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Understanding the World of Financial Markets

Course Guidebook

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Table of Contents

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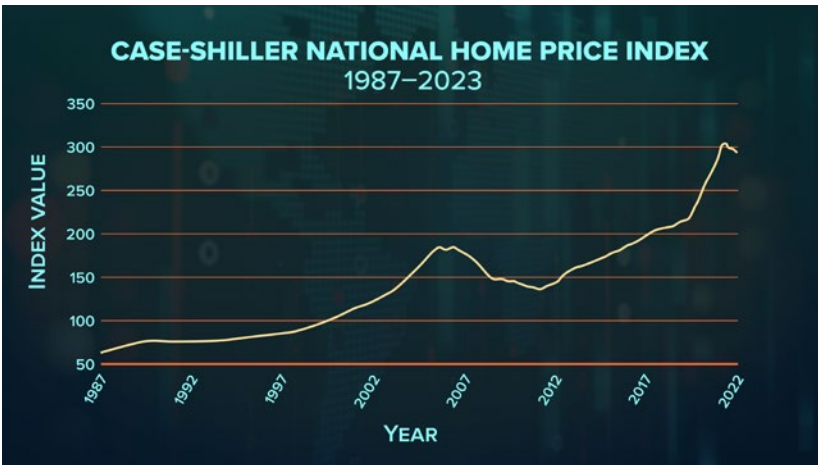
1

The Property Market

This course aims to help you understand the basics of the key markets that shape the economy as well as how they work and what that means for the average investor. As real estate plays a huge role in people's financial lives, this first lecture starts off by exploring the property market and asking some important questions about investing in a home. For most people, their homes will be their most valuable asset and largest source of wealth, especially in retirement. However, given that soaring property prices have left many people wondering whether they'll ever be able to afford a home, this lecture examines whether property is still a sensible market to invest in.

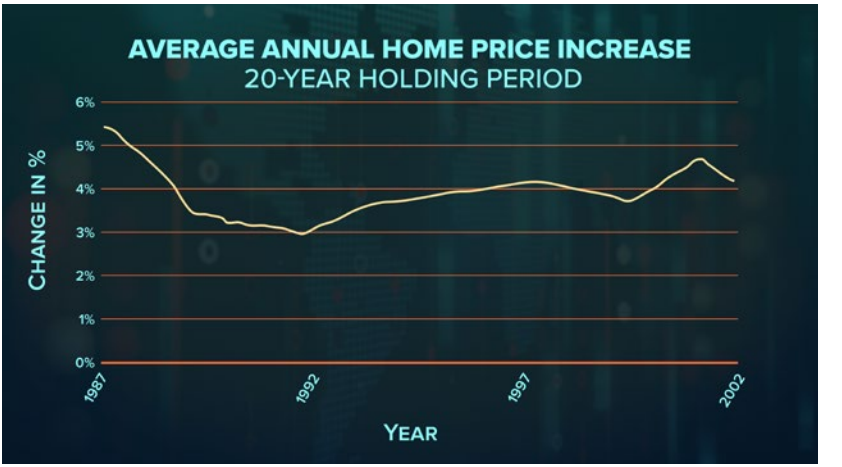
RETURNS ON PROPERTY INVESTMENT

The Case-Shiller US National Home Price Index highlights the acceleration of house prices in the early 2000s, the peak in late 2006 and early 2007, and the rapid fall during the financial crisis of 2008 and 2009. Home prices continued to drift down for several years after that but started rising again in the mid-2010s, followed by a tremendous increase during the COVID-19 pandemic. During this time, home prices increased even faster than they did during the boom in the early 2000s, which raises the possibility that there may be another bust on the horizon. Such big price swings can greatly reduce the return on buying a home and, depending on the timing, can make a home purchase a losing investment. Given this experience, will buying a home yield a solid—or even positive—return anymore?



Using the change in the Case-Shiller Index to calculate the average annual increase in home prices reveals that if a homeowner bought a home and held it for 10 years before selling, they would have lost money in only one very short period in recent times—between mid-2005 and the end of 2006. Even then, the worst average annual return was a loss of less than four-tenths of 1%. Overall, if a homeowner takes out a mortgage on a home and pays that

mortgage for 10 years, they'll accumulate equity in the home. There's a good chance that the equity they accumulate will more than compensate for the decline in the value of the house.



The picture gets even better when looking at average returns over a 20-year period—not only are there no losses on average, but also the minimum average return is less than 3% per year. And this doesn't include the other return from owning a home, which is the housing services themselves. In other words, not having to pay rent adds a significant amount to the effective return of owning a home.

Therefore, over the long haul, investing in a home still provides good returns, even when the market goes through significant booms and busts. Houses seem like they hold their value well—if held on to for a long period of time. But the shorter the time period, the greater the risk that a homeowner might lose money on that investment.

BUBBLES AND TRENDS SHAPING THE HOUSING MARKET

This return profile on property is actually quite similar to stock investing—the longer a person stays invested, the lower the risk of losing money. That's because every market can be infected by bubbles. A bubble occurs when market prices for an asset rise far beyond that asset's underlying value. When these unsustainable bubbles eventually burst, prices crash and then readjust to more realistic levels. For example, the financial crisis of the late 2000s was the result of a real estate bubble burst, driven largely by reckless lending practices that led to too many people buying houses they couldn't afford at prices that weren't sustainable.

Bubbles are temporary. The longer the timescale, the less significant they are in the scheme of things. No one wants to buy at the height of a bubble, but they aren't always easy to spot. Many valid reasons exist for why prices for an asset might start trending upward, and people shouldn't hold off on making an investment hoping for a fall in prices that may never come.

So are the increasing real estate prices of recent years indicative of another housing bubble? A trend that is driving house prices over the medium term is the retirement of the baby boom generation. As this generation moves into apartments, condominiums, and assisted living facilities, it may create a glut of houses on the market that depresses prices. Such a situation is definitely a concern, but other trends may mitigate or even completely offset it.

For example, even though population growth is falling, people want more housing, both in terms of increased space per person and multiple homes. More importantly, America and most other developed nations have underinvested in building new homes for nearly 2 decades. The rate of new home construction fell dramatically after the global financial crisis and never fully recovered, and the COVID-19 pandemic was another major setback. Therefore, the growth in the number of homes hasn't kept pace with the growth of the population, resulting in a home shortage.

In addition, the homes people need aren't necessarily where they want them to be. Some areas will experience housing gluts, while others will have severe shortages. So when considering whether purchasing a home is a good investment, it's important to get some numbers about local demographics and the area's longer-term economic outlook.

However, demographics and construction aren't the only trends that shape the real estate market. Real estate prices are closely linked with the health of the overall economy and interest rates because personal incomes back most home buying and mortgage repayment. When wages rise and unemployment falls, more people can afford to start entering the housing market.

Despite a major spike during the height of the COVID-19 pandemic, unemployment across the Organisation for Economic Co-operation and Development (OECD) has been at historically low levels over the past decade. The same applies to interest rates, making even fairly high mortgages affordable for new generations of home buyers. Due to much tighter lending practices introduced after the global financial crisis, it's more likely that mortgage default rates will not skyrocket as they did back then—even if a recession hits.

INSTITUTIONAL INVESTORS

The entry of institutional investors is yet another housing market trend worth considering. Before the global financial crisis, most of the businesses that purchased houses were sole proprietors. But during the crisis, prices fell dramatically, meaning that many houses represented great opportunities for value-oriented investors. Additionally, because of widespread defaults, hundreds of houses were being auctioned off in many cities. Therefore, it became possible for large institutions to invest on a scale that made the opportunity worth their while.

Institutional investors have largely followed the same strategy as the mom-and-pop investors who buy single-family homes—they turn the homes into rentals instead of trying to resell them for profit. The real estate investment trust is one of the most important types of institutional investor in the market for homes. This type of fund can sell shares to individual investors and must pay out 90% of its earnings to the trust's shareholders.

Institutional investors will be a permanent feature of the market for houses. For those who are interested in owning homes, this development is good news. If house prices start to fall significantly, these investors will be ready to do some bargain hunting and put a floor under the market. So it's possible

that home prices won't fall as steeply as they did during the global financial crisis. In addition, institutional investors may also play a part in permanently increasing the share of homes that are rented rather than owner-occupied, which may also help support home prices in the long run.

However, institutional investors are not without their critics. Several commentators have decried the rise of speculation in the housing market, where investors buy homes and apartments with the intent of simply holding them for a time and then selling them again for a profit, without bothering to take on renters. And some investment companies have specifically sought to buy houses for the purpose of short-term and holiday rentals, a practice that is becoming increasingly popular through platforms such as Airbnb. Investment of this nature takes housing stock out of an already tight market, driving up rents.

PROPERTY FLIPPING

Flipping is another popular way of investing in the housing market. Buying a house with the intention of reselling it quickly, possibly after making some improvements, became a national sport during the housing boom of the mid-2000s. According to the real estate data company ATTOM, about 1 home sale in 15 is a house flip since the sale occurs within 12 months of its most recent previous sale.

The attraction of house flipping is the possibility of earning a high return quickly. And the numbers appear to support the idea that the returns can be high. According to ATTOM data, the average return on investment from house flipping in the US has varied between about 25% and 48% since 2005, which seems quite high. But this return doesn't take into account any financing costs incurred to acquire the house, property taxes, or renovation costs. Therefore, the net return will be a lot lower. In addition, the data that people present on the returns of house flipping is full of what economists call survivorship bias—only using numbers on the profits that come from successful attempts to flip houses.

Due to the risk that goes into it, the key to successful house flipping is in the price paid for the house. The rule of thumb is that a house flipper should pay no more than 70% of the price they expect to get, less the renovation costs

they expect to pay—and that's the maximum. So a successful house flipper has to be able to drive a very hard bargain on any house they buy, and even then, it's no guarantee of success.

RELEASING HOME EQUITY

One way for every homeowner to get their money out of a home investment and use that value for other purposes—such as retirement funding—is a home equity loan or home equity line of credit, which can be very flexible and convenient and carry attractive interest rates.

Another method is to refinance the home and convert some of its equity to cash using cash-out refinancing. Such an approach makes sense when interest rates haven't changed much or, better yet, have fallen. If interest rates have risen since taking out the old mortgage, the homeowner will have to carefully do the math and decide whether the higher interest rate on the new mortgage negates the benefit from being able to access the increased equity in the house.

One other product that is often mentioned but less commonly used is the so-called reverse mortgage. In this approach, the homeowner borrows against some of the accumulated equity in their home, but they don't make any payments while they are alive and still live in the home. Instead, the amount borrowed accumulates interest. The principal plus all accumulated interest is paid off when the homeowner either dies or sells the home.

A reverse mortgage may be useful and attractive if a home has a lot of equity in it but the homeowner doesn't have very much post-retirement income or other savings. In addition, it will make sense only if they intend to stay in their house for the rest of their life and don't care about leaving a bequest to their surviving family. But the amount they can borrow will be limited by the fact that interest accumulates on the balance until they die or move. If they live a long time, the compounding of interest will make the total balance on the loan quite large, like a credit card bill on which only the minimum balance is paid. This danger reduces the amount that lenders are willing to advance for a reverse mortgage. Therefore, this type of mortgage can be a good tool to convert home equity to cash for people who have few options and are determined to remain in their homes.

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2

The Stock Market

Keith Gill is one of the most celebrated stock investors of recent years. He was a social media phenomenon who became famous as the leader of a huge pack of individual stock investors that took on Wall Street hedge funds a few years ago. His story is compelling because it's about an individual investor who won big in the stock market. So what does it take to get rich in the stock market? Do you have to be exceptionally lucky—or skilled—to make a fortune, or is it possible for average people to rake it in? To answer such questions, this lecture will focus on a few core concepts for those trying to understand the stock market in a broad sense.

MARKET EFFICIENCY

One fundamental fact about the stock market that affects the investing landscape for almost every investor is that it is quite efficient. The term *market efficiency* has a special meaning in this context due to a famous—but controversial—idea called the efficient market hypothesis. This concept is associated with the Nobel Prize-winning economist Eugene Fama, and it states that stock prices reflect all information that's currently available.

Competition causes the stock market to behave like this. If a market is full of investors and traders who are trying to get rich by picking the best stocks, then they'll use all the information they can find to get an edge over other investors. And they will act on this information by buying the shares of companies that they think are great prospects and selling the shares of companies that aren't. This competition leads to buying and selling based on information, which in turn ensures that the prices fully reflect the currently available information.

The word *currently* is key here. Although it might not sound important, it implies that the only thing that influences stock prices from moment to moment is the arrival of new information that people haven't previously anticipated. And because of that, stock prices will be inherently unpredictable.

But even though the future is unknowable, information available today generally provides a solid basis for predicting what will happen tomorrow, thus providing a foundation for making smart decisions that will result in an investor becoming richer over time. Here is where the line starts to appear between gambling and investing. Gambling offers the promise of big or quick payouts, but it's extremely risky since one is relying on very uncertain future information. Investing focuses on future information that can be predicted with greater confidence, which usually means much more modest returns but at a much lower risk—especially over the longer term.

