and other worthy life goals. You can set up several savings accounts for each goal you have identified.

Investing

To create wealth and get rich, you need to invest your savings. Investing means purchasing income-producing assets that give you a return on your money.

That return is called interest or rate of return. When that rate of return is compounded year over year, it starts to amplify and accelerate your savings.

COMPOUND INTEREST IS the secret to accumulating wealth and getting rich.

THE BEST PLACE TO invest for the long term is the stock market. Since 1871 the US stock market has a compound annual growth rate of 9.07%. That is a trend that will most likely continue, give or take a bit.

AT 9% compounded interest, you double your money every eight years.

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A GOOD PLACE TO start investing in the stock market is to open an account online with one of the big brokerages. Search online and pick the one you like and has good reviews. I use Schwab, and I have been happy with them.

INVEST in funds that invest in a broad basket of stocks. Look at low-cost index funds like ones that track the S&P500. There are also funds called ETFs that perform similarly. Vanguard funds are good ones to take a look at.

EDUCATE YOURSELF AND START SMALL. Tony Robbin's book Money is a great place to start. Jim Cramer has excellent books and information every day on the market.

UNDERSTAND the four legs of the money table and your relationship to them. The key is to get started.

4

MANAGERIAL

Managerial Economics

Managerial Economics explores the theory of the firm. It is a subfield of microeconomics. Micro deals with economic actors and how they behave and divides economic actors into two groups: individuals and firms.

THE GOAL of Managerial Economics is how to optimize business operations to maximize profits. Maximizing profits entails optimizing production to match demand and thus maximize sales, minimizing waste in the form of unsold inventory, and optimizing costs by reducing them. Profits, also called Net Income or Earnings, are equal to sales minus expenses, so by maximizing sales and minimizing costs, you maximize profits.

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We can calculate at what price we will maximize revenues by modeling the demand curve and analyzing demand elasticity.

Elasticity of Demand

When selling things, we want to maximize Revenue. Revenue is a function of price and quantity: how many you sell, for how much each.

Elasticity of Demand measures how much we are willing to pay for something before deciding not to purchase or make a substitution. This knowledge is essential to sellers that want to maximize their sales revenue.

Elasticity of Demand measures the slope of the demand curve and helps locate the point where total Revenue is maximized. Total Revenue is price times quantity.

Elasticity of Demand: How much do you really want it?

The elastic quality of Demand is a terrific concept to be familiar with as a business person because it helps us calculate the best price for our product or service. By best price, I mean the one that maximizes revenues.

Pricing is a tricky subject, and the price elasticity of Demand helps us make sound pricing decisions by

measuring the effects of price changes on our overall revenues.

We can model Demand using crowdfunding campaigns and other methods.

Demand is modeled to understand how many people are willing to purchase a product or service at various price points. The elasticity of Demand is a metric that measures the sensitivity to change in quantity demanded relative to a change in price. It is a measure of the slope of the demand curve. The more horizontal the demand curve, the more a price change will affect the quantity demanded. The more vertical the demand curve, the less a price change will affect the quantity demanded.

If you are a smoker, cigarettes have a pretty steep (vertical) demand curve. If the price increased tomorrow, say by a new tax, you might complain, but you would still probably shell out the extra money to get your pack of smokes.

Gasoline has a similarly steep demand curve. If gas prices go up, we still have to fill 'er up to get on with our day in many cases. This is true, at least in the short run, until we can adjust our lifestyle that involves less driving.

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Products and services with easy substitutes usually have flatter (more horizontal) demand curves. If there is a price increase, many people will switch or stop buying.

The terms we use to describe the slope of the demand curve are elastic and inelastic. The Demand for a good is considered inelastic when the Price Elasticity of Demand (PED) is less than one. Inelastic means that price changes have a relatively small impact on the quantity of the good or service demanded. Inelastic Demand relates to steep (more vertical) demand curves—the Demand for a good is elastic when its PED is greater than one. Elastic Demand means that price changes have a larger impact on the quantity of a good or service demanded. Elastic Demand relates to flatter (more horizontal) demand curves.

Price Elasticity of Demand (PED) is the percentage change in quantity demanded in response to a one percent change in price.

Our goal in modeling demand and calculating PED is to find the price point that maximizes total revenues.

Revenues = quantity sold * price

The maximum revenue point occurs where PED equals one, or what is referred to as Unit Elastic.

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Understanding the Demand of products and services and how much customers are willing to purchase at different prices is the goal of calculating a demand curve and demand elasticity. Here is how to calculate specific values that measure how responsive quantity demanded is to a price change.

The formula used to calculate the price elasticity of Demand is:

$$PED = [(Q_1 - Q_0) / (Q_1+Q_0)] / [(P_1-P_0) / (P_1+P_0)]$$

Q_0 is the initial quantity demanded when the price is P_0. Q_1 is the new quantity demanded when the price changes to P_1.

Note there is an inverse relationship between price and quantity demanded. As the price goes up, quantity demanded goes down, and vice versa: when price goes down, quantity demanded goes up. Price and quantity demanded always move in opposite directions, which means the price elasticity of Demand PED is always a negative number. We are interested in the absolute value of PED, meaning the value regardless of its negative sign.

Let's look at an example: a pizza parlor. Currently, you sell pizzas for $7.50 a pie. At that price, customers buy 2,500 pizzas per week. You are interested in increasing sales, so you decide to drop the price by $1 to $6.50. When you do this, sales increase to 3,000 pizzas per week.

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Lets calculate the price elasticity of Demand with this information (see the accompanying spreadsheet to follow the calculations; this is also a nice template that you can use to solve elasticity problems):

1. Plug in the values for each symbol.

$7.50 and 2,500 are the initial price and quantity, plug $7.50 into P0 and 2,500 into Q0. And because $6.50 and 3,000 are the new price and quantity, plug $6.50 into P1 and 3,000 into Q1.

2. Calculate the expression on the top of the formula.

(Q1 — Q0) / (Q1+Q0).

(Q1 — Q0) equals 500, and (Q1 + Q0) equals 5,500. Dividing 500 by 5,500 equals .090909

3. Calculate the expression on the bottom of the equation.

(P1 — P0) equals –$1.00, and (P1 + P0) equals $14.00. Dividing –$1.00 by $14.00 equals –.07143.

4. Perform the final division.

Divide the top result by the bottom result to get the price elasticity of Demand of –1.27273.

In this case, the price elasticity of Demand for these pizzas is –1.27273

The price elasticity of Demand PED is not a monetary value; it is simply a number representing the change in quantity demanded relative to a change in price. What the number tells us, in this case, is that a 1 percent decrease in price causes a 1.27 percent increase in quantity demanded.

In other words, the percentage increase of quantity demanded is greater than the percentage decrease in price.

In this case, when you decrease the price of these pizzas, you will sell significantly more pizzas, and your Revenue will go up from $2,500 to $3,000. You make up for the price decrease by a greater increase in volume.

Whenever the absolute value of price elasticity of Demand PED is greater than one, price decreases will increase Revenue. If PED is less than one, then increasing the price further will result in less overall revenues. Revenue, which is price times quantity, will be maximized at the price where PED is equal to one.

Factors that affect elasticity

PED are a function of consumer behavior. PED changes are based on how customers respond to a price change. The predominant influencer on PED is how customers choose to either maintain or change their consumption decisions after a price change. There was an old cigarette ad that said, "I would rather fight than switch." This attitude is the crux of the matter. How many consumers maintain the former buying behavior and how many decide to wait and look for substitutes is critical.

Here are some factors that affect that choice and thus the elasticity of Demand for a good or service:

Ready availability of substitutes

The strength of the substitution effect is based on the amount and proximity of available substitutes. The easier the replacement, the higher the elasticity. Customers can easily switch even in the event of a minor price change. If there are no perceived similar products to replace it, then the substitution effect will be small, and the Demand will remain inelastic.

Fungible is a term used in economics to describe substitutes. A fungible item can replace another identical item. They are mutually interchangeable.

How general or specific is the definition of the good

The more general the category of a good or service is, the lower the elasticity. A broad category like food has a very low elasticity of Demand (meaning it is inelastic) because no substitutes exist, and we need some each day. Commodity products have a relatively high elasticity of Demand because many replacements are available, and they are not differentiated, so preferences don't exist. Brand loyalty increases inelastic Demand because people want to stick with the brand they prefer, even with a price increase.

