The Focus Investor Series

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FocusInvestor.com: The Focused Few

Focus Investing Part 3: The Munger Models

Preface

Investing is an activity that allows an individual to become a master detective and realize the successful accomplishment of financial goals. Investors which a long term horizon should always try to determine what businesses will provide them with the best return over time and to do this they must closely examine individual companies to determine which company, out of thousands, is the right one. This article will explain how to accomplish the detective work that will help you accomplish your investing goals.

Special thanks are due to my wife Julie for letting me take the time out to write this. I also wanted to thank Warren Buffett, Benjamin Graham, Philip Fisher, Charles Munger, Dale Wettlaufer, and all the others who have helped provide me with a roadmap on how to think about investing. They did not have to share their knowledge and I appreciate the fact they acted in such an unselfish manner.

Thanks Dad for always being available to help when needed and for always being by biggest cheerleader. I also wanted to express a debt of gratitude to my Grandfather for always having the right advice.

I owe a large debt to all the proofreaders who helped with this series. Their suggestions and comments resulted in this series being a much better tool for investors.

Bruce Berkowitz, Lawrence Cunningham, and Andy Kilpatrick also provided valuable insights. I am extremely grateful for their time and assistance.

Focus Investing Principles

This series has three goals, to educate the reader on basic investing principles, to introduce both new and experienced investors to the focus investing style of investing, and introduce the concept of mental models to investors. By the time the reader completes this series they will have the practical knowledge to 1) know where to start learning about investing and 2) know how to start investing in the focused investing style.

The readers may be asking themselves what the concept of focused investing is all about. Focus investing is a combination of ideas drawn from the most successful investors ever. These investors are Benjamin Graham, Warren Buffett, Philip Fisher, and Charles Munger. The core mindset behind focused investing is to have investors think rationally about business valuation, understand how an investor's mindset may affect investment decisions, and have a firm grasp on how key concepts can interlock and combine to become greater then their individual pieces. Focus investing is an attempt to concentrate all the most powerful ideas from the aforementioned collection of investment masters into a single investment philosophy.

The series will be broken down into different sections according to the focus investing principles outlined below:

The Six Principles of Focused Investing

I. Develop a comfortable understanding of the language of business (accounting) and understand the basic investing concepts.

- Study a basic accounting book such as The Interpretation of Financial Statements by Benjamin Graham
- Understand four key investing concepts:
    - Compound Interest
    - Present/Future Value
    - Inflation
    - The difference between price and value
- Learn how cash flows through the businesses you are examining
- Learn how companies successfully manage inventory
    - Keep a close eye on how fast inventory and accounts receivables are growing. They should not be growing faster than the business's overall sales growth rate.

II. Purchase High-Quality Companies Selling Below Intrinsic Value

- Look for companies selling below intrinsic value (Margin of Safety)
- Look for a trustworthy, shareholder-oriented, high-quality management team
- Make sure the business has sustainable competitive advantages
- Make sure management makes rational capital allocation decisions

III. Portfolio Concentration

- 10 to 12 stocks allows adequate diversification against company-specific risk
- Over-diversified portfolios will tend to track the performance of the overall stock market
- Make large, concentrated purchases when the perfect opportunity presents itself

IV. Minimize Portfolio Turnover

- Minimizing portfolio turnover will keep the amount of trading commissions and taxes paid at a minimum

V. Understand the Psychology of Investing

- Understand how market and stock volatility affect investment decisions
- Patience and intestinal fortitude are requirements when investing
- Stand by your convictions
- Understand how rules of thumb can affect investment decisions
- Practice delayed gratification

VI. Build a Latticework of Models

- Develop a framework of "mental models" from various disciplines to gain a better understanding of the investment process
- Be able to combine multiple models when making investment decisions

Focus Investing Series: Part III
Charlie Munger's Network of Models

Mr. Munger, Vice Chairman of Berkshire Hathaway, gave two speeches entitled "A Lesson on Elementary, Worldly Wisdom as it Relates to Investment Management & Business" and "Business: What Lawyers Should Know" to students attending the University of Southern California School of Business and Stanford Law School that have been widely heralded as classic speeches on investing. I will cover what Mr. Munger discussed in relation to developing a network of models to use when determining solutions to problems. I believe this information is critical to develop the proper mindset towards investing.

This model system is based on the idea that investors must make decisions using multiple models from different disciplines. The traditional teaching method of one discipline per class is not the way to gain worldly wisdom, and may even place an investor at a disadvantage. The ideal set of models combines key ideas and thoughts from many different disciplines. The individual investor must take this combination of information from multiple disciplines and develop their own mental models to use when processing information to reach conclusions.

My thought in presenting this article to the reader is to provide the models Mr. Munger mentioned in his speeches along with relevant discussion on each model. I hope you find the material as interesting as I did.

Here are the models (with relevant discussion added) Mr. Munger discussed in the speeches.

Model I: Mathematics

An understanding of basic high school mathematics is critical to your investment success. Compound interest, present value formulas, and basic probability theory are vital concepts that need to be understood by all investors. These concepts all require the investor to develop a basic repertoire of mathematical skills. Investors are at a severe disadvantage if they don't have this basic skill set. Here are some examples of math theories that should be understood:

Probability Theory

In 1654, Pascal & Fermet exchange a series of letters that form the basis of what today is known as probability theory.