THE EFFICIENT MARKET HYPOTHESIS

The efficient market hypothesis comes in three different versions, with the most extreme—or strongest—iteration being that stock prices reflect all currently available information. Very few investors or economists believe this. The weak version of the hypothesis states that stock prices reflect all past information, which seems sensible. But it's the semi-strong version of the hypothesis that best describes the reality of the stock market: It posits that stock prices reflect all publicly available information, past and present. However, it still leaves out what financial economists call private information. That is, some people might possess knowledge that is helpful for predicting future stock prices so that they can pick winners and buy in early and cheaply. If that information becomes public, every other investor will try to do the same, and the advantage will be lost.

So the semi-strong version of the efficient market hypothesis suggests that one way to get rich in the stock market is to get hold of private information and use it to gain an edge over other investors. But isn't that insider trading?

In fact, only a subset of private information is off-limits because of insider trading concerns. What might make it off-limits is someone's relationship with the information's provider, not the fact that the information is private. For example, if they get information from the employee of a company and use it to make stock trades, then they run the risk of being charged with insider trading.

But an investor can also get hold of private information completely legally—they can study a company and make their own judgment about its value and their own predictions about how it's going to perform. Or they can use their own understanding of how stock prices are determined and their own assessments of market conditions to decide whether a stock is worth investing in. All of this information is private.

The semi-strong version of the efficient market hypothesis states that stock prices don't necessarily reflect all private information that's being created daily. But the market is already full of professional investors who earn their living from developing their own private information about stocks and

trading on that basis. They spend all day evaluating companies. That means there's a lot of competition to come up with better private information. And as a result of the trading motivated by that information, it doesn't take long before someone's newly discovered private information is reflected in stock prices.

For these reasons, the market is relatively efficient. Opportunities do exist to make big money by developing private information that is better than other traders' information. But it isn't easy, especially for individuals. So while it's possible to get rich in the stock market by picking your own stocks, you can't get something for nothing—you have to dedicate time and effort and take on risk.

INVESTMENT STRATEGIES

Keith Gill spends a lot of time gathering information on companies and from other investors. He describes himself as a deep-value investor and describes his favorite type of company as one that is experiencing financial difficulties but is not bankrupt. He also offers some good tips for any investor. For example, he emphasizes the importance of looking at insider share purchases, which are the purchases of company stock by the CEO and other officers. As these actors probably know more about a company than anyone else, their willingness to buy shares can be a signal about the future direction of the enterprise's stock price and private information they may have.

Another famous investor named John "Jack" Bogle believed in a totally different investment strategy for getting rich in the stock market. He is considered the father of index funds and passive investing. He founded one of the world's largest investment advisory firms and mutual fund companies, The Vanguard Group, which still operates today. Bogle purported that although individual stocks will go up and down unpredictably, the stock market as a whole is quite efficient. On this basis, it is the market—rather than individual stocks—that people should invest in.

Bogle believed that even the most talented and experienced stock pickers would tend to underperform the market average, and virtually no stock picker could beat it consistently. Legions of economists have tested this proposition,

and it's remarkable how consistently the evidence supports Bogle's wisdom. Dozens of famous studies have found that even just randomly selecting a set of stocks to invest in tends to do better than following the advice of seasoned market experts. Not only that, but investors pay those experts a percentage of their portfolio's value each year for the privilege of underperforming the market.

The lesson Bogle took away from this understanding was that the most reliable way to get rich is to avoid trying to pick winning stocks altogether. So he and Vanguard created the first index fund. This fund would own shares in every company of a particular index, such as the S&P 500, which is an index of the 500 largest companies currently traded on American stock exchanges. And investors could buy into these funds without having to buy shares in all those companies individually. An even broader market index is represented by the Vanguard Total Stock Market Index Fund, which invests in thousands of different stocks in an attempt to track the market as a whole. The only picking an index investor needs to do, Bogle argued, is to find the portfolio with the lowest management fees—those periodic fees add up over time and can significantly reduce one's overall return.

RETURNS ON INDEX FUND INVESTING

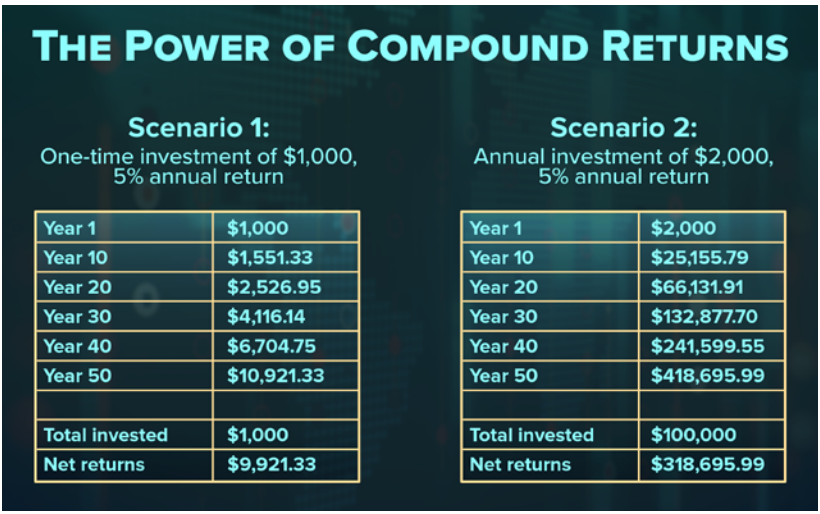
Can a person who follows the more conservative strategy of index funds still get rich from investing in the stock market? Under one scenario, someone could get rich this way if the value of the stock market rose quickly enough—and consistently enough—to turn small amounts of invested money into significantly larger amounts. Over many years, the stock market would make them rich through the power of compound returns.

Such a situation assumes that the market delivers consistently year in, year out. Historically, however, stock returns have been all over the place. There have been crashes, including the one in 1987 that shaved off about 20% of the market's value in 1 day. And there have been bear markets that lasted for years and ground down the value of stocks by a few percent annually. So can you still get rich from Bogle's strategy of passive investing when the market

behaves unpredictably? The answer is a qualified yes. If you give the market enough time, hanging in through the bad years and the good, then passive investing can still make you rich.

The value of the stock market follows a long-term trend tied to the growth of the overall economy because the companies listed in the stock market constitute a big part of the economy. But there's a lot of noise around that trend. And the scary part is that the noise sometimes drowns out the overall upward trend.

Just like picking the right company to invest in, picking the right year to invest in is pretty much impossible—there's just too much that's unknown about what will happen in the future. But keeping your money invested over the long term spreads out the risk. The longer you stay invested in the stock market, the less any individual dip matters, which suggests that you really can get rich in the stock market simply by investing in passive market index funds. But you still don't get something for nothing. The cost to getting rich is measured in units of time. You need to be able to leave your investments alone long enough to benefit from the underlying trend and to recover from any of the dips and crashes along the way.



Therefore, the main challenge to investors who want to take the passive route to getting rich in the stock market is clear: You need to be prepared to deal with ill-timed drops in the stock market just when you might need to sell some of your stock holdings to cover a major expense. While such factors can be a fact of life throughout your earning years, it can also affect you—perhaps unexpectedly—in retirement. Still, the long-run trend has pushed stock prices up for decades. And it will continue to do so as the economy continues to grow over the long term.

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3

The Market for Intangibles

Entrepreneurs understand the power of brand names, which generate value by attracting sales and increasing profits. Therefore, a brand is a store of value, making it an asset. People usually think of a company's assets in terms of buildings, offices, factories, and machines. But in finance, brands are known as intangible assets—they're real but have no truly physical presence. If you want to be a successful investor, you'll have to understand such assets and how to evaluate them. In this lecture, you will take a deep dive into intangibles and how they create value for companies.

HOW DO COMPANIES CREATE VALUE?

Intangible assets are everywhere in the economy, and they've become the leading source of value for private companies. In turn, these assets generate most of the cash flows that ultimately reward present-day stock and bondholders. So the market for intangible assets is a major driver of financial markets and investment decisions.

How do companies create value, and how do intangible assets contribute to this process? All companies want to earn profits, but not all profitable companies create value. In finance, value is created when companies earn higher profits than their competitors. They're literally earning more profit than the market thinks they should given the business they're in and the nature and amount of risk they're taking on. In microeconomics, normal profit is the average profit earned by companies in a particular line of business—the expected amount of profit a company should earn from doing that business. And that's the benchmark for value creation in finance.

If a company is earning profits that are equal to the normal profits in its industry, it's doing fine. But it's not creating extra returns that can go to the owners of the business and make them better off than the owners of any other business in the industry. In short, it's not creating value. However, a company that is earning profits that are greater than the average is doing better than its competitors. The owners are getting higher returns than they'd get from investing in the other players in the market. The company is creating value. Finally, if a company is earning lower profits than average in its line of business, it's destroying value. Its investors are losing ground relative to investors in other companies whose profits are average or higher than average.

So how can a company deliver higher-than-average profits and create value for its investors? It has to find some kind of edge, on the revenue side or the cost side, that other companies can't replicate.

REVENUES AND COSTS

On the revenue side, that edge boils down to market power—the ability to charge premium prices to customers. And intangible assets provide that ability. For example, how does a company's brand—as an important example of an intangible asset—create value? It fosters loyalty among consumers that enables the business to charge higher prices over long periods of time. Think about the restaurant chain Chipotle. Anyone can get a burrito at tens of thousands of taco stands, food trucks, and restaurants in America, but this brand offers a standardized product and experience that people like and know they can count on. Many consumers are willing to pay a premium price for a Chipotle burrito. The combination of repeat customers and premium prices leads to higher-than-normal profits and value creation for the chain.

Individual product attributes—such as Dr. Pepper's secret recipe—are also an important type of intangible asset. Attributes like a distinctive taste are a foundation on which a company can build a successful brand. And all kinds of product attributes can become intangible assets. Something as simple as a swoosh symbol on the side of a sneaker becomes an important style element that distinguishes a product and creates loyalty and premium pricing, which in turn create value.

The cost side completes the picture of how intangibles create value. The game here is to find ways to reduce costs that nobody else can think of or replicate. For example, it's well known that no one does logistics like Walmart. The company has found ways to organize and operate its supply chain that are far cheaper than the methods used by its competitors. In fact, with most commoditized products, intangibles on the cost side are a key area where value is created or destroyed.

THE RISE AND IMPORTANCE OF INTANGIBLES

Intangible assets have always been around, so what's different about them now? They've become the main type of asset in the present-day economy—and therefore the main asset to invest in when buying a business's stock or bonds. Two main reasons exist for such a situation.

First, the economy has evolved in ways that have increased the importance of intangible assets as sources of value. Going back about a century and a half or longer, the main business of an economy was usually agriculture. Then, thanks to the Industrial Revolution, the main business became making things in factories. Sometime in the middle of the 20th century, economies started to produce services more than things. In the past couple of decades, that has given way to making ideas. In other words, the transition from an agrarian economy to a knowledge economy rests on intangible assets to deliver value. Every step in this evolution created businesses that depended more heavily on technology, brands, and ideas to produce the goods and services people wanted. And the products people wanted were increasingly intangible.

Second, globalization has broken down many barriers between economies and created larger markets. This development hasn't really changed the demand or supply of intangible assets, but it has significantly enhanced their value. The larger the markets, the more profits a company's intangible assets can generate. Moreover, the information revolution has allowed for ever-greater penetration of brands, technologies, and ideas across the globe at unprecedented rates. Today, global brands are present—and generate sales and profits—virtually everywhere. Just about anywhere you go in the world, you can buy a can of Coca-Cola, hop in a Toyota, or find a McDonald's. And it's not just brands that benefit from larger markets. Other intangibles also gain value in a globalized economy. Take distribution networks as an example—a company might have a great product, but if it can't get this commodity to people, it won't make any sales.

Just how valuable have intangibles become because of the evolution of the economy and the rise of globalization? Ocean Tomo estimates that intangible assets account for about 90% of the S&P 500 companies' total assets. And as the economy evolves, one might expect intangible assets to account for nearly all the value of a company's assets in the not too distant future.

In certain industries, that transition has already occurred to some extent. For instance, many of the most valuable global fashion brands do not own factories at all but rather outsource production of their clothes to a vast network of global clothing manufacturers. And with the decline of malls and the rising popularity of online clothes shopping, many labels are also closing stores and moving to online retailing only. The value of their clothing—and thus their company—is derived almost entirely from their styles, designs, and reputation.

THE FRAGILITY OF INTANGIBLES

Intangible assets are fragile, and like other fragile items, they can shatter, destroying their value in an instant. For example, because such assets are based almost entirely on ideas, there's no guarantee that another company won't come along with a better one.

Patent protection is no guarantee of permanent success, either. When a pharmaceutical company patents a new medicine, it must disclose the structure of the compound to the public. Doing so helps competitors invent similar drugs that aren't covered by the patent. Later, the pharmaceutical companies face so-called patent cliffs when the patents on their medicines expire and are exposed to competition from generic versions of their products.