Percentage of income

Customers will scrutinize purchasing decisions more as the choice represents a higher percentage of their income or budget—this scrutiny results in higher elasticity. People will instead switch rather than fight. When the good represents only a tiny fraction of the budget, the income effect will be less significant, and Demand will be more inelastic.

Need

The more necessary a good is the less choice in purchasing and the lower the elasticity. People will buy

with less regard to price. Life-saving medicine is an example for those who need it.

Duration

In economics, we discriminate between the short term and the long term. These terms don't refer to a specific duration of time but how long before producers or consumers have flexibility over their decisions.

The longer a price change remains in effect, the higher the elasticity as people adjust to the new normal. Consumers will search for and discover lower-cost substitutes. For example, when gas prices spike, consumers will complain but still fill up their empty tanks in the short run. But as prices remain high, consumers will exercise their choice and find ways to reduce their Demand for gas by switching to public transportation, purchasing electric cars, riding a bike, or moving closer to work to reduce the commute.

Brand loyalty

Brand loyalty can offset how sensitive a customer is to price changes, resulting in more inelastic Demand. Customers would rather fight than switch (or at least pay a bit more).

Who pays?

Demand is likely to be more inelastic in markets where a third party pays and the purchaser does not directly pay for the goods they consume. Some examples are expense accounts, tuition reimbursement, or health insurance.

What is Managerial Accounting?

Managers Need Actionable Information.

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One of the main concerns of Microeconomics is how firms make decisions. Managerial accounting provides the information required to make informed business decisions.

There are two major ways to increase net income or profit:

- Increase revenues
- Reduce costs

Rarely can you increase revenues without also increasing costs to support the increased revenues. For example, if costs grow faster than revenues increase due to inefficiencies, the perceived increase in revenues is counterproductive because they are offset by even higher increase in expenses. Or in the second case, if a reduction of the expenses like marketing or advertising has an unintended negative impact on revenues, then that cost reduction strategy is also counterproductive. These scenarios illustrate the fundamental importance of really having a good handle on all the aspects of costs and the dynamics of how they vary.

Understanding cost structure and determining costs of producing goods or delivering services can get complicated. Complexity increases as the number of variables and components of cost increase. Complexity can vary depending on the scale of an operation, the degree of automation and labor, the number of inputs, and the complexity of overhead calculations and estimates. Cost accounting is a sub-discipline of accounting that deals with

measuring costs accurately. Cost Accounting is a function internal to the enterprise and not shared with the outside world like Financial Accounting.

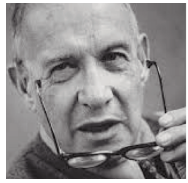
Cost accounting is a process of collecting, analyzing, summarizing, and evaluating the various elements that make up the total costs of production and delivery. Cost accounting techniques are used to understand the cost structure and how different cost components vary with the amounts produced. As a result, operations and production processes can be optimized with a greater understanding of cost structure.

Cost accounting is used to analyze different alternatives to make optimal decisions about the most cost-efficient use of resources and production and distribution processes. Thus, cost accounting has close ties to operation management and industrial process design. For example, you may reduce costs by substituting less expensive materials or streamlining a workflow in a manufacturing floor design.

From an Income Statement point of view, the goal of managing and controlling costs allows the maximum amount of revenue to fall to the bottom line as net income.

Cost accounting provides detailed cost information so managers can control current operations and plan for the future. What gets measured gets managed. Its primary function is to facilitate decision-making for managers. This

information-based decision-making capability is why cost accounting is sometimes called managerial accounting.



The goal is to produce reports or computer dashboards for management to determine the most appropriate course of action based on the cost efficiency, supply chains, and production capability. Thus, it helps managers make more intelligent, better-informed decisions.

There is a variety of approaches to cost accounting. Different companies use different systems, and how it's done can vary across different parts of the same organization.

Unlike the financial accounting systems that record the debits and credits of transactions and assist in preparing financial statements, cost accounting systems and reports are not subject to rules and standards such as Generally Accepted Accounting Principles.

Financial Statements are shared with parties outside a company like bankers, investors, governmental authorities, and suppliers. Because they are shared with outsiders for

them to make decisions about the health and profitability of a company, they need to be uniform, consistent, and adhere to specific standards.

Managerial and cost accounting reports are proprietary. They are not shared outside the company. As a result, there is more latitude and flexibility in preparing what information is important and how best to present it to be actionable.

Management and Cost Accounting

The information managers use to make informed decisions for their firms.

How Costs are Categorized

There are two basic types of accounting: managerial (or cost) accounting and financial accounting.

In financial accounting, we show costs as expenses on the Income Statement. Direct costs are sometimes broken out as an expense line right below revenues. This expense line is called Cost of Goods Sold or COGS.

In cost accounting, our focus is on what it costs to produce something. Our goal is to manage costs and optimize them: the less something costs to make, the more profit.

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We bundle expenses to parse cost information so we can gain managerial insights. Our goal is to analyze product or manufacturing costs better.

We separate our costs into two general categories: direct and indirect costs. There are three basic elements of costs: direct materials, direct Labor, and overhead. Materials and Labor are the major components of direct costs, and Overhead is an indirect cost. We group direct and indirect together as manufacturing costs.

Creating value is the process of transforming inputs into a product or service. The cost of raw materials and Labor are what make up direct costs.

Direct materials include purchased parts. They are directly associated with making the product. Some materials support the process but don't end up in the finished good. For example, things like oil for machines or masking tape for painting are support materials. These are indirect materials. We account for indirect materials as part of manufacturing Overhead.

Direct Labor is the cost of the workers who make the product. Indirect Labor includes workers who do not use the direct materials to build the product. For example, supervisors, managers, and maintenance workers are indirect Labor. Indirect Labor is part of manufacturing Overhead.

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Manufacturing overhead costs include indirect materials, indirect Labor, and all other manufacturing costs. Depreciation on factory equipment is part of Overhead. Costs related to the factory-like rent, insurance, taxes, and utilities, are also part of manufacturing Overhead.

Cost Accounting

Direct, Indirect, Fixed, and Variable Costs

This terminology is interrelated and can be confusing. You may have to read through this section a couple of times to refresh and clarify these concepts. It may be a bit confusing at first but will become apparent with use.

All types of businesses track their activities with cost accounting techniques. Managers need to understand the costs of running the business. If you don't know your costs accurately, you don't know if you are making money. It would be best if you sold things for more than they cost to make to have a sustainable business.

Cost accounting developed with the industrial revolution. As the scale of enterprises increased, so did their complexity. Operating complex enterprises led to the development of systems for recording and tracking costs. Understanding costs help managers make better decisions. We now have 300 years of cost accounting experience to draw upon.

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AT THE BEGINNING of the industrial age, costs were primarily variable costs. Labor, raw materials, and power varied directly with the level of production. Nevertheless, the total variable costs were a rough guide for decision-making.

VARIABLE COSTS GO UP and down according to the volume of work. Other costs tend to remain the same whether a factory is busy or idle. Manufacturing has become more mechanized and automated. As a result, fixed costs have become more important in management.

FIXED COSTS INCLUDE FACTORIES, equipment, maintenance, and overhead costs like quality control, storage, plant supervision, and engineering. Fixed costs were not part of businesses in the early days of industrialization. However, with the growth of industrial-scale enterprises like railroads, fixed costs became important. For example, you can't move freight on a railroad without first putting down tracks and buying locomotives. These are fixed costs.

NOT UNDERSTANDING how to allocate fixed costs to products initially lead to poor decision-making. However, today we know that understanding fixed costs is crucial to making informed decisions about products and pricing.

Direct costs such as Labor and raw materials are variable costs. Total variable costs increase as more units are manufactured. For example, every pizza made in a pizzeria uses a certain amount of dough. That dough, the raw material, is a variable cost.

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Direct costs can be variable or fixed. For example, a supervisor is a direct cost and a fixed cost. Their salary is the same each week no matter how many products are manufactured. By contrast, raw materials are a direct cost and a variable cost. The amount of supplies used increases as the volume of activity increases. Got it?