Another aspect that makes intangible assets fragile is that they're often based on reputation. As the saying goes, it takes a lifetime to build a good reputation—but it can be lost in a minute. Corporate scandals and social media both have the power to transform a company's image overnight.

THE NET EFFECT OF INTANGIBLES ON COMPANY VALUE

Intangible assets are sources of new profits and high growth, which are clearly good for value. But they are also significantly riskier than tangible assets, such as buildings and machines. Which of these effects is stronger in a particular company?

Investors must grapple with this question whenever they consider buying a stock, a corporate bond, or any other financial instrument backed by the earning power of a company. In today's world, a company's ability to deliver on its financial promises increasingly depends on the performance of its intangible assets.

So looking at standard financial numbers, such as balance sheets, profit and loss statements, and sales, is still an important part of making investment decisions—but it's insufficient. An investor should start by evaluating a firm's intangible assets to get the full picture of the company's value and future earning potential. Such assets could be a strong brand or reputation for quality products and excellent service. How innovative is the company's technology in terms of its current products or its future pipeline? What other aspects of its products attract customers and lock them in? Regarding the cost side, has the company found cheaper or more efficient ways to make, distribute, or invent its products? Does it minimize costly returns and employee turnover?

Next, the investor should assess the intangible assets with a critical eye. How much do the company's intangibles stand out from the same assets of its competitor firms? Does it have a nationally known brand while its competitors are only locally or regionally known? Is the firm's technology years or only weeks ahead of the competition? How difficult would it be for competitors to replicate this intangible or go one better? Would they have to find a way around a patent or merely update the software on their production lines? Do they have to get serious about improving the quality of their products? Or should they just do a better job of advertising their quality?

Finally, the investor must try to be as realistic as they can about the fragility of the company's intangibles. What would it mean for the firm's main intangible asset to shatter and lose most of its value? How likely is such an event? And how much damage would this event cause to the company's earning potential?

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4

The Bond Market

A bond is a security issued by a government or corporation. Issuing bonds is like taking out a loan with many lenders. But bonds are a little different from loans in two ways. First, bonds repay their principal all at once—on the maturity date of the bond—rather than in installments over time. Second, between issuance and maturity, bonds pay interest on the principal every 6 months at the so-called coupon rate. The advantages of bonds over conventional loans are that they can be used to raise capital from many investors, the debt can be traded easily, and the value of that debt can be adjusted to market conditions. However, the bond market can be a paradoxical place to invest in at times—and you'll explore why in this lecture.

BOND YIELDS

The first consideration for any investor in any market is that their investment should give them a reasonable shot at doing at least a little better than inflation. If their money grows slower than the increase in the cost of living or inflation, then the standard of living they can afford over time will shrink. However, if bond rates can deliver a small return over and above inflation—even 1% or 2% on average—then a long-term investment in bonds will grow an investor's wealth noticeably, even after inflation.

Inflation and interest rates are part of the dynamics of the economy that every investor should be thinking about. Interest rates are sometimes so attractive that some of the best places for an investor's money are savings accounts and certificates of deposit. And interest rates are sometimes so low that the investor is actually losing money over time by keeping it there. But what's kept some people from investing in bonds is that bond yields have been so low in recent decades that they can't even preserve the purchasing power of the money invested in them.

Before the global financial crisis of 2008 and 2009, bond yields behaved normally. They stayed above expected inflation by a healthy amount—usually between 1% and 3%. Expected inflation would occasionally jump above them, but only temporarily. After the crisis, 10-year US Treasury bond yields fell below inflation expectations and have pretty much remained below them since. And it's a similar story in most developed countries. So what has happened to the bond market, and is it the new normal?

THE FISHER EFFECT

The reasons bond rates have stayed so low for so long are related to how the bond market works and, more importantly, which players in the market have had the most influence over bond prices and yields.

The idea that bond yields will usually be greater than expected inflation comes from economist Irving Fisher and the proposition that bears his name—the Fisher effect—which says that any quoted interest rate consists of two parts. One part is the average inflation rate that's expected to occur over the life of a bond. The other part is the inflation-adjusted return, also called the real return, that people demand.

Fisher proposed that people demand to be compensated one-for-one when it comes to expected inflation. That is, they want to be paid high enough interest rates so that the money invested in a bond won't lose its purchasing power relative to the market for goods and services.

The real return is the compensation that people expect while waiting to be paid back and for bearing any risk that the bond issuer defaults. So a bond yield should cover inflation plus a little extra. Most economists think that this return is a good way to represent bond yields and how they react to inflation.

But there's a practical problem with the Fisher effect. Investors don't have any way to precisely—and objectively—measure either the real return on bonds or the expected inflation rate. So their personal estimate of the expected inflation rate can be very different from the bond market's estimate, and it's certainly possible that their expected inflation rate is much higher.

MONETARY POLICY AND LIQUIDITY

The Fisher effect describes a tendency, not a law of economics. Bond investors may want yields to be higher than expected inflation, but other forces may push yields higher or lower and keep them there for long periods of time.

For example, after the global financial crisis, the Federal Reserve bought trillions of dollars of bonds, pushing their prices up and their yields below the expected rate of inflation. The eurozone and Japan followed similar quantitative easing policies, effectively flooding the international economy with cheap money. Lower interest rates and high liquidity make it cheaper for banks to lend and for corporations and municipalities to borrow from them. So the yields on other types of bonds will also track downward, as there's less need for borrowers to offer high bond returns when they can borrow from banks instead—the primary reason why bonds became an unattractive investment for many people.

Several other changes introduced after the global financial crisis also had major impacts on the bond market. One of the most important involved bank regulation. Policymakers realized that the global financial crisis was a new variation on an old problem—liquidity. The crisis was essentially a massive run on the entire financial system. Investors began to lose confidence that they could convert the billions of dollars they had invested into mortgage-backed securities, commercial paper, money market funds, and other assets back to cash, so they panicked and tried to cash out all at once.

In the aftermath of the crisis, regulators created new rules intended to ensure that banks would have enough liquidity on hand to meet investor withdrawals, even during times of elevated stress. The main rule they imposed—a liquidity coverage ratio standard—requires banks to hold "high quality liquid assets" at all times that can be easily converted to cash and paid out to depositors and investors if they suddenly want their money back. Government bonds are the primary type of such assets that banks can use to satisfy the new liquidity standard. This important change has permanently increased the demand for government bonds such that Treasury bond yields may not rise back to the levels thought of as normal before the crisis.

COLLATERAL

Another big change in the financial markets after the global financial crisis concerns collateral. Borrowers post collateral when they take out loans. For example, when taking out a mortgage loan, most people use their homes as collateral. And when investors engage in various types of trading, especially derivatives trading, they also post collateral. As in the case of loans, the collateral is there to ensure that traders can still pay their counterparties—or the people or institutions they're trading with—if they lose money on the trade and owe money to them.

In the run-up to the 2008 global financial crisis, market practices surrounding the use of collateral became relatively lax. Lenders and traders allowed their counterparties to post less collateral than they had historically and to use lower-quality forms of collateral. Of course, when the crisis unfolded and mortgage defaults skyrocketed, lenders and traders were hit by big drops in the value of the collateral. This double whammy was a distinctive aspect of the financial crisis of 2008 that made it a lot worse than many other such crises.

Markets and regulators reacted to the experience by significantly tightening their collateral standards, in terms of both the amounts of collateral demanded for a given loan or trade and the types of collateral deemed acceptable. As a result, many market players increased their demand for US Treasuries after the global financial crisis. And they all had the same motivation—they realized that the financial markets had become much riskier, and they wanted to take out extra insurance against those risks. US government bonds were the best insurance policy they could find. Treasury securities are highly liquid, universally accepted, and almost free of default risk.

The financial markets are still digesting these huge changes in monetary policy and risk management. Over the longer term, the market will probably return to a more normal one, where bond yields are a bit above expected inflation. The supply of bonds is bound to keep increasing at a healthy rate as governments increase their borrowing. Supply will catch up to the increased demand. And on the demand side, the bond markets will eventually have to deliver yields that average household investors find attractive.

BOND INVESTMENT OPTIONS

So what should frustrated bond investors do in the meantime? The answer is not necessarily to go in search of higher-yielding types of bonds, like corporate bonds. An unfortunate side effect of the changes in the government bond market is a phenomenon known as yield compression.

Yield compression describes the fact that the spreads—or the differences in yield—between risky private bonds and risk-free government bonds have also fallen significantly. The extra yield promised by private bonds is there to compensate investors for the risk that the issuer will default. In other words, it's a risk premium. Yield compression means that the risk premium on private bonds has declined so that investors may not be adequately compensated for the extra risk they're taking on.

However, there may be some relatively safe ways to boost the return on bond investments. For example, it makes sense to regularly check on the rates on Treasury Inflation-Protected Securities (TIPS)—US Treasury bonds whose face value adjusts over time to match inflation. The coupon rate on TIPS is therefore inflation adjusted, or a real return. This amount can and does vary, so an investor may have to check these yields for a while before that real return is attractive.

Other types of bonds in the United States to consider are the mortgage-backed securities and notes offered through Fannie Mae, Freddie Mac, and Ginnie Mae. These securities carry better returns than government bonds and are still very close to being risk free given the explicit and implicit guarantees that come with being affiliated with the US government.

Municipal bonds are another option. Though their coupon rates are usually not much higher than the Treasury's, income from municipal bonds is generally exempt from US federal income tax—and sometimes state taxes as well—which can make them attractive. Municipal bonds have also become a major growth area internationally, particularly in Asia, as countries invest heavily in infrastructure and economic development.

Investors may also want to look into bond-like investments, such as mutual funds that focus on dividend-paying stocks and real estate investment trusts. Such funds pay out regular income like bonds do. But this is a higher-risk

strategy than buying and holding government bonds. Their income streams are variable and always subject to change. And unlike bonds, stock mutual funds and real estate investment trust shares don't have a final payment of bond principal. Instead, investors are betting that the shares in these investments maintain their value, which isn't guaranteed.

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5

The Market for Talent

One of the most important investments a company makes—and often one of the riskiest and most expensive—is its CEO's compensation package. In this lecture, you'll explore how the market for CEOs can produce incredibly variable outcomes, even when comparing the same person's performance at different companies. In doing so, you'll also examine the factors that result in the market generating such large compensation packages for CEOs, especially in light of the risk that they won't actually be good for the company.

THE POWER OF CEOS

Understanding the market for CEOs is critical for investors. CEOs generally have inordinate power over the companies they lead. They not only choose the investments their companies make but also shape the company culture—in turn affecting how effectively the employees pursue the investment projects chosen by the CEO. Attracting and keeping a good CEO is arguably the most important investment a company makes because of their immense impact on value creation—or destruction.

American CEOs have particular influence over the companies they manage because of the way corporate governance has evolved. Corporations are supposed to work like representative democracies, in which shareholders elect members of the board of directors. In turn, the directors hire and oversee the professional management team—headed by the CEO—which runs the company day to day.

But the reality of the current system is that the CEO of a company is also a member of the board of directors. In fact, it's common in American corporations for the CEO to also serve as the chair of the board, giving the CEO a lot of input in the nomination of people to run for open seats on the board. And in most cases, the number of people running in board elections is exactly equal to the number of open seats. In other words, candidates generally run unopposed.

So if you were the CEO of a company and could exercise a good amount of control over the people who get elected to serve on the company's board, what would you do? You'd nominate people who were positively disposed toward you and your vision for the company, if not simply your friends. Given this situation, is it any surprise that American CEOs operate without much fear of pushback from their boards?

But even when CEOs haven't necessarily handpicked their board, many other power imbalances exist between the board and the management team. Boards meet relatively infrequently, and directors often serve on multiple boards simultaneously, meaning that many don't have a good grasp of corporate operations. Boards also have far less access to internal information than the executive team. And if boards lack depth in areas such as risk assessment, auditing, or corporate accounting, their ability to independently assess their company's performance may be limited.

Such power imbalances mean that even when boards are more independent, they can still be ineffective in their oversight roles. Germany has some of the most rigorous corporate governance laws in the world. But massive corporate scandals at companies such as Volkswagen, Deutsche Bank, and Siemens—which took place during record-high payouts to German CEOs—have led many experts to conclude that the problems of corporate governance go deeper than just who picks the board. Therefore, an essential part of investing involves paying attention to a company's CEO.

CEO COMPENSATION

CEO compensation is extremely high in American corporations. And while the United States leads the world in CEO pay, similar trends have been observed across the OECD, with countries such as Switzerland, the Netherlands, and the United Kingdom also seeing significant growth in CEO compensation.

The high level of CEO pay is influenced by corporate governance. In fact, some financial economists have argued that the dominant role of the CEO—especially their influence over selecting board members—is responsible for runaway growth in compensation.

While friendly relations between board members and the CEO probably do mean that pay packages tend to err on the side of generosity, things are a bit more complicated than that. First, many corporations these days use compensation consultants to help them set the CEO's pay package. Boards want their CEO's compensation to be no lower than the average pay that other CEOs receive. But of course, every company wanting to pay their CEO above the average is a recipe for rising compensation. CEOs are sure to pay attention to the pay their peers earn and will feel insulted if their own compensation doesn't measure up.

Second, an important goal that these compensation packages need to achieve is to motivate the CEO to keep working hard and innovating. So how does a company motivate a CEO to work hard in the coming year when it has just paid them $10 million for last year's work? It can either use a stick—the threat of firing the CEO if they turn in a mediocre or poor performance—or a carrot, which would be an even larger and more attractive set of goodies for performing well. In reality, to keep CEOs motivated, many companies try to ratchet up each year's rewards for good performance.

CEO PERFORMANCE

CEOs' judgment can get clouded by emotions or other biases, and they can make some odd—if not downright bad—decisions. And according to Hersh Shefrin, a leading expert on behavioral finance, being in the limelight all the time actually makes the situation worse. Shefrin calls such a situation the visibility factor: The more publicly visible someone's actions and words are, the more this pressure amplifies their cognitive and emotional biases that get in the way of good decision-making. A CEO's emotional connection to the company they run can cause them to take criticisms of their firm personally and go to absurd and possibly value-destroying lengths to defend it and, therefore, themselves.

Another issue that is especially important to watch out for is the one-trick pony—CEOs or other top executives who become successful in one company because they're able to make an important change or implement a winning strategy there. When they move on to become CEO at the next company, they try the same thing, but chances are that this tactic doesn't work so well there.

There's one other common type of CEO—the empire builder. Empire builders are so convinced of their gifts that they want to turn their companies into monuments to themselves. They usually do so by embarking on signature projects or going on acquisition sprees. And they don't feel limited in their choice of targets. They frequently expand their empires into completely different lines of business and product. This strategy can work for a while, but it eventually runs into trouble for shareholders. An empire builder's projects don't necessarily create much value because they're not held to the same standards as normal corporate projects. And empire builders inevitably stretch themselves too thin, which makes their projects even less likely to succeed.

Empire builders also tend to be larger-than-life characters with lots of charisma, often becoming celebrities in their own right. Such a situation goes some way to explaining why they not only get away with their empire building but also are often encouraged to do so by shareholders. Most empire builders do seem to have extra capacity and talent that many other garden-variety CEOs lack. Richard Branson is an example of an empire builder who has had a great run and seems able to start successful businesses in just about

any industry. To some degree, that success can be propelled by the sheer value of the brand created. Branson's Virgin brand runs through all his ventures—each launched to great fanfare and, often, at least initial success.

Empire builders may eventually pursue one conquest too many though, which ends badly for shareholders. Virgin Orbit is a good case in point. The venture went public in 2022 but declared bankruptcy in mid-2023 after a failed orbital satellite launch.

COGNITIVE BIAS AND EVALUATING CEOS' PERFORMANCE

If there's a common factor underlying all these examples, it's the overconfidence bias. CEOs tend to be confident people, and they often overestimate their abilities. Their overconfidence leads them to trust their own instincts and emotions too much. It also causes them to believe that they've found a one-size-fits-all solution to performance problems and that their abilities entitle them to run huge, far-flung enterprises.

But the fact is that investors' cognitive biases have created a market for CEOs that selects for overconfidence. People want their leaders to be larger than life and tend to follow those who appear confident in themselves. Investors confuse charisma for competence, substituting how much they like someone for an objective estimate of their actual abilities. They turn CEOs into celebrities and seem to be willing to pay them as if they were.

The people who rise to become CEOs are generally very talented, and they really do help companies create value. For many years, Sergio Marchionne—as CEO of the Italian automaker Fiat—was the highest-paid executive in Italy. Prior to his takeover in 2004, Fiat had not been profitable for years and was feared to be on the brink of collapse. Within a couple of years, Marchionne had turned the company around, eventually merging with Chrysler to become one of the world's largest auto groups. While Marchionne's salary was high, Fiat's turnaround was worth more. With hundreds of thousands of employees, experts estimated that Fiat provided €136 billion to the Italian economy in 2016—nearly €400 million a day.

CEOs clearly do matter. To their boards, the millions the CEOs make in compensation probably don't seem large compared to the billions their companies stand to make. But the problem is that CEOs are still people—they have bad days, blind spots, and biases. They can end up running companies that really aren't a good fit for their abilities. Or they can make bad decisions and then double down on them under pressure rather than admitting they were wrong.

So what should you do as an investor? The best defense is to keep tabs on the CEOs of the companies you invest in—at least in the cases of significant investments you make directly. If you're invested in actively managed mutual funds, you have to trust that the fund managers are taking the CEOs and their behavior into account. If you invest in passive index funds, then you just have to hope that average CEO behavior is pretty good.

But if you're investing in the securities of an individual company, then you need to compare the CEO's actions and the statements they make to justify those actions with your understanding of the firm's current situation—yet another reason to pay close attention to the company's financial statements and other performance measures. In particular, you need to look for signs that the CEO is too emotionally invested in the firm, too confident in their own

version of events, or too convinced of the superiority of their own insights or vision for the company's future. And if the CEO is putting the plane into a nosedive, you need to be ready to bail out.

Above all, you need to avoid your own tendency to be taken in by the CEO's confident attitude, winning smile, and best-selling book. It's hard to cut through the glamor of the modern celebrity CEO and make an objective judgment about their performance—but you have to remember that you're the CEO of your own portfolio.

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6

The Futures Market

Futures enable investors to lock in the price of a commodity, currency, or other asset. Doing so prevents losses that could result from subsequent price changes and enables an investor to confidently make future plans because they have removed an important source of uncertainty. In other words, futures are a great hedging tool, which means they help to control risk. In this lecture, you will explore how the futures market works, the mechanisms behind hedging and speculating on such agreements, and how futures prices can provide valuable information for investing in financial markets.

DEFINING FUTURES CONTRACTS

A futures contract is an agreement in which the contract's seller agrees to deliver a fixed amount of some asset to the contract's buyer on a pre-agreed future date. The price paid by the buyer is called the futures price, which is the current price of the futures contract.

Each futures contract also calls for a standard quantity of some asset to be delivered. For example, the standard natural gas futures contract—which is traded on the New York Mercantile Exchange—calls for the delivery of 10,000 units of natural gas. And a unit of natural gas is 1 million British thermal units' (BTUs) worth of gas. Futures prices for natural gas contracts are quoted in terms of dollars per million BTUs. A recent price of the natural gas futures contract was $2.682 cents per million BTUs.

If an investor buys that futures contract, they'll have to pay that futures price right now. So it's not a future price—it's the price someone would pay now to receive 10,000 units of natural gas later. For example, an electric power utility might want to buy natural gas futures in September that call for natural gas to be delivered in December. The utility locks in a price in September that is likely to be lower than the market price of natural gas in December, when demand for gas is likely to be much higher. That's a hedging transaction in which a user of natural gas locks in a price so that it removes the risk of an adverse price move.

The market for natural gas depends a lot on the weather. In the winter, many households use natural gas to heat their homes. And natural gas is used as a major fuel for generating electricity, meaning demand can also spike in the summer when people crank up the air conditioning in their homes. Because weather is unpredictable, there's a big hedging demand for natural gas futures.

Historically, futures evolved to help control risk in markets for commodities where price variability is high—particularly agriculture, where there's often a long lead time between when a farmer must make an investment in seed, labor, tools, and fertilizer to grow something and when they can take their product to market. Farmers are essentially gambling that their investment at sowing time will pay off at harvest time. Futures help make this less of a gamble.

Investors can also speculate using futures contracts. Each futures price changes moment to moment, so investors can essentially bet on whether that price will rise or fall. Speculators who want to bet that the futures price of an asset will rise will buy futures contracts, which is also called going long. Those who want to bet that the futures price will fall will sell futures contracts, which is also known as going short.

For futures markets to work well, myriad people must be on both sides of the market so that it's easy to buy or sell contracts. Therefore, a market needs to have ample numbers of both hedgers and speculators. If everyone wanted to hedge, say by selling futures, there wouldn't be enough people buying futures to enable hedgers to sell the amount they need to. In addition, speculators help to bring new information to the market and integrate that information into prices. The chance to make a trading profit off new or better information is the incentive investors need to ensure that new information sees the light of day and gets factored into prices.

HEDGING WITH FUTURES

Unless you run a business that produces or uses large amounts of commodities, you probably won't need to hedge any commodities exposure. And though it might sound attractive to be able to hedge your natural gas bill in winter, the size of the contract—10,000 units—is too large relative to a realistic level of household gas consumption. Indeed, most commodity futures contracts call for far more gas than any individual household can use.

But things such as financial futures exist, covering stock prices, interest rates, and currencies. For example, one of the most actively traded futures contracts is the S&P 500 futures contract. You could potentially use that to hedge your stock portfolio. Likewise, actively traded money market futures contracts can be used to hedge short-term, 3-month interest rates. And of course, lots of currency futures contracts also exist to hedge foreign exchange exposures.

In some cases, the size issue may not be a problem with financial futures. For example, if you have accumulated $200,000 worth of long-term bonds in your portfolio over decades of investing, you could think about using bond futures—which deal in $100,000 increments—to hedge the interest rate risk

on your bond portfolio. Similarly, the so-called S&P 500 E-mini futures contract also covers a small enough amount that individual investors can use it to hedge their stock portfolios.

However, there's an additional issue beyond size that tends to make hedging with futures impractical for individual investors—the maturity of the futures contracts. Futures contracts only go out for 2 years or so, which limits the horizon of the hedge. And the truly liquid part of the market is concentrated in the next 3 months' worth of futures contracts. So if you were serious about using futures contracts to hedge your financial investments, you would need to roll over your contracts at least every 3 months or so by closing out your hedging position on the maturing contract and opening a new hedging position on the next 3-month contract. Not only is this a hassle, but it will also incur transaction fees. You may even make losses on the hedge that you have to pay in real money today, and you may not recoup those costs for years, when you finally liquidate the underlying stock portfolio. Therefore, using futures to hedge is impractical for most people.

SPECULATING WITH FUTURES

Individual investors can do as well as professional investors in the stock market for several reasons. For instance, individual investors can find good stocks that professionals can't or won't invest in because the companies are too small. Also, individual investors don't face the pressure of delivering short-term investing profits, so they can stay in the market for longer periods and reap the benefits of investing in long-run trends rather than short-term ups and downs. Finally, the stock market is a place where all investors can potentially win. If an investor buys a stock and its price goes up, another investor's opportunity to do the same thing is not affected.

However, in the futures market, professional investors don't avoid any contracts, so no off-the-beaten-track opportunities exist for individual investors. There may be less-traded contracts, but such contracts tend to be even more dangerous for individual investors because the likelihood of large price changes is higher. And these markets tend to be dominated by experts

in that commodity or asset. An investor could make money trading lean hog futures, for example, but they would need to become an expert on the complex global pork industry to have a chance.

In addition, given that the liquidity in the futures market is concentrated in the next 3 months of contracts, individuals can't hold long-term positions in futures the way they can in stocks. Finally, trading futures contracts is a zero-sum game. You can only buy or sell a futures contract if somebody else wants to make the exact opposite bet that you do. If you make money on your futures contract investment, then the person on the other side loses money. So when you trade futures, you're basically matching wits against the person you're trading with. And you're most likely to be up against a professional who knows the ins and outs of the asset, the contract, and the market a lot better than you do.

FUTURES AND MARKET INFORMATION

Futures markets do have something to offer everyone—and that's information. Futures prices are heavily influenced by people's expectations about the future price of the commodities and financial assets they cover. So futures prices can provide information about the market's expectations, which can be valuable.

One specific futures contract is the Fed funds futures contract. Fed funds are loans of reserves that banks make to each other on a short-term basis. The rate that the banks pay on these loans is called the Fed funds rate, which is heavily influenced by the Federal Reserve. When the Fed changes the fed funds rate, other interest rates usually follow this move.

The Fed funds futures contract is for the average Fed funds rate during a calendar month. Since futures contracts are strongly influenced by expected future prices, it appears that the Fed funds futures contract will reflect the market's expectation about future interest rate changes. In other words, the Fed funds futures rate should provide an indication about the future direction of the Fed funds rate and, therefore, of all interest rates.

Economists have tested this idea and found that Fed funds futures contracts are quite good at predicting future Fed funds rates. Thus, for individual investors, Fed funds futures can be a good source of information about the direction interest rates are headed. The trick is to pay attention to when the Federal Open Market Committee meetings—at which the Fed decides whether, and how, to change the Fed funds rate—will take place in the future. Investors should watch the behavior of the price of the futures contracts that mature in those months, as that's when the interest rate changes will take place.

Information about future interest rate changes can be of help to bond investors, especially for timing the bond investments they already plan to make. For example, if you're planning to invest $10,000 in long-term bonds over the course of this year but the Fed funds futures contract is strongly suggesting that the Fed will cut interest rates, you may want to spend most of that money soon to lock in a higher interest rate while you can. Similarly, you might want to put off most of the investment until later this year if the Fed funds futures are strongly indicating that the Fed will raise interest rates then.