Fuel used to operate a machine is an indirect cost. The fuel cost is variable because more is used when the machine runs longer and more products are made. Depreciation is also an indirect cost. However, it is a fixed cost since the machine's depreciation expense is the same each year and not tied to its amount of use.

Costs are categorized as direct or indirect. The cost is fixed if the total amount of the cost does not change as production volume changes. If the cost changes as a function of activity or volume, it is a variable cost.

Classifying costs in these ways help managers understand the dynamics of their operations. It allows them to use data about the past, in the present, to make better decisions about the future. A deep understanding of costs and their dynamics is a competitive advantage.

Breakeven Analysis

The structure and dynamics of costs and revenues vary from one company to the next. They vary based on the volume produced and sold.

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Managerial economics, corporate finance, and cost accounting all are interested in measuring and analyzing the relationships between sales and expenses.

The goal of managers is to maximize profit. Managerial economics is a set of tools to minimize costs and maximize revenues. It applies the techniques of microeconomics to total, average, and marginal costs and determines levels of revenues and expenses that optimize profit.

Cost accounting and economics overlap in the field of managerial economics. We will now look at several handy cost and revenue analysis techniques.

Break-Even Analysis

The breakeven point is a concept used in economics and business. It is derived from cost accounting data. It is the number where total costs, fixed and variable, and total revenue are equal. This point equals the number of units that need to be sold so there is no net loss or gain - to break even.

At breakeven, all the costs are covered. Therefore, the profit at the breakeven point is 0. Breakeven is the point after which additional sales will contribute to a profit.

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The breakeven point is the sales amount required to cover total costs. Total costs are both fixed and variable costs. One can measure breakeven in either units or revenue.

Break-even is only possible if the price charged per unit is higher than the variable cost per unit. The difference between price and variable cost contributes toward covering fixed costs. We call this amount the Contribution Margin.

The goal of business is to make a profit. Break-even analysis determines the sales that must be exceeded to make a profit. It is a measure of the sustainability of a business. It also measures the impact of marketing campaigns.

The breakeven point is clear and direct analytical tools for management. It provides insight into the relationship between revenue, costs, and net income.

The retail industry tracks break even on an annual basis. However, break-even in retail doesn't usually occur until late in November. That is why we call the Friday after Thanksgiving Black Friday. That is when most retail operations go from operating in the "red" (at a loss) to operating in the "black" (making a profit). Red and black refer to the ink colors used in accounting ledgers to denote a loss or a profit.

Target Income Sales

The breakeven point relates to the concept of Target Income Sales.

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Target Income Sales is the required revenue to achieve a budgeted profit goal. For example, a CEO may focus on a target net income (profit) number. This goal needs translation into a sales revenue target for the sales team. Target Income Sales is a way of backing out the sales required to achieve a profit goal.

The calculation is similar to breakeven analysis. Here is the formula:

(Fixed costs + Target income) ÷ Contribution margin percentage

Let's say a company's president wants to achieve profits of $1,000,000. The firm's fixed costs are $2,400,000, and the average contribution margin percentage (revenue minus variable costs) is 40%.

In this case, Target Income Sales is $8,500,00:

($2,400,000 Fixed costs plus $1,000,000 Target income)/40% Contribution margin percentage = $8,500,000

The Target Income represents the desired income point. Target Income Sales are the sales targets developed in the budget.

Cost-Volume-Profit Analysis

Figuring out how you get to profitability

Cost–volume–profit (CVP) is an analytic tool based on cost accounting measures. CVP analysis is a framework for

figuring out how you get to profitability. Achieving consistent profitability is how you create a sustainable business.

CVP IS VERY useful for making informed decisions and analysis.

CVP ANALYSIS EXPANDS on break-even analysis. A critical transition point in CVP analysis is the break-even point where total revenues equal total costs. At break-even, an enterprise has no profit or loss, and costs are covered.

CVP IS BASED on the same assumptions as break-even analysis:

- Costs and revenues behave linearly.
- Costs are either fixed or variable.
- The amount of activity is the only factor affecting costs.
- All the units produced are sold. There is no inventory build-up.

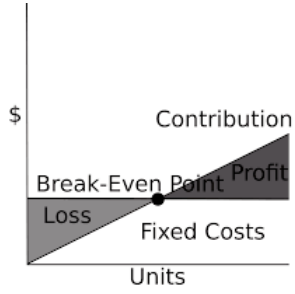
The product mix remains constant.

THE CVP ELEMENTS ARE:

- Activity Level
- Unit prices
- Unit Variable Cost
- Total fixed costs

Economics is considered a science. Science seeks to gain insights by using assumptions to reduce complexity. Managerial economics reduces the complexity of situations to gain a better understanding and deeper insight. This insight is helpful for informed decision-making and future planning.

CVP assumptions create a simplified linear model of how costs and profits interact. This interaction plots levels of volume sold at a consistent unit price. Volume increases linearly affect total revenues and costs if we assume constant costs and prices.



CVP identifies the contribution of revenue to cover fixed costs. This contribution margin is what is left after variable costs are covered. The nature of the contribution margin is the central insight of CVP. If the unit price is greater than the unit variable cost, each successive unit sold will chip

away at fixed costs. The break-even point is a special case of CVP, where revenue covers total fixed and variable costs.

The following are the formulas for deriving CVP:

Total Costs = Total Fixed Costs + (unit variable costs X number of units)

Total Revenues = Sales Price X number of units

Now we need a little algebra. Don't be intimidated. We are just putting the elements of the above formulas into abbreviations:

TC = FC + V x U

TR = P x U

Where:

· TC = Total costs
· FC = Total fixed costs
· V = Unit variable cost
· U = Number of units
· TR = Total revenue or Sales
· P = Sales price per unit

We calculate profit as TR-TC. It is a profit if this is a positive number and a loss if it is negative.

Next, we unbundle the components of Costs and Sales to provide further insight into operations. We will do this by deriving a formula for the contribution margin.

This formula will take a bit more algebraic manipulation. Hang with me, and don't let algebra intimidate you. It will

follow the narrative description above about what the Contribution Margin means.

First, we separate total costs into the fixed and variable costs components:

TC = FC + V x U

We can now unbundle the components of sales as contribution plus variable costs. Contribution is what's left after deducting variable costs from sales. Before achieving break-even, the contribution goes towards offsetting fixed costs. After break-even, the contribution is the amount of a unit sale going towards profit.

TR = C x U + V x U

We can think of profit/loss (PL) as the contribution margin from the units sold minus the total fixed costs:

PL = C x U — TFC

CVP analysis is a framework for figuring out how you get to profitability. It describes how many units at what price you need to sell to cover all your costs. In practice, the assumptions can limit its accuracy. Nevertheless, it is a way to understand the dynamics of how your cost structure affects your goal of turning a profit. And turning a profit is how you remain a sustainable business.

5

BEHAVIORAL ECONOMICS: WHY WE DO WHAT WE DO

Oh, Behave! Behavior: its Antecedents and Consequences

Behavioral Economics is a method of economic analysis that applies psychological insights into human behavior to explain economic decision-making.

We are not Spock.

Behavioral Economics is a heroic attempt to refine the assumptions of classical economics when it comes to actual human behavior and decision making. It probably doesn't come as a surprise to you that we humans are not always hyper-rational in calculating the optimal solution to what is best for us. Sometimes we misbehave. Sometimes we make poor decisions. I know my closets and garage are full of less-

than-optimal purchase decisions. Economics should take that into account.

It all started with The Wealth of Nations by Adam Smith, published in 1776. Since then, Economics has made great strides in becoming a reputable applied science. It did so by abstracting human behavior relative to how we make decisions.

Classical economists kept the math easy by simply positing that we all optimize our decisions to give us the maximum satisfaction and benefit all the time. Well, guess what, it ain't necessarily so.

Classical economics is good at describing events after the fact but not so good at predicting what will happen. Remember 2008? Or 1929?

As Canadian (like Mike Myers) Laurence Peter, of the Peter Principle fame, so wittily said:

> "An economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen today."

Economic events and catastrophes are essentially the aggregations of many individual behaviors colliding,

canceling each other out, and adding together into rogue waves. Perhaps part of the poor predictive power is oversimplification when it comes to assumptions about human behavior.

PHYSICS IS a pure science that sometimes has a similar relationship to everyday events. There's the story of the dairy farmer who enlisted a physicist to analyze his cows and milk production. The physicist reviewed the farm and the operation, went away for six months, and returned with his analysis. He began:

> "Assume a spherical cow of uniform density..."

SIMPLIFICATION, reductionism, and abstraction are the methods of generating theory. Every theoretical system is built on assumptions that are taken as self-evident, like the five axioms of geometry. For example, economics made great strides by developing analytical tools based on the simplifying assumption that we are entirely rational actors. In theory.

IN PRACTICE, not so much. For over two centuries, the ideology of free markets has dominated the world, bending politics and economics to its core assumption that market forces produce the best solution to any problem of allocation. Any problem. All problems. These days, we explore more nuanced versions of capitalism and economics based on a more nuanced vision of behavior.

> *In department stores, so much kitchen equipment is bought indiscriminately by people who just come in for men's underwear.*
> Julia Child

MBA ASAP

Behavioral Economics is a method of economic analysis that applies psychological insights into human behavior to help explain economic decision-making. Traditional economics assumes that people are entirely rational actors and are constantly optimizing their decision-making.

If that were a true and accurate description of our behavior, supermarkets wouldn't have impulse purchase sections by the checkout line. There would be no advertising industry or influence selling tactics.

Behavioral Economics attempts to paint a more subtle and shaded portrait of our decision-making behavior, heuristics, and cognitive biases. To paraphrase Leonard Nimoy: we are not Spock.

One big breakthrough in our decision-making abilities came from looking deeply at the shortcuts we use to size up a situation and act quickly. These shortcuts are called heuristics. Heuristics, it turns out, are efficient problem-solving techniques, especially when one must make a quick decision, like the fight or flight type we used to have to make on the savannah a couple hundred thousand years ago. They are not guaranteed to be optimal or perfect, just sufficient for the immediate circumstances. Nowadays, they can lead us into temptation and be manipulated by savvy marketers and hucksters.

Behavioral Economics can teach us about who we really are. Like Morpheus says in The Matrix: "You take the blue pill, the story ends. You wake up in your bed and believe whatever you want to believe. You take the red pill, you stay in Wonderland, and I show you how deep the rabbit hole goes."

Take the red pill.

6

CAPITALISM

Capitalism is a modern economic system where goods and services are sold for profit. The exchange between buyer and seller is called the market. In a capitalist economy, the parties in a transaction determine the price at which assets, goods, and services are exchanged.

Capitalism is characterized by capital accumulation, competitive markets, and wage labor.

Capitalism has existed under various forms of government and in different times, places, and cultures. Following the demise of feudalism, capitalism became, and has remained, the dominant economic system in the Western world.

Characteristics of Market Systems:

- Private property
- Freedom of enterprise and choice
- Self-Interest
- Competition
- Markets and prices

The Next Phase of Capitalism

Kinder and gentler disruptive storm

THE CORPORATE STRUCTURE has been one of the great developments of the industrial age and a significant driver of economic development for the past almost two centuries.

LIMITED LIABILITY, governance by plurality, and the separation of ownership and management were very productive innovations.

CORPORATE STRUCTURE, matched with capital markets, formed a perfect storm of economic growth and innovation.

THESE TWO POWERFUL vectors have been a boon to humankind. These two forces have coordinated with the market mechanism allowing supply and demand to equilibrate and determine price and quantity.

THIS MACROECONOMIC ENVIRONMENT has lifted nine-tenths of humanity out of abject poverty and a life that was, as

Thomas Hobbes put it, "solitary, poor, nasty, brutish, and short."

Startups, entrepreneurship, and venture capital have led to the second wave of accelerated innovation and economic growth. They are perfectly matched vehicles and systems for exploiting Moore's and Metcalfe's laws.

Unicorns, companies with valuations of $1B+, have been funded and nurtured without the need for capital formation in the traditional capital markets.

The corporate structure has fallen short in its disconnect to the broader world and constituencies and stakeholders outside its immediate purview of shareholders, management, and employees. The corporate mandate to maximize profits disregards the impact on other stakeholders.

Including all stakeholders is the next frontier in corporate calibration.

The scale of the pernicious effects of capitalist impact is an unintended consequence of the unparalleled success of corporate governance and structure, aligned with the efficient capital formation in the capital markets.

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Trickle-down and multiplier effects of wealth generation are inadequate and disorganized for spreading benefits more widely and equitably.

B Corporations are attempting to address and redress the situation. Widely spread entrepreneurship may be the key. Indeed, government regulation and organized labor are required to throttle back excess, redistribute wealth in the coming automation unemployment wave, and maintain guardrails for public safety.

We can't gloss over the problems we have and the need for social safety nets, universal healthcare, and some form of universal income. Capitalism melded with broad safety nets seems to be the best way forward.

As Winston Churchill said,

> "Democracy is the worst form of government, except for all the others."

The same holds for capitalism: it's the worst form of an economy except for all the others.

We will probably progress towards hybrid forms that take the best attributes and manage the excesses in both cases.

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Business techniques that have developed over centuries and startup ecosystems that have evolved rapidly over the past decades can now be employed and deployed with little concern for barriers to entry, including investment capital, communications, product development, distribution, growth hacking, and digital downloads.

Now business skills can be the engine of agency for everyone. The best way to find fulfilling work is to create it.

Business Structures

A sole proprietorship is the simplest business form. It is owned by a single individual and may use a trade name or business name. There is no legal distinction or separation between the owner and the business. The owner receives all profits and is responsible for all losses, debts, and liabilities. The proprietor owns all the assets, and all the obligations of the business are theirs.

A sole proprietor A partnership is an arrangement in which parties agree to advance their mutual interests.

A corporation is a legal entity that is created through a registration process established through legislation. Incorporated entities have legal rights distinct from their employees and shareholders and may conduct business as a for-profit or not-for-profit company.

How Corporate Structure Made Your Life Better

The Game-Changing Innovative Impact of Corporate Structure

If you are a fledgling or aspiring entrepreneur, you are probably thinking about the legal structure of organizations. You ponder questions like: should your company be an LLC or a C corporation?

The quick answer is to start as an LLC in your state. It is inexpensive, quick to establish, and provides valuable liability protection.

If you plan to raise money and take on investors like Angels and V.C.s, you will re-form as a corporation.

Then you will want to know: what is a board meeting like, and what goes on in the C Suite?

The following is a quick primer on what a corporation is and the logic behind why it is the organizational structure of choice for companies.

Why do businesses form as Corporations?

The corporation form of business structure has proven itself to be one of the most revolutionary and productive forces of

capitalism ever created. Of course, we rarely think of an organizational and legal structure as a game-changing innovation, but it is difficult to overstate its impact in this case.

Corporations are an ingenious innovation in how humans organize their efforts and protect their owners. This legal concept has been at the center of economic development for more than a century. The corporate form of organization and governance is an engine of prosperity. In the grand scheme of things, that isn't such a long time. It is a surprisingly recent invention.

The corporate structure allows an enterprise to exist in perpetuity. It provides governance and capital formation mechanisms that enable the relatively simple, stable, and predictable transfer of authority, power, and ownership.

It is the most flexible and productive enterprise vehicle ever created. Consequently, its importance and influence impact every aspect of modern life.

I am not exaggerating the importance of the concept of the corporation and want to take a moment to understand how it evolved.

History of the Corporation

Adolph Berle was a famous lawyer and economist who detailed the evolution of the modern corporation in a landmark book, The Modern Corporation, and Private Property, published in 1932.

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THE MAIN CONCERN of this book was to describe the division of ownership and control: those who own corporations, the shareholders, are separate from the management of the corporation, which is handled by the Board of Directors and the executive management headed by the Chief Executive Officer (CEO) or President. It is governance by plurality and means that more than one person sets and votes on the strategic direction and plan to achieve it. In addition, a formal set of instructions guides the running of a corporation: the Articles of Incorporation and the Bylaws.