Of course, futures prices aren't 100% accurate, as factors beyond expected future prices also influence the behavior of traders in the market. But they are a tool—one used by professional investors—that is available to individuals who understand what to look for.

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7

The Market for Fear

In every financial market, greed and fear are the two emotions that receive the most attention. Not only are they harmful, but they are also contagious. A few nervous investors are sometimes all it takes to trigger a panic on the markets. But how do you know when fear has gripped the market? And when is it time to stand your ground? Over the years, scholars have developed a family of statistics to measure fear levels in the financial markets. They have even turned some of these statistics into financial products that people can invest and trade in. In this lecture, you'll learn how such products work and how they can help you understand and invest in the market.

MEASURING FEAR IN THE FINANCIAL MARKET

In financial markets, people are afraid they'll lose a big part of their savings and their hopes for the future. Two main ways they can lose their savings are through theft or some big change in the economy or markets.

While investors can't eliminate the possibility of theft, they can do a lot to minimize it. However, a market crash, a bank panic, or the collapse of a company or country can lead to big losses, and investors basically have zero influence over whether or when such circumstances occur. This specific fear is connected to financial risk—a connection that makes investors' fear measurable.

Risk is the probability that something bad will happen. And financial risk is the probability of suffering financial losses that originate from some event in the financial markets, such as a market crash. The usual way to measure risk is to calculate the variance or the standard deviation, which is the square root of the variance. Variance and standard deviation indicate the dispersion of a probability distribution around its mean. And that provides an idea of the range of possibilities. The greater the variance, the higher the probability of a bad outcome. So variance is a measure of risk, and it can therefore also be a measure of fear.

MEASURING FUTURE RISK

Generally speaking, the higher the variance and standard deviation, the greater the risk of bad outcomes and the greater the fear. There's one problem, though. Usually, *past* data is used to estimate the variance of a distribution. But what an investor really wants to know is what the variance of future outcomes, such as prices and investment returns, will be.

If an investor can estimate the variance of future prices or expected returns, they then have a measure of the risk the future holds. To measure this variance, they can use the options market—specifically options on stock index futures.

Stock index futures are futures contracts based on the value of a stock index like the S&P 500 or the Dow Jones Industrial Average. The current price of a stock index futures contract indicates the market's expectations regarding the value of the stock market as a whole. It's important to use the price of the entire market because it measures the collective fear of a generalized market crash or downturn. If the stock market is crashing, there's a very good chance that other financial markets are also suffering negative returns. So an investor can use an estimate of the variance of the future returns on the stock market as a proxy for the variance of the returns in all financial markets—and, hence, the fear of a generalized market meltdown.

Stock index futures provide information about the expected future prices of stocks, but they don't say anything about the future variance of these prices. Options on stock index futures can do that, though. Options contracts are bets by investors on the future price movements of an asset. They can be taken out on nearly any asset, including futures contracts. Therefore, so-called futures options are options on futures contracts—bets on the future direction of futures contract prices.

What investors want to know is the future variance or standard deviation of the stock index futures price because it's as good as knowing the future variance of the stock index price itself. The option on the stock index futures contract helps investors estimate this variance in the following way: In every option-pricing model, two unknown variables are the price of the option and the future variance of the asset price. Every other variable in this model, such as the time to expiration, is known. So an investor can use any option-pricing model to solve for the price of the option (given an assumption about this future variance), or they can solve for the future variance of the price of the underlying asset (given the current price of the option).

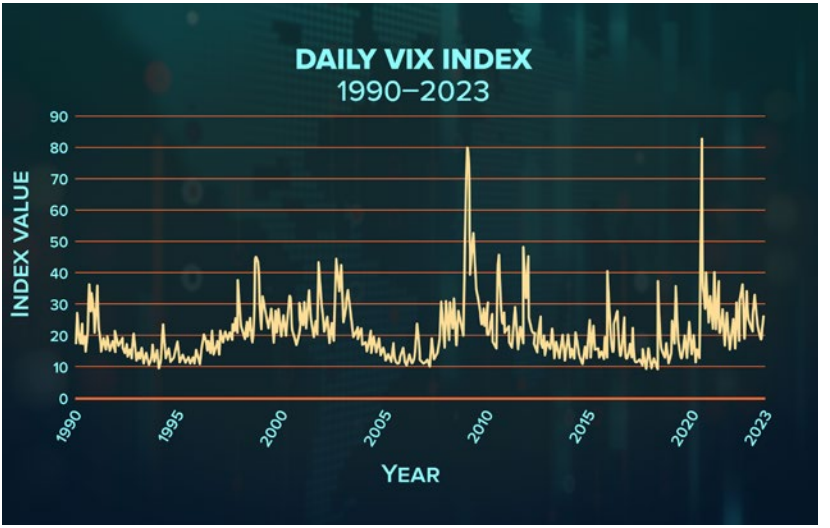
Because the market price of the futures option is determined second by second in the market, investors can take the prices of a stock index futures option and solve for the future variance of the value of the stock index. In doing so, they find the implied volatility of the asset price. Options traders like to use the word *volatility*, which refers to the future standard deviation of the price of the asset. That volatility measure is the market's guess of the future standard deviation of the asset's price.

Therefore, the implied volatility of a stock index futures contract is a measure of the variance of stock prices and, hence, a measure of the fear of a generalized market meltdown—provided that the stock index is representative of the overall stock market. Today, the implied future volatility of the S&P 500 index futures contracts has become the standard measure of fear in the financial markets. The name given to this implied volatility is VIX, which is short for volatility index. But it's also known as the fear index. So when people talk about the VIX, they're talking about the amount of fear that this implied volatility indicates is present in the market. The higher the index, the greater the fear. Because it's based on the broadest set of companies, the VIX remains the gold standard of fear.

THE VIX'S HISTORY

From 1990 through early 2023, the VIX ranged in value from high single digits to values of more than 100, with the index usually trading in a range between 10 and 30 during normal times. The VIX might rise above 30 a few times in a year and above 40 every few years or so. But it appears to rise above 50 only when the markets are in a full-blown panic. The VIX peaked above 80 just twice during the aforementioned 3 decades. Once was in October 2008, at about the peak of the global financial crisis. The index peaked again in March 2020, induced by a liquidity panic in the financial markets brought on by the COVID-19 pandemic lockdowns. But the highest value the VIX has ever reached was above 100 during the October 1987 stock market crash.

What's important about these peaks in the VIX index is that they tend to be short-lived. When the index rises to a high level, it doesn't stay there long. And once it drops back to a more normal level of between 10 and 20, it tends to stay in that range. The VIX therefore exhibits what statisticians call mean reversion. Whenever the index's value goes above or below its mean value, it tends to return to that mean. Most financial prices and returns don't behave that way. By the same token, the VIX rarely dips below the level of 10. It's as if there's a floor at this value because there's always some level of fear present in the market.



With regard to the timing of these ups and downs, the value of the VIX tends to move in the opposite direction of the stock market and other asset markets. In turn, the index registers lows during good times and market booms. For example, the VIX reached very low levels in the 2005 to 2007 time frame, when the residential real estate market boom was peaking. So when the index is low, asset prices are often rising briskly, and when it jumps up, market prices and returns generally fall—sometimes dramatically.

USING THE VIX TO INVEST

One way to use the fear index involves the VIX's mean reversion property. In the past, the VIX has mostly wandered between the values of 10 and 30—and reliably returned to a mean level of about 20. Therefore, an investor might get tempted to buy one of the exchange-traded products when the VIX gets close to the bottom of its range. Such a decision is predicated on the expectation that the index will quickly return to its mean value or even go up toward the upper end of its range. The faster it does so, the higher the return one could earn from this investment.

Another way to use the VIX is to take its role as an indicator of market sentiment seriously. When the index approaches its highs—especially those rare values of 40 or higher—this indicates that a lot of people in the market are worried. And when people get really worried, they tend to sell. Generally, they sell too quickly in these situations, which can create buying opportunities when prices fall relative to their fundamentals. A great expression about this situation states: "When the VIX is high, it's time to buy."

A suggested shopping list would include stocks of high-quality companies whose prices have been driven down excessively, relative to your estimates of their long-term value. To buy during these times, you would have to be very familiar with these companies, confident in their value, and fairly certain they won't be permanently affected by whatever craziness is causing the spike in the VIX. Even if you don't want to dive deeper into the market when the VIX is soaring, knowing it's spiking is still valuable because it can help you to keep your nerve and stay fully invested. When the VIX indicates that other investors are in the grip of fear, the safest thing is to stay calm and leave your investments alone.

It's important to remember that fear is a feeling and that it's not always rooted in reality. For example, despite a sky-high VIX and dire predictions of an economic apocalypse, the 1987 crash did not lead to a second Great Depression. You don't want to use the index to simply follow the herd—you want to use it to try and get ahead of it. Similarly, when the VIX reaches the bottom of its range, it's a signal that other investors might be letting their guard down too much and are willing to overpay for assets. At such a time, you want to be extra skeptical about any potential new investment. And you want to keep in mind that low VIX values are often followed by market disruptions, especially after extended periods when the index has been very low.

In other words, a low VIX reading indicates that trouble might be brewing, particularly if it remains low for long periods of time. It wouldn't be a surprise if a big company implodes, a rogue trader sinks a bank, or some other new source of stress in the market bursts onto the scene. Some of the lowest VIX values were in the years prior to the subprime mortgage crisis, and that makes total sense. The crisis occurred exactly because investors, hedge funds, banks, ratings agencies, and regulators were so relaxed that they failed to scrutinize

the explosion of fundamentally unsound mortgage-backed securities and debt instruments. And that complacency—or lack of fear—meant that even as the crisis started to emerge, many failed to recognize it as such until it was too late.

So knowing when the markets are fearful and when they're complacent can be a great help to investors. The VIX provides a very easy way to measure these extreme states. It's also a fascinating case of a different kind of market—one that helps individuals understand some of the emotional drivers of investor behavior and market dynamics.

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8

The Options Market

When investing in financial markets, the simplest way to be a profitable trader isn't to come up with amazing trades—it's just to not make stupid ones. And one of the best examples of the latter comes from the options market. In recent years, individual investors have been piling into the options market in search of a quick profit. Through this lecture, you'll explore how the market for options works. By doing so, you'll learn some of the fundamental rules of how serious and successful traders operate in financial markets and, conversely, how fools and their money are soon parted.

OPTIONS TRADING

Options are a financial instrument that gives the holder the right to buy or sell a particular asset at a fixed price—called the strike price—on or before a certain date. They are like futures in that they can help spread risk and hedge against future uncertainty. But unlike futures contracts, options contracts don't commit the holder to actually buying or selling anything. It's just the right, or the option, to do so that you're buying and selling. Stock options usually cost a lot less than the stock itself, and buyers of options only risk what they paid for the options. However, sellers of options can incur much greater losses.

The vast majority of the trades being done involve investors taking so-called naked positions in calls and puts. In other words, investors are betting that the price of some asset, usually a share of stock, is going to rise or fall in price. And these bets are naked because the investors don't actually own any of the underlying asset they are gambling on. So if the option is exercised, they'll have to make additional trades involving the underlying asset.

Making naked, directional bets on stock prices using options isn't wise. If an investor is right, they can make some nice profits. But if they're wrong, they can lose big. If they buy naked options that expire out of the money, they lose everything they've invested, including both the price of the options they bought and the trading fees and commissions. And if they sell naked options, their losses can skyrocket—up to the value of the underlying stock when they sell put options or even higher when they sell call options. If they buy stocks outright, they still profit if they win and aren't left with nothing if they're wrong.

On top of that, the maturity or length of the options contracts people are buying has become increasingly shorter. When an investor buys or sells options, the expiration date is an important part of the contract. The longer the time until expiration, the greater the chance that a stock price will move in their favor. These days, more and more individuals are buying options with only a few days to expiration. And there has been a surge in the purchase of so-called Zero-days-to-expiration options contracts—basically betting that the price of a share will move up or down a lot on that day. The shorter the amount of time to expiration, the less an investor is making a bet based on information about the company's performance and the more they're betting on sheer price momentum in the market.

Finally, buying options is expensive. The bid-ask spreads for options are far wider than they are on the underlying assets like stocks. An investor buys options at the ask price and sells at the bid price, where the ask is higher than the bid. This spread is another cost on top of any trading commission they pay—meaning that the options have to increase in value by the amount of the bid-ask spread and the trading commission before an investor truly profits from their options trade. In other words, trading naked options places investors at an immediate disadvantage relative to trading the underlying shares or other assets that also have options contracts written on them.

Although some people are profiting from trading options, investors are losing money on average. Between November 2019 and June 2021, retail investors lost $2.1 billion on their options trades. While options trading can be part of a sensible portfolio strategy, investors are not engaging in serious investing—they're gambling. Options offer the allure of quick profits at lower costs, but if someone trades naked options on a short-term basis, they have to be lucky to win.