SEPARATION OF OWNERSHIP AND CONTROL, liability protection, and being actively traded on the stock market are the innovations that allow people to invest relatively modest amounts in giant enterprises. Investors in stock are the owners of the company. Their reward is their share of the profits and the growth of the value of the enterprise. These incentives and protections are what have allowed for capital formation and investment in massive-scale enterprises.

THE INDUSTRIAL REVOLUTION made scale an advantage. These innovations in capital formation allowed enormous enterprises to develop and take advantage of that scale. Unfortunately, not many people can afford to invest the money to start a big operation like an automobile, airplane, or computer company. That's why capital formation through stock markets and corporations is an ideal match and presents the first form of crowdsourcing. Stock divides ownership across many investors. Capital can be raised from

many people interested in a corporation's prospects and profit potential and used to invest in plant and equipment, supplies, and employees.

THE MODERN CORPORATION is an ideal match for innovations brought about by the stock market. They create a powerful symbiosis: money can be aggregated in the stock market and allocated and traded to the most promising ventures in the form of corporations. Investors can make their investment decisions based on the performance of the corporations.

Business performance is reported quarterly in the form of profits and other accounting measures. Investor ownership interest is separate from the operational issues of management. As a result, they reap the benefits of ownership as the company they invested in generates profits.

Corporate Profits, Shareholders, and Stakeholders

Corporate profits flow into two categories. A portion stays within the enterprise to support future growth, and the balance goes to the shareholders as dividends. There can be tensions related to how the profits are divvied up.

RECENTLY, shareholders have demanded companies dividend out more earnings and put the money in the shareholder's hands (and pockets). Since the 1980s in the U.S., maximizing shareholder value and using profits to buy back shares and increase dividends has been the general mantra of U.S. capitalism.

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This practice has been widespread but is now coming under increased scrutiny and criticism as short-term thinking. Too high a dividend payout ratio erodes the long-term viability of the enterprise.

It is unsustainable. A corporation needs to deploy profits to upgrade and invest in new equipment and training. It requires the resources to increase its prospects.

Shareholder maximization of this sort focuses on enriching current shareholders, who are the owners but have the least long-term interest in the company since they can sell their shares quickly in the stock market.

Put starkly, they can advocate for draining the lifeblood of a corporation and exit by selling their shares when the prospects for the future start to look grim or compromised. This situation leaves other stakeholders like the community, employees, and suppliers in the lurch as they can't switch so quickly and have more vested in the enterprise's long-term viability.

There are advocates for no longer just running a corporation to maximize profits solely for the benefit of shareholders. Instead, it has become a prominent practice to broaden stakeholders' awareness and widen the operation's goals to include other stakeholders.

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ADDRESSING these concerns creates a more enlightened form of capitalism. In other parts of the world from the U.S., such as Europe and Asia, governments, employees, and other long-term stakeholders have seats on boards and help guide the direction of the enterprise.

THE SEPARATION of ownership and control is convenient since it gives investors the best bang for their bucks. Executives and employees of the company are primarily working for them and hopefully increase the value of their investment.

YET THIS CREATES a conflict of interest because executives and workers are motivated differently than the shareholders. Ostensibly, all the workers are trying to increase the company's value successfully and increase shareholder value. Increasing shareholder value is the stated task of the executives who are planning and running the company.

OFTEN PEOPLE ARE MORE interested in their private gain, security, and well-being than in the firm's future. Unfortunately, these survival concerns can put their goals and motivations in conflict with those of the owners (shareholders).

THIS CONFLICT of interest is the main reason communism has not been able to operate successful and sustainable businesses: People in power tend to squander all resources for their private gain.

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The management responsible for the day-to-day operation of the corporation can manage the company's resources to their advantage. They can do this because there is no effective oversight or scrutiny by the shareholders. Therefore, how to align these different interest groups and properly motivate the workers to achieve the owners' goals is vital in management, Strategy, and Corporate Governance.

Corporate Oversight

Ways in which these tensions between owners and executives of corporations are managed and mediated are:

- Voting rights of shareholders: if shareholders are not satisfied with the company's running, they can vote out directors and vote in ones that align with their operating ideas. The annual voting documents are called Proxy Statements. The Proxy Statement allows investors to vote remotely. Votes are tabulated at the annual meeting. In most cases, a majority of shares are necessary to ratify a vote.
- Transparency in reporting: for publicly traded companies, regulations require corporate executives, directors, and their auditors to provide clear and understandable reporting in documents like 10Ks, as well as accuracy in accounting. There are also mechanisms and materials designed to hold executives accountable for their actions and address reducing fraud. The Securities and Exchange Commission (SEC) oversees this corporate

reporting. In addition, the SEC oversees regulations designed to maintain public trust in the fundamental fairness of the financial markets.

- Moral Hazard is a term used to describes a lack of accountability when someone is not held responsible for their actions and the risks that arise from those actions. Reducing and eliminating moral hazard is a fundamental principle of financial and securities regulation. Although removing it is not a practical possibility, the goal is to minimize moral hazard to the level of an unusual occurrence. This effort helps significantly promote trust in the markets and, in turn, encourages investment money to continue to flow into the stock market and supports the funding of promising enterprises.

Board of Directors

The Board of Directors charts the company's course by developing and approving the strategy and the budget. The Board usually consists of an odd number of participants, so voting is never tied, and usually consists of outside directors with expertise in various aspects of the business like law, marketing, management, finance, and accounting; and directors that are also top executives like the CEO and CFO.

THIS DIVERSITY CONCEPT of multiple people with different views, experiences, and expertise is called governance by plurality.

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The Chairperson leads the Board of Directors and sets the agenda, and runs the meetings. Board meetings discuss issues at hand and vote on them, thus setting the company's course.

Board minutes document and record the content of the meetings. The minutes are prepared and archived by the Corporate Secretary. The minutes are in the board book along with the Articles of Incorporation and the Bylaws.

Executives

The Executives execute the strategy and budget approved by the Directors. The top executive is the CEO Chief Executive Officer; sometimes, this role is called the President. Other "C" level executives include:

- CFO Chief Financial Officer, who oversees the accounting, financing, budgeting, and reporting.
- COO Chief Operating Officer, who oversees the operations, supply chains, factories, equipment, and personnel.

As the digital age has progressed and evolved, two more C level roles have become crucial:

- CTO Chief Technology Officer
- CIO Chief Information Officer

There has been a proliferation of "C" level executive titles in recent years as part of the evolving organizational design and structure of complex enterprises.

Corporate Governance

The charter documents of the corporation, the Articles of Incorporation, and the Bylaws document corporate governance practices. These documents detail how decisions are made that affect the enterprise, such as:

- Election and Term of Directors (usually three years and staggered),
- Voting rights of Shareholders (the owners),
- The scope of power of the CEO,
- How to inform shareholders of news that materially affects the corporation, and
- Scheduling and notification of the Annual Meeting.

At the Annual Meeting, executives and the Board inform the shareholders of the year's progress and performance. The Proxy Statement documents the vote items and the vote tally.

Delaware as Corporate Headquarters

In U.S. corporate law, C corporations are the most flexible and common form of an organizational structure. Delaware is the state where most U. S. companies incorporate. As a result, Delaware has become the de facto standard location for corporate residency in the U.S. Delaware has developed

a legal system especially honed to deal with corporate law and disputes.

From a capital formation or capital raise standpoint, it is good to incorporate in Delaware because venture capitalists and investors are familiar with the laws and structure. In addition, this familiarity can eliminate a stumbling block in due diligence proceedings related to raising capital and investing.

Nevada has mirrored Delaware's laws and offers more reasonable pricing to incorporate to lure corporate business and headquarters.

The Role of Corporate Structure

The benefits of the corporate structure began to become apparent as the Industrial Revolution evolved, expanded, and created the need and the opportunity for large enterprises to undertake large-scale business activities.

Corporations provided the organizational structure to grow and manage large-scale operations in a perpetual manner that transcended a single dominant, charismatic, entrepreneurial personality like a Carnegie, Rockefeller, or Edison.

Corporations also evolved into the perfect vehicle and match for stock and bond markets for capital formation,

raising, and investment. Thus, they developed simultaneously to meet the needs of each other.

THE CORPORATE STRUCTURE allowed capitalism and the capital markets to infinitely scale. Capital markets provide the vehicle to aggregate money and channel it into promising projects represented by corporations. This symbiosis drove the economic development of capitalist countries, especially in the United States.

THE CONCEPT of Limited Liability and the corporate veil were major contributing catalysts that helped it all fall into place. Like the stock market reporting requirements, regulations to capital markets allowed investors to review the results and allocate and re-allocate funds based on corporate performance.

THE HEROIC ENTREPRENEURS of early capitalism eventually were replaced by a new group of bureaucratic, professional managers as companies grew in scale and matured over time. Thus, top universities created the MBA curriculum in the early twentieth century to train competent managers for this new and developing professional field.

Evolving Role

The business world has changed dramatically in the past thirty years with the astonishingly rapid development of technologies, including computers, communications networks, and mobile devices. As a result, companies have

been able to develop without the need for significant start-up capital.

In today's economy, ideas can be developed, tested, and refined on tiny budgets with no working capital. Barriers to starting and scaling an enterprise no longer exist.

Product and services can be developed on a laptop, launched via an App or website, and downloaded as many times as there is a customer's appetite without concerns for manufacturing or inventory.

No longer is significant capital an initial requirement to roll out a world-changing idea. Marketers can run marketing and awareness campaigns online via targeted pay-per-click PPC advertisements. Projects, products, and services can go viral, creating vast awareness on social media.

The interest generated can be converted to sales through credit card or PayPal account charging. This type of model requires little infrastructure other than what is publicly and freely available, and supply can scale rapidly to meet any level of demand.

A consequence of this structural shift is a resurgence of high-profile entrepreneurs leading new enterprises with vision and charisma.

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Launching companies by converting ideas into products and services rely more on heroic leadership than operational efficiency. As a result, there is less initial reliance on the stewardship of professional managers, sometimes referred to as "adult supervision."

However, at some point in the life of every growing company, the skills of managers are needed. Many cutting-edge entrepreneurs are adept at continuing to lead their enterprises past the initial ideation stage and have proven to be excellent managers. Others have thought more like owners than employees and stepped aside at the appropriate transition time to let capable others work to increase the value of their equity stakes.

Through this recent transformation of the role of management, corporations continue to be the most viable form of legal and organizational structure. The significant benefits of corporations are a limited liability to protect founders and investors against failure and risk aversion and a flexible stock structure that provides equity and stock options to investors, key employees, and founders.

The early-stage barriers concerning capital for starting a company are gone. But after attaining product/market fit and a sustainable business model, money is still obviously strategically crucial to scale up production and support marketing and sales. Thus, the corporate structure is the vehicle for seeking and attaining venture capital investment and other funding sources.

Summary

The corporation form is one of the most revolutionary and productive forces that capitalism ever created. It isn't easy to overstate its impact. But, as we have seen, it needs some tweaking to address important issues.

Some of the essential benefits are:

- Liability protection
- Separation of management and ownership
- Ability to raise capital from multiple investors
- Operate in perpetuity
- Governance by plurality

In the coming decade, the corporate structure will evolve how humans organize their efforts, protect owners, and spread the benefits to wider stakeholders.

7

THE STOCK MARKET

How to Build Wealth by Investing

The stock market is a great place to invest and build wealth long term. Recently several brokerage services have gone to charging zero trading fees. This savings is a boon for small investors.

A GOOD STRATEGY for building wealth is to buy and hold stocks that you like. If you use a product or service, check out if the company is publicly traded and think about its prospects in the future.

Selecting companies to invest in.

It is not about timing the market but time in the market that determines the best chance of making gains and accumulating wealth.

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THERE ARE no guarantees of making money. The stock market can be volatile. But over the long term, it has historically performed better than any other class of investment.

EXAMINING a company's financial health is called fundamental analysis.

YOU CAN MAKE informed decisions about what companies to invest in by analyzing their financial statements with financial ratios.

ALL PUBLIC COMPANIES file audited financial statements with the Securities and Exchange Commission each year in the form of a document called a 10K. In addition, they are required to update these financials quarterly with a 10Q.

YOU CAN FIND these documents on the SEC website www.sec.gov by searching their name in the EDGAR section of the website.

HERE IS a primer on financial ratios to analyze and compare companies and make value-based investing decisions.

> "A wealthy person is simply someone who has learned how to make money when they're not working."
>
> - Robert Kiyosaki

Financial Ratios

Financial ratios are powerful tools used to assess company upside, downside, and risk.

THERE ARE four main categories of financial ratios: liquidity ratios, profitability ratios, activity ratios, and leverage ratios. These are typically analyzed over time and across competitors in an industry.

USING RATIOS "NORMALIZES" the numbers so you can compare companies in apples-to-apples terms.

Liquidity and Solvency

Solvency and liquidity are both refer to a company's financial health and viability. Solvency refers to an enterprise's capacity to meet its long-term financial commitments. Liquidity refers to an enterprise's ability to pay short-term obligations. Liquidity is also a measure of how quickly one can convert assets to cash by being sold.

A SOLVENT COMPANY owns more than it owes. It has a positive net worth and is carrying a manageable debt load. On the other hand, a company with adequate liquidity may have enough cash available to pay its bills but may still be heading for financial disaster down the road. In this case, a company meets liquidity standards but is not solvent.

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Healthy companies are both solvent and possess adequate liquidity.

Liquidity ratios determine whether a company has enough current asset capacity to pay its bills and meet its obligations in the foreseeable future (current liabilities).

Solvency ratios measure how quickly a company can turn its assets into cash if it experiences financial difficulties or bankruptcy.

Liquidity and Solvency ratios measure different aspects of whether a company can pay its bills and remain in business.

The current ratio and the quick ratio are two common liquidity ratios. The current ratio is current assets/current liabilities and measures how much liquidity (cash) is available to address current liabilities (bills and other obligations). The quick ratio is (current assets — inventories) / current liabilities.

The quick ratio measures a company's ability to meet its short-term obligations based on its most liquid assets and excludes inventories from its current assets. It is also known as the "acid-test ratio."

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THE SOLVENCY RATIO examines the ability of a business to meet its long-term obligations. Lenders and bankers commonly review solvency. The ratio compares cash flows to liabilities. The solvency ratio calculation involves the following steps:

All non-cash expenses are added back to after-tax net income. This adjustment approximates the amount of cash flow generated by the business. You can find the numbers to add back in the Operations section of the Cash Flow Statement.

Add together all short-term and long-term obligations. This summation is the Total Liabilities number on the Balance Sheet. Then divide the estimated cash flow figure by the liabilities total.

THE FORMULA for the ratio is:

(Net after-tax income + Non-cash expenses)/(Short-term liabilities + Long-term liabilities)

A HIGHER PERCENTAGE indicates an increased ability to support the liabilities of the enterprise over the long term.

REMEMBER that estimations made over the long term are inherently inaccurate. Many variables can impact the ability to pay in the long run. Using any ratio used to estimate solvency is subject to a degree of uncertainty.

Profitability Ratios

Profitability ratios are ratios that help discern how profitable a company is. To be profitable, a company has to cover costs. The breakeven point and the gross profit ratio address the dynamics of cost coverage in different ways.

The breakeven point calculates how much cash a company must generate to break even with its operating costs.

The gross profit ratio is equal to (revenue — the cost of goods sold)/revenue. This ratio provides a quick snapshot of expected revenue that can cover the overhead expenses and fixed operations costs.

Some additional examples of profitability ratios are profit margin, return on assets, and return on Equity. The higher the value in these ratios, the more profitable a company is. Having a higher value relative to a competitor's ratio, or the same ratio from a previous period, is indicative that the company is performing relatively well and going in the right direction.

Return on Equity

Return on Equity (ROE) = Net Income / Average Shareholders' Equity

Earnings per Share

Earnings per share (EPS) is the portion of the company's profit allocated to each outstanding share of common stock.

Earnings per share is an excellent indicator of the profitability of any organization, and it is one of the most widely used profitability measures.

Activity Ratios

Activity ratios show how well management is doing managing the company's resources. For example, activity ratios measure company sales relative to another asset account.