TRADING WISDOM: THREE BASIC TYPES OF TRADES

Riccardo Rebonato has written extensively on the philosophy of risk. His 2007 book *Plight of the Fortune Tellers* is a classic of risk management, especially in the context of trading financial instruments. According to Rebonato, only three basic types of trades exist across all financial markets: selling lottery tickets, buying insurance, and rolling dice.

Regarding the first type of trade, if a trader were to run a lottery for profit, they would be making many small gains while running the risk of incurring a big loss that wipes out their gains. Selling lottery tickets describes a huge number of ordinary investments—including a stock market investment. The stock market goes up and down, but most days it inches up a little bit so that your profits add up over time. But there's always the risk of a big market crash that reduces traders' gains or inflicts big losses. Even the business of lending money can be described this way. Banks make small profits from nearly every loan they extend, but occasionally, a loan customer implodes, defaulting on their loan and leaving very little—if any—value that can be recovered.

The second type of trade is called buying insurance. When someone buys insurance, they pay a regular premium, which means they're paying out or losing money. But if a particular event occurs, such as a car accident or a house fire, the insurance makes a big payout. Similarly, a bought insurance trade is one in which the trader loses a little bit of money on a regular basis in the hope that a big event occurs, leading to a huge payout. The problem with such trades is that traders must continually pay out money to maintain their position—a phenomenon called negative carry. For a bought insurance trade to work out, the trader's timing must be good. The event has to happen before they run out of money to support their position. But there's always the chance that they'll never get that payout or that they'll run out of money before it hits.

The final trade type is called rolling dice—a trade that basically has symmetric payoffs and probabilities, implying that the average profit is zero. In other words, it's the foolish or stupid trade because people who make it are simply hoping that the outcome will be in their favor. Unfortunately,

millions of options traders have been doing this type of trading when they buy the Zero-day-to-expiration and other short-term options contracts. These traders are hoping that the price of the underlying asset will move in their favor in a big way over a short period of time. Most financial prices behave unpredictably over short time horizons, so it's very close to a 50-50 chance whether they'll go up or down during a single trading day or even over the course of a few days. As the financial economists who study these trades argue, the only people getting rich are the market makers who are selling the options to retail traders.

The upshot of this discussion is that if you're going to trade in a serious way, you need to understand the kind of trade you're making. That is, you need to understand how the trade is supposed to make money and what the main risk of loss is. And you also need to be honest about whether the trade is a rolling dice trade. If it is, you should forget about it and find a sold lottery ticket trade instead. Alternatively, if you're willing to invest even more effort and take on increased risk, find a bought insurance trade.

TRADING WISDOM: FOUR RULES FOR TAKING ON RISK

Aaron Brown, another great thinker about risk and trading, lays out four rules for taking on risk as either a trader or a gambler in his book *The Poker Face of Wall Street*. The first rule is to do your homework—which includes understanding the type of trade you're planning, learning what you can from people who've tried the trade before, calculating whatever probabilities or odds you can about the trade's success, avoiding unnecessary risk, and making sure you're getting paid enough to take on the risk.

Rebonato says that before you decide on a trade, you should think about "the good, the bad, and the breakeven." The good is what your profits will be if the assumptions that motivate your trade turn out to be exactly right, while the bad is simply how bad things could get. The breakeven is a calculation to find out how bad things need to go before a trade starts to lose money.

Once you do your homework and decide to make a trade, Brown's second rule of trading is to act decisively. If you decide to make a trade, you should make the exact trade you planned, not some halfway version of it. And you need to do whatever you can to maximize success and not worry about minimizing risk at that point. If you've done your homework properly, you should be confident in your choices.

After making the trade, you have to react to new information about the trade's success as it comes in. With this in mind, Aaron Brown's third rule for trading is to "make the tough fold." That is, you should get out of a trade once you have enough information that it's not going to work out as planned. As new information from the market comes to light, you should update not only your subjective probabilities about the trade's success but also your degree of belief in the mental model you used to justify the trade. This rule aims to keep you from getting burned by the sunk cost fallacy. Sinking a pile of your money into a trade doesn't mean you should ride it out. You should stay in a trade only when the evidence suggests it will do well going forward. If not, you should bail out.

What if you make a serious trade and it still loses money—maybe a lot of money? Here's where Aaron Brown's final rule for traders comes in. This rule says plan B is you. If your big trade loses or if you find out the hard way that you're really not meant to be a trader, you still have your knowledge, skills, and will to succeed. In other words, even if you lose a bunch of money, you'll survive. You can find another way to make a profit or earn a living.

One of the reasons a lot of people are intimidated by trading is that they know they'll take their losses pretty hard, in that they'll blame themselves and feel like they've done something wrong. Brown isn't telling you to ignore the loss—but to remember that you still have a lot of other things going for you if one of your investments turns sour. Losses happen, but they don't have to define who you are as an investor or a person.

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9

The Private Equity Market

At the end of 2010, the total value of the US stock market was $17 trillion. This number grew to $25 trillion in 2015, before doubling again by the decade's end. But despite this fact, the American stock market has actually been shrinking for years. So how can the market be shrinking if its total value has been going up? The answer to this question has to do with the number of public companies that are listed and traded in US equity markets. In this lecture, you'll explore the increasing importance of the private equity market and its consequences for individual investors.

CONSOLIDATION THROUGH MERGERS AND ACQUISITIONS

In 1996, the total number of companies listed on American stock exchanges was more than 8,000. But that number fell to a little more than 4,000 at the end of the last decade. In other words, the number of publicly traded corporations in the US declined by almost half in less than 2 decades. The stock markets consisted of fewer companies—and each was much larger, on average, than in the past.

Two reasons exist for such a situation. One has to do with existing companies leaving the stock market due to financial or legal distress, typically after they go bankrupt and liquidate their business—which doesn't happen very often. Much more often, publicly listed companies disappear because they've been acquired or have chosen to go private.

In a recent year, there were more than 500 mergers and acquisitions in which a company was purchased for more than $500 million. Many companies of that size are publicly traded corporations, which gives an idea of the number of mergers involving listed companies. McKinsey & Company estimate that

95% of the companies that left the stock market between 2000 and 2020 did so because they were bought by somebody else. So dozens, if not hundreds, of companies disappeared from stock markets each year because of mergers.

Supermarkets are a prominent example of increasing market concentration internationally. Kroger and Albertsons—the two largest supermarket chains in the US for some time—have each acquired dozens of other chains in recent decades without rebranding them. In 2023, they were even discussing merging themselves.

When companies merge, they typically create a larger single firm and try to use their combined resources to generate more profits, leading to a higher market value. Since they reduce competition, mergers can also lead to higher profits that investors reward with higher valuations. The reduction in the number of companies that results from mergers means that the huge pool of savings flowing into the stock market each year is spread among fewer names. So the total market capitalization on exchanges around the world is indeed growing, even as the number of listed companies shrinks.

SHRINKING INITIAL PUBLIC OFFERINGS

What about the supply of new companies in the stock market? Why hasn't the number of mergers been offset by new listings? This part of the story is important for investors.

Corporations can join the stock market in two ways. One method is for an existing corporation to set up a division or a line of business as a separate entity through a spinoff. Spinoffs are used when companies have product lines or divisions that distract managers from what they consider to be their main business, or core competence. Generally, only a handful of spinoffs take place in any given year.

The main way new companies join the stock market is through an initial public offering (IPO). A privately held company can file with the Securities and Exchange Commission (SEC) for a public stock offering. When looking at data from 2000 through 2019, the number of IPOs seems to average

somewhere around 200 to 250, with a range running from 62 IPOs during the global financial crisis to 397 at the height of the dot-com bubble in the year 2000. The total number of IPOs during this 20-year period is not far above the decline in publicly traded companies during the same period.

This "normal" number of about 200 IPOs a year seems like a lot until the context of the overall economy is considered. Literally millions of businesses exist in the United States, and hundreds of thousands of new ones are formed each year. In addition, the economy is much larger than it was in the year 2000, having doubled in size by 2020. So as the overall economy gets bigger, one would expect the number of companies that could become successful, publicly traded corporations to also get bigger. However, IPO activity has remained stagnant in recent decades despite overall economic growth. What is happening?

Many companies don't want to go public—or rather, the owner-founders of these companies don't want to take them public. When a private company goes public, it can get a massive cash infusion that enables it to grow and innovate. But these funds have significant costs that fall heavily on the company's owner-founders. An IPO usually reduces the original owners'

control over the business they created. In many instances, owner-founders end up with 1% or less of the company after its IPO. People who've devoted years of their lives to building a business can find that hard to take.

In addition, dealing with millions of shareholders is a time-consuming challenge. CEOs have to invest a significant share of their resources just trying to please shareholders, especially the large, institutional investors that hold significant stakes in the company. And every public company is vulnerable to activist investors who want the managers to make big changes in how the company operates.

PRIVATE EQUITY

Until recently, the challenge of dealing with shareholders was the price of success because going public was the most efficient way for a promising company to obtain the capital it needed to grow and mature. Therefore, companies planned for an IPO despite the hassles. But the picture has changed thanks to the evolution of the private equity market. Private equity refers to the practice of privately held investment companies purchasing significant ownership shares in a public or private business.

The key to earning exciting returns from private equity is being able to buy a company at a low price and then sell it while its prospects remain strong. IPOs used to offer the only practical way to cash out of a private equity investment. So private equity mainly took the form of investing in a company, improving its performance, and then taking it public through an IPO. In the 1980s, many of the companies that entered this business were named for the way they invested in companies—through leveraged buyouts (LBOs). In an LBO, investors buy up companies using large amounts of borrowed money, perhaps 90% of the purchase price. The interest rate they pay on these borrowings tends to be high. So they have a strong incentive to improve the performance of the asset within a short amount of time and sell it to new owners. If the buyers get it right, they earn great returns, thanks to their use of lots of leverage.

The success of the LBO shops attracted more companies—and more capital—to private equity, especially among institutional investors, such as university endowments. Institutional investors were willing to commit large sums of money to private equity firms for several years at a time, which allowed private equity investing to reduce its historical reliance on short-term borrowing. Private equity firms could now be more patient investors. Just as importantly, these firms started to make their own market for the companies they bought. Instead of always going through the IPO process to cash out of their investments, they began to sell their portfolio companies to each other—known as the private-equity secondary market.

From the private equity point of view, selling a portfolio company to another private equity shop is faster, easier, and cheaper than going through the lengthy and expensive IPO process. In other words, private equity has evolved to the point that remaining a privately held company has become a credible long-term alternative to becoming a publicly listed and traded corporation. Such a situation plays a big role in keeping the number of IPOs relatively low worldwide. That is, the number of companies leaving the stock market through mergers hasn't been offset by the comparatively smaller number of new companies joining public markets.

CONSEQUENCES FOR INVESTORS

If more startups remain privately held, individual investors' opportunity to invest in young firms and benefit from their rapid growth will be reduced. Even when startups choose to go public, individual investors still miss out on much of the initial growth. That happens because startup firms are staying private longer before they go public.

These days, the average venture-funded startup company that goes public is 12 years old at the time of its IPO. Before the year 2002, by comparison, the average age of a company at the IPO was 6 years. So individual investors may be missing out on 6 years of growth of the next Google—or possibly missing out on the next Google altogether.

The shrinking number of publicly traded corporations—and relative lack of new IPOs—has another major consequence. A big part of the attraction of stock investing is that it gives individual investors the chance to own a representative slice of the economy and benefit from the economy's long-term growth. But if the stock market doesn't represent the overall economy, investors are missing out on at least part of that growth. And it's even possible that the stock market will become overloaded with companies that are stagnant or in decline.

So what should you do? In the United States, you have to be an accredited investor to have access to private equity. To get accredited by the SEC, you need a certain amount of income and a net worth of more than $1 million. Some countries have somewhat lower requirements or will accept certain kinds of professional qualifications to become accredited. But even if you make it over that bar, you will still want to have truly serious amounts of wealth to invest so that you can sufficiently diversify your holdings of private companies. Private equity is a high-stakes world that only those with deep pockets can really afford to play in.

One option to get around this problem is equity crowdfunding, which the SEC has allowed individual investors to participate in since 2016. Equity crowdfunding uses internet platforms to connect startup companies with individual investors who might be interested in buying shares directly. But the amount that individuals are allowed to invest through crowdfunding is limited by regulation—and for good reason. The companies that use crowdfunding are typically small and at early stages of development when the risk of failure is sky-high. And crowdfunding investors must be willing to hold their investments for years before having reasonable hope of cashing out. This approach may not be a practical or prudent way to build a portfolio.

But if a big portion of high-growth American stocks is out of reach, then you might do well to look into opportunities for investing in high-growth foreign stocks. Such stocks are not perfect substitutes for American stocks—especially the more thinly traded securities—and might not be as well regulated as stocks in developed economies. However, until the number of public firms in the American stock market stops shrinking or the market for private equity is opened to individual investors, there might not be any better options.