THE MOST COMMON asset accounts used are accounts receivable, inventory, and total assets. Since most companies have many resources tied up in accounts receivable, inventory, and working capital, these accounts are in the denominator of the most common activity ratios.

ACCOUNTS receivable (AR) is the total amount of money due to a company for products or services sold on a credit account. The length of time until AR is collected is critical. A company must finance that expected revenue in some way. You can't pay bills with AR.

THE ACCOUNTS receivable turnover shows how rapidly a company collects what is owed to it and indicates the liquidity of the receivables.

Accounts Receivable Turnover = Total Credit Sales/Average Accounts Receivable

The average collection period in days is equal to 365 days, divided by the Accounts Receivable Turnover.

Another ratio that helps gain insight into AR collection is:

> Average Collection Period = 365 Days/Accounts Receivable Turnover

Analysts frequently use the average collection period to measure the effectiveness of a company's ability to collect payments from its credit customers. The average collection period should be less than the credit terms that the company extends to its customers.

A significant indicator of profitability is the ability to manage inventory. Inventory is money and resources invested that do not earn a return until the product is sold.

The longer inventory sits, the less profitable a company can be. Conversely, a higher inventory turnover ratio indicates more demand for products, better cash management, and a reduced risk of inventory obsolescence.

The best measure of inventory utilization is the inventory turnover ratio. You calculate it as either the total annual

sales or the cost of goods sold (COGS), divided by inventory cost.

> Inventory Turnover = Total Annual Sales or Cost of Goods Sold/Average Inventory

Using the cost of goods sold in the numerator can provide a more accurate indicator of inventory turnover because it allows a more direct comparison with other companies. However, different companies have different markups to the sale price, and this can obscure apples-to-apples comparison.

The average inventory cost is usually used in the denominator to compensate for seasonal differences.

Leverage Ratios

Leverage ratios analyze the degree to which a company uses debt to finance its operations and assets. The debt-to-equity ratio is the most common. You calculate this ratio as:

> (Long-term debt + Short-term debt + Leases)/ Equity

Companies with high debt ratios need to have steady and predictable revenue streams to service that debt. Companies whose revenues fluctuate and are less predictable should

rely more on Equity in their capital structure. Leverage also has obvious implications for solvency.

Startups rely almost entirely on Equity as they have no revenues or very uncertain revenues that can service debt.

DuPont Analysis

The DuPont Corporation developed DuPont analysis in the 1920s to assess their investments across their various companies and operations. As a conglomerate, they need a tool to evaluate the relative performance of their different business units.

Dupont analysis is a tool to make decisions about where and how to allocate resources. As a result, it has become a widely adopted managerial and investment tool.

What drives ROE?

DuPont Analysis analyzes Return on Equity by deconstructing it into its main drivers.

DuPont Analysis is an expression, which breaks return on Equity (ROE) into three parts.

The basic formula is:

ROE = (Profit margin)*(Asset turnover)*(Equity multiplier)

=

(Net Income/Sales)*(Sales/Assets)*(Assets/Equity) = (Net Income/Equity)

The three constituent parts are:

- Profitability: measured by profit margin
- Operating efficiency: measured by asset turnover
- Financial leverage: measured by equity multiplier

DuPont analysis enables you to understand the source of superior (or inferior) returns by comparing companies in similar industries or between industries. It also provides a deeper level of understanding by parsing apart the significant variables and drivers of Return on Equity. And ROE is undoubtedly a metric that equity investors (stock investors) find essential.

Summary

Financial ratios are potent tools. Use them to assess company upside, downside, and risk when you are evaluating stock investments.

There are four main categories of financial ratios:

- Liquidity ratios,
- Profitability ratios,
- Activity ratios,
- Leverage ratios.

These are typically analyzed over time and across competitors in an industry.

Ratios "normalize" the numbers so you can compare companies in apples-to-apples terms.

How to Create a Diversified Stock Portfolio

Harness the power of Beta and the Capital Asset Pricing Model.

The surest way to become wealthy is to save money and invest it in the stock market. The stock market has been the greatest wealth generator of the past century.

Here are two tools you should be familiar with to reduce risk and increase your returns through diversification and portfolio theory.

Beta and the Capital Asset Pricing Model are also used to calculate the cost of equity. This calculation is a method to derive a meaningful discount rate for discounting the future cash flows and valuing income-producing assets.

Attention Entrepreneurs

Entrepreneurs can use these tools to create a rational valuation for a startup seeking early-stage equity financing.

Let's take a look.

Beta and CAPM

Every company has different products and services, customers and competitors, technologies, and employees. These unique circumstances and situations mean that every company listed on the stock market has a different risk profile.

How can we measure and compare the relative risk of different stocks?

The equity risk premium is the excess return that investors in the stock market require above and beyond the interest rate provided by U.S treasury bonds. U.S. treasury bonds are the de facto risk-free alternative because they are backed by the government's ability to pay.

Investors think in terms of a risk-reward tradeoff. The additional anticipated return compensates investors for taking on the higher risk of investing in stocks.

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The stock risk premium is a theoretical estimate. It can't be known precisely. No one knows how stocks will perform going forward.

We can estimate the risk premium by measuring past stock market performance.

Markets compensate investors for taking on the higher risk of investing in stocks.

Estimates of the equity premium vary. A reasonable estimate of the equity premium is around 5.5%. That premium compensates us for putting our money in the stock market instead of a treasury bond.

But what if we invest in the stock of an individual company? What if we put our money in shares of Apple, or Goldman Sachs, or Tesla? What rate of a return should we expect to invest our hard-earned money in the stock of a single company?

Individual stocks are riskier, potentially than investing in the overall stock market. That is why mutual funds and ETFs are so popular. They mirror the entire market or sectors of it.

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We need to find out what the premium is to compensate us for taking on the additional risk. We need to measure individual stock risk and price that risk.

Our estimate for the annual average overall stock market return is 5.5%. We need a way to think about and measure the risk of individual stocks to calculate the risk premium required for investing in that stock.

How much risk premium should we expect to compensate us for investing in a specific stock? How do we measure how risky that stock is?

Let's consider what makes a stock risky. Stocks are volatile. Volatility is another way of saying that their price fluctuates up and down a lot. We can't predict the future. We never know if a stock is going to go up or down in the short term.

The short-term movement of a stock is a random walk. Maybe it jumps around more than the average share. One day it's up 15% and the next it goes down 25%.

We can evaluate a stock's past performance to get a sense of the stock-specific risk. We can see if the shares have varied a lot in their prior performance.

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We aren't limited to investing in only one specific stock. We can invest in a bunch of different stocks with different risk profiles. Holding a bunch of different commodities is called a portfolio. Some of the various stocks go up when others go down, and vice versa.

Think of investing in a suntan lotion company and an umbrella company. When the sun is shining, people buy suntan lotion, and that stock performs well. But few people are buying umbrellas, and that stock languishes. When it is raining, the umbrella company is making sales, and that stock soars. But the suntan lotion company is quiet.

The two companies perform the opposite. Each offsets some of the risks of the other.

Umbrellas and suntan lotion is a simplified example that illustrates the concept of diversification. Investing in different stocks creates diversification that reduces portfolio risk.

I might require a 20% return to hold a risky stock. Some other investors might be willing to accept less than a 20% return because they are going to place the stock in a diversified portfolio. The company will raise money from the investor with the cheaper required rate of return. From the company's perspective, that is a less expensive cost of capital.

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We want to quantify how diversification impacts the risk of an individual stock on our portfolio holdings.

Let's look at an example using the historical returns for five years on three stocks, companies A, B, and C.

Imagine we are looking at the graphs of these three stocks. You know those squiggly lines that chart the movement of a stock over time. You can see them when you look up a company on Google Finance.

Company A goes up the most at 21% a year, plus or minus 27%. That's a lot of volatility.

B is the middle stock and goes up, on average, 15% a year over five years, plus or minus around 19%. It goes up less and is less volatile.

C has been lackluster over the last five years. C hasn't had high returns. It has gone up, on average, 5% over the previous five years, plus or minus around 17%.

By analyzing the individual returns and volatility, I should charge A the most in terms of risk premium, I should charge B the middle, and C the lowest risk premium.