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10

The Market for Good Behavior

Recent years have witnessed the rise of environmental, social and governance (ESG) investing, in which investors direct their funds toward companies that have demonstrated good practices in these areas and away from those that haven't. In effect, ESG investing tries to create a market for good behavior. This lecture will examine whether such a strategy really works. Has ESG investing improved the behavior of companies? Does this approach generate good returns in terms of either money or social benefits? And are the people who buy ESG-labeled investments actually putting their money where they think their mouth is?

PROBLEMS WITH ESG INVESTING

Several problems exist in relation to ESG investing. To start, adding significant new objectives is going to be difficult for any corporation. The less related the goals are to the company's core competencies, the greater the chance they'll distract the managers and lead to reduced profits—or worse.

Another problem with ESG investing is simply knowing who to invest in, when, and why. Some ESG investors want to direct their money toward companies that appear to be doing the right thing. Alternatively, this type of investing could work more like activist investing by targeting poor performers. Both investment approaches are consistent with actual practices under the umbrella of ESG investing.

A third problem with such investing is that it's very difficult, if not impossible, to assess a company's true intentions. It's entirely plausible that a firm is not sincere about transforming itself and that a whole ESG campaign could amount to what people now call greenwashing. Such a concern extends to all areas of ESG investing. For instance, bluewashing is when companies overstate their commitment to social practices. In more recent years, commentators have also criticized pinkwashing and purplewashing, in which companies make bold statements but take little action on LGBTQ and feminist issues, respectively.

In ESG investing, investors have to be constantly on guard to try and separate fact from fiction when it comes to corporate intent. It's the same combination of asymmetric information between investors and managers—in the presence of risk, uncertainty, and legitimate instances of simple bad luck—that plagues all investment decisions.

ESG RATINGS

ESG ratings are one of the current mainstays of ESG investing. They attempt to quantify the ESG performances of different companies and summarize them in numbers that investors could potentially use to select their portfolios.

Many companies have stepped up to provide ESG ratings. However, researchers who have investigated such ratings find that those of the same company can vary widely depending on which firm provides the rating. A project at MIT's Sloan School of Management looked at both the range of ESG ratings for companies and the correlations between different providers' ESG ratings and found that they were all over the place.

Companies' ESG ratings may disagree with each other for several reasons. To start, a lot of the data that ESG rating firms want to use isn't directly available or available for every company. Therefore, they estimate it, and such estimates can vary. ESG ratings are also indexes—that is, weighted averages. Different rating companies have different weights they place on the components that go into their ratings. They don't necessarily use the same components, either.

And ratings firms also seem to have different ideas about what makes a company a good candidate for ESG investors, so their rating methodologies can vary greatly. Some raters assign higher marks to companies that seem to be doing a good job in terms of ESG performance. But other raters take the approach that a firm with problems in these areas has more potential for improvement and will assign higher ratings to these companies. In addition, researchers have shown that the raters' preexisting opinion of a company will influence the ratings they give. People give the benefit of the doubt to firms they already think of as good, responsible corporations, which biases the ratings in favor of these companies.

So if the ratings disagree, whose ratings should an investor actually follow? Regulators are waking up to the fact that the public wants to know about the ESG-related activities of the companies they invest in. And in some places, they are making new rules about ESG disclosure.

The European Union is the farthest along in this process. Starting in 2018, it began requiring nonfinancial corporations above a certain minimum size to report on the risks they face from environmental, social, and several specific governance issues. Several years later, it created and published an expanded set of definitions of ESG-related behaviors—called the taxonomy—which will be phased in over the coming years as the standard benchmark for all ESG disclosure and reporting in the EU. Unfortunately, the US is considerably less advanced in this regard.

So while ESG ratings are a good idea, an ESG-focused investor should do their own research. The agreement among the ratings may improve as the industry matures. But without disclosure rules that improve the accuracy and consistency of the underlying data that goes into them, ESG ratings won't approach the utility and dependability of bond ratings.

MUTUAL FUND MANAGERS AND ESG INVESTING

Rather than relying on ratings, investors can turn over their ESG investing decisions to professionals—in other words, mutual fund managers. There's been an incredible surge in the number of mutual funds that cater to ESG investors. And in the future, a third of global assets under management are expected to be in ESG-themed mutual funds, amounting to $50 trillion by 2025.

However, no standard industry or regulatory definition defines what an ESG fund is. One practice that's come to light over the past few years is that some companies have simply been rebranding their existing mutual funds as ESG funds. While the mutual fund managers who rebranded the funds did change the companies they held—sometimes dramatically—they also held on to many, if not most, of the companies they had before the change.

In a handful of cases, mutual fund managers have run into trouble with regulators over their ESG funds. The SEC has been on the lookout for possible greenwashing on the part of fund managers and is focused on ensuring that the mutual funds actually do what they tell investors they're doing.

By and large, though, the data that's been assembled on the holdings of ESG funds indicates that their holdings differ from the average. But they don't differ by all that much. ESG funds often overweight tech and healthcare and underweight energy, so they tend to outperform when tech and healthcare do well and perform relatively poorly when energy does well. And the fact that they are prone to devoting larger portions of their investments to the largest companies means that the returns on ESG funds have a higher average correlation with the overall market than the returns to the average non-ESG fund. Essentially, in terms of their returns, ESG funds behave very much like the overall market does.

Moreover, these portfolio weightings can be dubious in terms of their ESG bona fides. Energy companies may be some of the most obvious contributors to climate change, but tech firms are rapidly catching up. Amazon prominently features in many ESG funds, but it's by far the largest polluter of the big tech companies. And its reported emissions exclude the massive amount generated by its huge network of third-party sellers, shipping partners, and overseas suppliers. In addition, the management fees on ESG funds—both actively managed mutual funds and exchange-traded funds—are significantly higher than those on non-ESG mutual funds.

The bottom line on ESG funds is that an investor pays extra but doesn't necessarily get much for that money. A set of definitions or regulations on such funds that can effectively prevent greenwashing does not yet exist. And ESG funds haven't really shown that they would invest one's money very differently from the way non-ESG funds would.

ESG BONDS

The bond market has done a much better job than the world of stocks at setting standards so that investors know what they're getting. The International Capital Market Association (ICMA) has put together voluntary

standards that define what different types of ESG bonds must do to qualify as either a green bond that satisfies the environmental criteria or a social bond that satisfies the social criteria for ESG investing.

According to the ICMA, a green bond must apply the proceeds of issuing the bond to finance or refinance a green project. The acceptable types of green projects include climate change mitigation, climate change adaptation, natural resource conservation, biodiversity conservation, and pollution control.

The ICMA also defines social bonds, which use their proceeds to finance or refinance social projects. Such operations aim to mitigate a specific social issue that threatens or hinders the wellbeing of society or a specific target population or seek to achieve positive social outcomes in general. Examples of social projects include affordable housing, food security, and socioeconomic advancement.

Two other ESG bonds are worth mentioning. One is a sustainability bond, which is simply a bond that uses the proceeds for both green and social projects. The other is a sustainability-linked bond. When a company issues such a bond, the proceeds can be used for any corporate purpose. But what makes the bond special is that the company commits to achieving some kind of green or social goal within a specific amount of time. If it doesn't, it will face a financial consequence; often, the interest rate paid on the bond rises.

The attractiveness of ESG bonds is clear—they have an explicit tie to green or social projects that can be monitored and measured.

IMPROVING COMPANY BEHAVIOR

The financial markets may not be the best way to prompt companies to behave better. They can be used to a certain extent—as the examples of green and other ESG bonds demonstrate. And as disclosure standards for companies improve, the stock market may become better at disciplining companies for their ESG performance.

But other means of getting companies to behave better exist, and they're proving to be much more effective than the financial markets. The brighter the spotlight of public scrutiny on a company, the more it changes its behavior. In this regard, the mobile web and the ability to post comments and

videos nearly instantly about any aspect of corporate behavior are powerful tools. Companies react when their shortcomings or wrongdoings are exposed on social media and go viral. The strongest ESG pressures can be brought to bear in such places.

Shareholder activism is another way to put pressure on corporations. Recent years have seen a dramatic increase in corporate shareholder votes on ESG resolutions. In 2021, for example, Engine No. 1—an activist hedge fund—shocked the energy industry when it managed to get three environmentalist candidates elected to the board of ExxonMobil after a concerted campaign to sway some of the company's largest shareholders. It is early days to see what actual effect such actions will have on corporate behavior. However, shareholder resolutions and board changes may ultimately impact this behavior far more directly than ESG investing, whose effect is more indirect and harder to measure.

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11

The Virtual Assets Market

The fear of missing out (FOMO) is a normal part of human nature. But when it comes to investing, FOMO often results in people making investments too soon and without asking enough questions. Most people don't realize how long it can take between recognizing the potential value of a new discovery and realizing profits from it. In this lecture, you'll explore how the market for virtual assets, such as cryptocurrency and non-fungible tokens, is causing a tidal wave of FOMO.

DEFINING VIRTUAL ASSETS

The Financial Action Task Force defines a virtual asset as "any digital representation of value that can be digitally traded, transferred or used for payment." This definition includes a lot of assets, including ones that have been in existence for decades. However, most people associate virtual assets with the use of cryptography and distributed ledger technologies, such as blockchain. This latest generation of virtual assets—dating back roughly to the first mining of Bitcoin in 2009—was designed to be distinct from, and operate differently than, digital versions of standard assets.

The most distinctive feature of this generation of digital assets is that they can be exchanged and tracked without the need for a centralized authority, such as a securities exchange or a payment system operator. Instead, the market participants facilitate the exchange of assets and maintain the records of all exchanges that take place. So the old generation of virtual assets can be understood as centralized virtual assets and the new generation as decentralized virtual assets.

Decentralized finance (DeFi) has two parts that are worth exploring separately: the decentralized virtual assets themselves and the decentralized mechanisms and technologies used to exchange the virtual assets.

CRYPTOCURRENCIES AND STABLECOIN

In terms of decentralized virtual assets, the first ones out there were the cryptocurrencies—for example, Bitcoin, Ethereum, and Dogecoin. The standard cryptocurrency is not backed by any other asset; it has value only because people agree to pay a nonzero price for it in the market. No central authority stands ready to redeem a unit of cryptocurrency for another asset. Instead, if an investor holds cryptocurrency and wants to trade it for another asset, including traditional money, they have to do so on a cryptocurrency exchange.

Unfortunately, cryptocurrency exchanges have proven to be one of the most vulnerable parts of the market for virtual assets. They're routinely attacked by hackers and fraudsters. In addition, they have been largely unregulated and generally locate their businesses in countries that have introduced laws that are friendly to crypto exchanges or have lax financial regulation in general. Such factors often mean that the people operating cryptocurrency exchanges can make big mistakes or even intentionally mistreat their customers.

As there's nothing backing the typical cryptocurrency, their prices can move for any reason—or no reason whatsoever. As a result, volatility in the values of most cryptocurrencies has been staggering. Unstable prices make cryptocurrencies a very poor choice as a store of value but an almost ideal vehicle for speculation. And for decentralized cryptocurrency systems to transmit payments, the system participants have to receive fees to do that work. These fees are generally a lot higher than the fees people have to pay to send and receive payments using traditional money. For these reasons, cryptocurrencies are unattractive investments.

One of the ways that the market has reacted to these problems is to create virtual assets that are backed by other, more stable assets. For example, stablecoins—technically a type of cryptocurrency—attempt to maintain

a stable value with respect to some other reference asset. Many existing stablecoins, including Tether and USD Coin, aim to maintain a strict price of $1 per unit.

Stablecoin creators have tried to back these assets in two ways. One is simply to hold dollars—or dollar-denominated assets—so that if people want to exchange their stablecoins for dollars, the stablecoin operator has a pile of dollars standing ready for this purpose. The other approach involves cryptocurrency, and the record for these stablecoins is mixed.

Some stablecoins are backed by name-brand cryptocurrencies like Ethereum; the amount of Ethereum backing each dollar's worth of the stablecoin is worth much more than $1. That overcollateralization is there to protect the value of the stablecoin against the wild swings in cryptocurrency values. Other stablecoins are backed with generic cryptocurrencies, and they haven't done well. Sooner or later, investors realize that the value of one asset is being backed by another asset that has nothing backing its value. As a result, these stablecoins tend to collapse.

NON-FUNGIBLE TOKENS

In addition to stablecoins, another type of virtual asset has been created that is backed by something of value. These virtual assets are non-fungible tokens (NFTs). The non-fungible part of the name means that each token is unique and can't simply be replaced by another token. In comparison, each unit of cryptocurrency is designed to be fungible.

NFTs are used to electronically represent ownership or authenticity of unique items. They're best thought of as a certificate of authenticity. They can attest to the authenticity of just about anything, but they have mostly been used for digital art. The NFTs associated with art—that is, the actual tokens themselves—are simply lines of code that verify the authenticity of the image associated with or referred to by the NFT. So a buyer doesn't really own the image associated with the token—they own the code that says the image is authentic. In other words, the NFT is like a certificate saying they possess an

authentic print of an original painting or photograph. But they don't own the underlying art, and more importantly, they don't own the copyright to the underlying art. The artist who created it retains that.

In general, the art market, like the market for virtual assets, is quite volatile because most of art's worth is based on the intangible cultural value people assign to it rather than the tangible cost of what art is made from or the labor required to make it. In this sense, buying NFTs is not much different from buying art generally—an investor is speculating more than investing.

But NFTs do have two characteristics that could lead to real value for society. First, NFT art collections continue to pay commissions to the artists every time a token is resold—a true innovation in the art world. Currently, the artist who creates a work gets paid only for their first sale of a work and then never sees any benefit from subsequent sales. Second, NFTs get people into the spirit of tokenizing all kinds of assets, including those that already exist in digital form but not necessarily in a form that is easy to transmit or trade.

DISTRIBUTED LEDGER TECHNOLOGIES

The big opportunities with a virtual asset may not lie in the asset itself but rather in new applications of the underlying technology. Distributed ledger technologies are a good example. A distributed ledger is basically a tamper-resistant, publicly viewable record that is maintained by a group of people who are dispersed around the world and generally don't even know each other. Many potential uses exist for distributed ledgers. For example, moving property titles to a distributed ledger could vastly speed up and lower the prices of title searches. And land transactions recorded on a blockchain—as is being explored in India—would create a disaster-resistant record that automatically records every transaction and makes a plot's entire history publicly viewable.

It's also possible to embed lines of executable computer code into a distributed ledger, which enables the creation of so-called smart contracts—self-executing contracts that don't require centralized authority or even human intervention. Smart contracts demonstrate both the promises and current pitfalls of DeFi. Ideally, such contracts could be used by people to borrow, lend, invest, and

engage in many other financial transactions that currently require the use of a financial intermediary like a bank or broker. At the moment, however, smart contracts have a lot of learning to do in terms of preventing fraud and misuse. Part of the problem is that smart contracts embedded in distributed ledgers are written by computer programmers, not lawyers or finance experts.

The other troubling aspect of smart contracts—and of all DeFi—is that they're trying to develop financial services and markets without regulation. Unregulated financial markets always end up in chaos. Clever people find ways to push the system beyond its limits, which causes it to overexpand and then crash. Other smart people simply find ways to cheat or defraud everyone else. In either case, there's no recourse when bad things happen. Without sufficient regulation to support good risk management and fair play, even the most promising financial markets wither and die.

THE PROMISE AND REGULATION OF VIRTUAL ASSETS MARKETS

The most promising direction for DeFi involves introducing better, faster, and cheaper ways to conduct the same types of transactions that traditional markets are already performing. Doing so would necessarily bring the markets for virtual assets into competition with traditional financial markets, which would wave a giant red flag in front of the regulators.

For example, a stablecoin essentially functions like a money market mutual fund. In both instruments, people deposit money, the money is invested into government bonds, and then the depositors can cash out their deposits whenever they like. So if money market mutual funds are regulated, why should a virtual version of them go unregulated?

Cryptocurrency borrowing and lending is one of the growth areas for virtual assets and DeFi, meaning that these markets will have to either submit to regulation or go completely underground. In this regard, the market for virtual assets will need to mature before it is suitable for serious investments from ordinary people. The big question is the extent to which the market for virtual assets will agree to be regulated, which could take two paths.

In one scenario, virtual assets and DeFi could move under the regulatory umbrella, and the truly useful products and services would survive by outcompeting traditional products and providers of financial services. Alternatively, DeFi could be cut off from any meaningful connection to the regulated financial markets and shrink to a very small niche market catering to illicit transactions. At the same time, all its good ideas would be stolen by traditional financial firms and folded into their product and service offerings.

Several products and technologies in the market for virtual assets show great promise for making financial services better, faster, and cheaper. But these products aren't necessarily the ones that are dominating the market now. Moreover, it takes time for the right applications to emerge and the right companies to develop and market them. It may take years before any clarity appears regarding who the long-term winners in the virtual assets market are likely to be. And that's assuming the regulatory issues get sorted out.

Unfortunately, in the market for virtual assets the fear of getting in too soon just isn't as powerful as FOMO. Too many people have rushed to invest in virtual assets without first seeing where this market is going and what parts of it could contribute something new and needed to society—and therefore add real value. The investors who make the most of the market for virtual assets are the ones who take their time to watch for signs that the market is maturing and can identify the products that create true value for society.

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12

The Market for Markets

If you're going to participate in financial markets, there's one saying to remember: "Everybody on Wall Street gets paid." Such a sentiment is especially important to keep in mind as many of the costs traditionally associated with investing decline or even go to zero. The services that those costs used to cover are still being provided, however, meaning that everyone involved in providing them is still expecting to be paid. In this lecture, you will explore how the financial markets get paid and uncover the increasing lack of transparency in how the people who work in exchanges and other trading venues get paid.

BROKERS AND DEALERS IN EXCHANGES

Exchanges are simply organized markets for products. They bring buyers and sellers together and help facilitate transactions between them. And as long as there has been commerce, there has been a need for exchanges in some form. In the Middle Ages, for instance, merchant guilds created secure spaces where traders could meet to make deals, invest in each other's trading ventures, and help enforce agreements between members—in exchange for member dues that funded the guilds' operations.

Relatively recently, even more modern exchanges, such as stock exchanges, operated like a guild. Getting a seat on an exchange was effectively joining a club for trading whatever products or financial instruments were listed on the exchange. Membership on the exchange was valuable because members could execute trades not only for themselves but also on behalf of other people who paid for that service. The exchange covered its expenses by charging dues. And in the case of stock exchanges, they also earned income by charging listing fees to the companies whose shares then became eligible for trading on the exchange.

Over time, the members of exchanges such as the New York Stock Exchange evolved into brokers who earned most of their income by executing trades on behalf of their clients. And for a very long time, they earned good money for doing that because they cooperated to keep their trading commissions high. For most of their history, exchanges protected their members' income by limiting the number of seats they offered.

The other main model for operating an exchange is based on dealers rather than brokers. The difference between a broker and a dealer is that a broker simply facilitates a trade by matching potential sellers and buyers. If the trade happens, the broker earns a commission. However, a dealer maintains their own product inventory and stands ready to either add to that inventory by purchasing product from other traders or to reduce that inventory by selling some of it to other traders. The dealer profits from this buying and selling by posting two different prices: a bid price (the price they are willing to pay for the product) and an ask price (the price they're willing to sell the product for). Naturally, the ask price is higher than the bid. The difference—that is, the bid-ask spread—is the profit the dealer makes every time they buy and sell one unit of the product.

A CHANGING BUSINESS MODEL

The big dealer market in stocks was created by the National Association of Securities Dealers (NASD). In 1971, it organized an electronic communication system linking all the dealers together, which became the NASDAQ market. In the NASDAQ, all the securities dealers competed by showing their bid and ask prices so that an investor who wanted to sell a stock could find the dealer with the highest bid price and sell their shares to that dealer. Similarly, an investor who wanted to buy shares could find the dealer with the lowest ask price and purchase from them.

The problem with the club-style exchange model is that it allows—or even encourages—those with membership to collude with each other to keep the price of their services high. And evidence from economists and analysts soon backed up the idea that spreads and fees were being kept artificially high.

With the advent of the internet, new electronic platforms began to spring up for trading stocks and other assets. These electronic communications networks (ECNs) weren't organized or operated like traditional exchanges. They were privately owned and used computers to match up buyers' and sellers' orders automatically, without the need for brokers or dealers. And unlike the exchanges, they didn't have any rules that stipulated what assets they would or wouldn't trade, so they competed with NASDAQ, the New York Stock Exchange, and each other to attract business. The ECNs earned per-share trading fees; thus, their objective was to draw as much trading away from the established exchanges as possible.

This situation created both a problem and an opportunity for the SEC in that the proliferation of alternative trading systems fragmented the market and introduced the possibility that the same asset was trading for different prices in these different markets. The exchanges and trading systems didn't communicate with each other, which made it cumbersome—if not nearly impossible—to know who had the best price for any given stock.

But the multiplication of markets also had the potential to increase competition. During the late 1990s and into the early 2000s, the SEC introduced a series of new rules that forced the various exchanges and alternative trading systems to communicate with each other and allow any stock to be traded on any of these markets. This development culminated in rules that required customer stock trades to take place at the so-called National Best Bid and Offer—the highest bid and lowest offer prices available from among the various trading platforms and exchanges.

Traditional exchanges had to change their entire business model to survive. One major step was to introduce trading fees so that every sale on the exchange generated revenue; the more volume traded, the higher the revenues. The other change was to demutualize—exchanges converted from being owned and operated by their members to publicly traded, professionally managed, for-profit corporations. The two changes were complementary in that becoming publicly traded corporations enabled exchanges to buy each other so that they could grow and achieve economies of scale. A lower number of larger and more efficient exchanges would see higher trading volumes, generating more fees and earning higher profits on each trade.

So a market for exchanges was born, and it's been quite active. Exchanges have merged nationally and globally, different types of exchanges have merged, and exchanges have also purchased alternative trading systems. Individual exchanges merging and becoming parts of larger companies placed further pressure on them to pull their own weight and contribute significantly to their owners' bottom line.

HIGH-FREQUENCY TRADERS AND PAYMENT FOR ORDER FLOW

The main way that exchanges have pursued profits has involved catering to the most active traders. As the exchanges introduced trading fees, they have a big incentive to maximize the number of trades that take place. The same factors that drove the exchanges to change their business model to focus on maximizing trades also spurred the rise of a new kind of trader—the high-frequency trader (HFT). HFTs are proprietary trading companies; that is, they put their own capital at risk and try to earn profits by making consistently profitable trades.

The high-frequency label comes from the fact that these trading firms submit immense numbers of orders to exchanges and alternative trading systems—millions of buy and sell orders daily. The speed with which they are buying and selling means they might make only a fraction of a cent in profit on each transaction, but multiply that over millions of trades and it's a different picture.

Given the huge number of orders that HFTs submit, it's no wonder that exchanges have catered to them. And trading fees are only part of the new revenues that HFTs have brought to the exchanges. Exchanges generate a huge amount of data in the course of matching buyers and sellers, and such data has proven to be a gold mine for them. Given their business model, HFTs want this data, and they're willing to pay for it. Selling data about trades and orders has become such a lucrative part of the business of operating an exchange that it now accounts for half of exchange revenues.

During the last decade, brokerage commissions have been relentlessly driven to zero by both established firms and fintech upstarts like Robinhood, which offers commission-free trading from regular smartphones. And a practice called payment for order flow provides the answer to the question of who is paying the trading fees. Basically, paying for order flow takes place when market makers and trading firms pay brokers to send them the orders that come to them from their customers, instead of routing the orders directly to an exchange or alternative trading system. Doing so gives the agent paying for the order flow the first chance to trade directly with the broker's customers whose order flow has been sold.

Market makers and HFTs will pay for order flow because it's another easy way of stepping ahead. They can cherry-pick the orders that enable them to improve the market price by a hair and then profit when the price moves further in their favor. The orders the HFT doesn't want to interact with are passed on to other traders or trading venues.

Payment for order flow is one of the reasons why nearly half of all trades don't even take place on exchanges anymore. And these shadowy parallel markets are far less transparent, making them harder to regulate or understand.

UNCERTAINLY IN THE MARKET AND THE POWER OF INFORMATION

The markets have become accustomed to the high volume of trading that HFTs do; it's fair to say that if they suddenly stopped trading, bad things would likely happen to prices. The problem is that there's nothing preventing HFTs from pulling out, and on many occasions in different markets, they've done exactly that. Whenever market activity stops behaving the way the HFTs' models predict, these players sharply reduce their trading or even shut it down completely.

Such a scenario is what happened in 2010 that helped cause the so-called flash crash in the stock market. HFTs pulled out of the stock market after a large, unexpected trade in stock index futures contracts began to drag stock prices in unforeseen directions. And the vacuum created by the HFTs' disappearance drove many bid prices to absurdly low levels.

While admittedly an extreme and rare event, the point is that it could happen again—at any time. HFTs increase liquidity in the markets on a fair-weather basis. However, they disappear when the market needs liquidity the most, resulting in significantly wider bid-ask spreads at those times and leaving traders unable to unwind their positions without making big losses.

Unfortunately, this new world of for-profit exchanges that caters to HFTs seems like it will be here for the foreseeable future. And while an investor may not be able to change the system, they can at least become better informed. Retail traders have the right to ask their brokers about the trade-routing strategy used as well as the details of where their trade was executed. And in some cases, individual traders can tell their brokers where to direct their trades, although it costs the broker more and traders may have to pay for that.

This largely hidden market for exchanges only reinforces the number one rule for investing in the financial markets: Do your research. Understanding the markets takes more than just reading hot stock tips or getting suggestions from an app. You always want to comprehend the deeper dynamics that move markets and drive investors. Whatever the market and whatever your goal, information is the most valuable resource at your disposal, and it is the lifeblood of every serious trader.

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