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But what if I put all three together in a diversified portfolio? Together on average, what risk premium would I require that for the collection?

The three stocks together average out to a smoother line. Let's say that the total curve goes up at around 12% plus or minus 10%. The aggregate line is smoother than any of the three individual lines.

By owning those stocks together into one portfolio, the wiggles in the lines tend to cancel each other out. This phenomenon is due to the diversification of the portfolio.

Let's return to the umbrella company and a suntan lotion company to reinforce the concept of diversification. When it's raining, the umbrella company does well, and the suntan company is slow. When it is sunny, the suntan lotion company is selling, and the umbrella company is stagnant. Each cancels out the other, and the two together are less volatile than either by itself. That is the risk hedging impact of diversification.

In our case, sometimes A goes up a lot when B goes down. Sometimes stock C goes up when B and A go down. The mutual cancellation of each independent variation creates a smoother group price line.

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That's what we seek as investors. We want to earn a smooth return and not be concerned about the market's roller-coaster ups and downs.

Through diversification, the variations in individual stock price movements cancel each other out. That helps us be more comfortable about putting our hard-earned money into risky securities like stocks.

The more those variations cancel each other out, the lower the return we require for an individual stock.

What we want is a quantitative measure of how each stock contributes to the portfolio variation.

Does a stock make the overall portfolio more or less volatile? It doesn't depend on the individual stock wiggles, but how much it varies with the other stocks in our portfolio.

That's a key concept. The risk of a stock comes from how much it impacts the other stocks in our portfolio. Holding multiple equities can reduce overall risk.

Why not hold lots of stocks? Why not invest in a portfolio representing the whole market? That is what mutual funds

and ETFs are. They are baskets of stocks that represent an industry sector or the entire market.

Let's examine how to measure the risk of an individual stock. Volatile variations and jumps could be useful if that stock wiggles and jumps independently of all the other stocks in our portfolio. We are looking for stocks that zig when our other stocks zag.

We want to measure how a particular stock changes the risk of our portfolio. How does the stock's price movements make the portfolio price movements vary? Does the stock make our collection more or less volatile?

That measurement is called Beta.

Beta

Remember, volatility is our measure of risk. Beta tells us how much the stock moves up and down with the market.

We're going to measure the variance of the stock, and we're also going to calculate covariance. Covariance is how two things vary together.

If two stocks tend to move together, they've got high covariance. If two stocks vary independently, they don't

matter to each other; then, there's no covariance between them.

THE MORE THEY MOVE TOGETHER, the more covariance there is.

COVARIANCE IS the measure of how things move together. Variance is a measure of how something moves by itself.

NOW I AM GOING to introduce the risk measurement called Beta and how to calculate it.

BETA MEASURES an individual stock's risk contribution to a portfolio.

BETA IS a ratio of covariance and variance. We divide one by the other, so Beta is covariance divided by variance.

BETA MEASURES an individual stock's volatility relative to the volatility of the market. A stock with a beta of precisely 1.0 means it moves in lockstep with the market. If the stock's Beta is less than 1.0, it moves less than the market. If a stock moves more than the market, the stock's Beta is greater than 1.0.

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INVESTING IS all about risk vs. return. Having a quantitative way of assessing risk gives us a tool to evaluate the returns we require or can expect.

HIGH-BETA STOCKS ARE CONSIDERED RISKIER but provide higher returns. Low-beta stocks pose less risk but also have lower yields.

HOW MUCH DOES a stock move with the market? Here is the formula for calculating Beta.

$$\text{Beta coefficient}(\beta) = \text{Covariance}(Re, Rm) / \text{Variance}(Rm)$$

WHERE:

Re =the return on an individual stock

Rm=the return on the overall market

Covariance=how changes in a stock's returns relate to changes in the stock market's returns

Variance=how far the market's data points spread out from their average value.

THE COVARIANCE between our stock Re, and the market, Rm, is the numerator. Covariance measures how much the individual stock we are interested in moves relative to the overall market.

WE TAKE our covariance measure and scale it by the variance of how much market moves overall.

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THAT RATIO MEASURE of the variation of the individual stock relative to the variation of the stock market (covariance) divided (scaled) by the overall market variance, is called Beta, or the beta coefficient.

BETA QUANTIFIES the unsystematic risk of an individual stock compared to the systematic risk of the entire market.

Systematic risk refers to the risk built-in to the entire market. Systematic risk is known as undiversifiable risk, and it can't be diversified away.

BETA IS A STATISTICAL MEASUREMENT. We can also calculate Beta by plotting the returns over time of the individual stock against the performance of the market. Beta is the slope of the regression line through those data points.

THE GOOD NEWS is that Beta is calculated for you and is available as part of the general information about any stock on Google or Yahoo finance or whatever is your favorite place to look up stocks.

ALL YOU NEED to know is that beta measures how much a stock moves relative to all stocks scaled by how much the market varies overall.

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That is a stock's Beta. It's a measure of how much it moves with the market.

Beta measures how risky a stock is when we include it in a portfolio.

If I put a particular stock into my portfolio, does that make my collection vary more or less?

Betas are usually around one. They can go as low as 0.25 and as high as 2.5. That is the range.

Beta tells us how much market risk we are taking when we buy a stock.

Let's look at an example.

If a stock has a beta of 2.0, that stock varies in price twice as much as the market. That stock is two times as risky as the market. We will require two times the market premium to buy that stock.

Two times the market risk should also produce much higher returns.

Let's think about the cost of equity. The cost of equity capital is how much investors require, as a rate of return, to invest in the company stock.

The rate of return was the risk-free rate plus a risk premium.

Recall our estimate of the overall stock market risk

premium was 5.5%.

Now we can think about and quantify the risk premium for individual stocks. That risk premium is Beta. The risk premium for a stock is: how much market risk I'm taking, Beta, times the equity premium, the 5.5% of market risk.

Beta is a measure of how many portions of market risk a stock represents. The equity premium is one portion of market risk.

CAPM

We can put it all together in the Capital Asset Pricing Model CAPM.

CAPM DESCRIBES the relationship between systematic risk, the risk that a portfolio can't diversify away, and the expected return for individual stocks.

CAPM SAYS the required or expected rate of return of any asset is equal to the risk-free rate, plus beta times the Equity Premium.

RRoR = Rrf + B * EP

Where:

EP is the Equity Premium (the expected rate of return from the market above the risk-free rate)

B is Beta (Covariance / Variance)

Rrf is the Risk-Free Rate (U.S. Treasury Bonds)

RRoR is the Required Rate of Return

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CAPM IS a formula for measuring the risk and the required return on any stock. Every stock has a unique beta. We can calculate that Beta or look it up on Yahoo.

WE CAN SAY what the return is we require on that stock. Our required rate of return is the risk-free rate plus beta times the equity premium.

LET'S calculate an example for a stock that has a beta 1.7. The equity premium is around 5.5%, and the risk-free rate is 2%. How would we calculate the cost of equity for that stock?

IT'S THE RISK-FREE RATE, plus beta times the equity premium. In this case, that would be 2% + 1.7 times the 5.5% equity premium, which equals 11.35%.

SO IF WE buy that stock, how much do we expect to earn for taking that much risk? We plan to receive over 11% for a stock with a beta of 1.7.

NOW WE HAVE A NUMBER. We can use that as the discount rate to discount our estimates of the future cash flows to equity holders.

IF WE LOOK at the balance sheet of the company, we see assets on the left-hand side. On the right-hand side of the

balance sheet are debt and equity. We now have a discount rate that we can apply to discount the cash flows of the company.

THAT DISCOUNT RATE is calculated using the capital asset pricing model, the risk-free rate plus beta times the market premium.

Summary

Check out MBA ASAP Corporate Finance to see how to use that discount rate to discount estimated future cash flows to present value.

DIVERSIFICATION CHANGES RISK. Market risk can't be diversified away.

WE USE AN ESTIMATE OF 5.5% in these examples, but you can modify that to meet your risk profile. Beta measures a stock's sensitivity to that market risk.

WHEN WE PUT those two things together, the risk-free rate plus beta times the equity premium, we've got a way to measure the risk of owning individual stocks.

I HOPE this comes in handy on your way to wealth!


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