When people are unsure what the outcome of a situation will be, they express their opinion in terms of how probable the outcome is. Making a decision on how to proceed in a course of action based on uncertainty as to the outcome is a first step in managing risk. Here is an excellent quote on risk management by Peter Bernstein in his book, Against the Gods, "The essence of risk management lies in maximizing the areas where we have some control over the outcome while minimizing the areas where we have absolutely no control over the outcome and the linkage between effect and cause is hidden from us."

Pascal advised, "Fear of harm ought to be proportional not merely to the gravity of the harm, but also to the probability of the event (occurring)"

Decision Trees

Each branch of the decision tree represents new information that, in turn, changes the odds in making the particular decision along the decision tree path being observed.

Law of Large Numbers

This "law" means that the relative frequency of an event, and the probability of the event to occur; need to be equal only when an infinite number of repetitions are being observed. In other words reality tends towards theoretical values when the number of observations is large.

When purchasing stock for an investment you must take into account the probabilities of the business doing well going forward based on your data and experience. Since this involves somewhat of a judgment call, a margin of safety is used to put the odds more in your favor. This margin of safety can be a lower purchase price than you think the business is worth. For example, buying a percentage stake in a business for less than that same stake would be worth if the business was sold outright provides a margin of safety.

Compound Interest

Along with the theory of relativity, Albert Einstein is alleged to have called compound interest one of the universe's most powerful forces. It is truly amazing how large small sums of money can grow over time as interest is regularly added to principal.

To understand the incredible benefits of compound interest on investing you first must understand the difference between simple and compound interest.

Simple interest is calculated only on your initial investment outlay. For instance, if you receive a 5 percent interest rate on a beginning investment of $10,000 when the first year is over you will receive $500 in interest as compensation for letting someone else use the $10,000 over the last year. If you continued to receive an interest rate of 5 percent on the original $10,000 investment, the growth of the investment over the next five years would be:

Year 1: $10,500.00
Year 2: $11,000.00
Year 3: $11.500.00
Year 4: $12,000.00
Year 5: $12,500.00

Although you have earned some money for letting others use it these are not the kind of numbers investors should be striving for over the long term. Thankfully investors can take advantage of compound interest.

Compound interest takes into account the amount of interest your money has earned and adds that to your total investment, and compounds that amount on a periodic basis.

So in effect you are earning interest on the interest your money is earning. As a result, your initial investment grows at a much more satisfactory rate in comparison to the simple interest growth rate in the chart above. Using the example above with a yearly and monthly compounding interest rate yields these more impressive results:

Compounding Yearly	Compounding Monthly
Year 1: $10,500.00	Year 1: $10,511.60
Year 2: $11,025.00	Year 2: $11,049.40
Year 3: $11,576.00	Year 3: $11,614.72
Year 4: $12,155.00	Year 4: $12,209.00
Year 5: $12,763.00	Year 5: $12,833.60

Another point to remember is that the more frequently the money compounds the better. For example, a monthly compound growth rate of 7 percent will cause your money to grow quicker than if the account was compounding yearly at the same rate.

A simple way to calculate how long it will take to double your money when earning a compound rate of return is to use the Rule of 72. Using this rule entails dividing 72 by the interest rate the investment is achieving. As an example, at a six percent compound rate of return your money would double in twelve years (72 divided by the six percent rate).

When earning interest rates of:	An investment will double in:
3%	**24.0 years**
5%	**14.4 years**
7%	**10.3 years**
10%	**7.2 years**
12%	**6.0 years**
15%	**4.8 years**
20%	**3.6 years**

Here is the formula used to calculate compound interest:

$P=C\ (1+ r/n)^{nt}$

P= future value

C= initial deposit

r= interest rate (expressed as a fraction: e.g. 0.06)

n= # of times per year interest is compounded

t= number of years invested

Present Value

An investor should value a business in terms of what he expects the business will produce in cash over its life span after considering how much cash the business will need to expend just to maintain its underlying business position. When considering the cash flow from a business, the normal assumption is to assume the business will operate indefinitely. Why is this important? It is important because a payment received one year from now is worth less than one received today since you could invest the current payment and get it back in twelve months. In addition to the principal being returned, interest would have accrued over the twelve-month time span. By taking all the anticipated future cash flows and discounting them back to the present at an appropriate discount rate you can determine an intrinsic value for the business.

Present Value Formula

$V= X_1 / (1+r) + X_2 / (1+r)^2 + \ldots. X_n / (1+r)^n$

V= Present value of future cash flows
X= Cash flow (Year 1, Year 2, etc…)
r= Discount rate
n= # of periods

When calculating the present value of future cash flows it is important that you determine an appropriate discount rate to use when discounting the cash flows. Mr. Buffett advises he uses the current rate of the 30-year Treasury bond. However, since the government has been buying these back (and the fact that the yield curve is currently inverted) I would recommend using the current rate on the 15-year Treasury bond. These rates can be found many financial publications, for example the Wall Street Journal shows the rates in the C-section of their paper.

Present Value (or Discounting) Example:

Assuming FocusInvestor.com has an annual income (you could also use free cash flow as an input) of $100,000. To determine its intrinsic value at the present time (assuming it will be able to generate the same income over the next five years) you would perform these calculations (assuming the 10-Year Treasury Bond is yielding 10 percent):

Year	Income	Divided By	Present (or Discounted) Value of the Income
1	$100,000	1.10	$90,909.09
2	$100,000	$(1.10)^2$	$82,644.63
3	$100,000	$(1.10)^3$	$75,131.48
4	$100,000	$(1.10)^4$	$68,301.35
5	$100,000	$(1.10)^5$	$62,092.13
Totals:	$500,000		$379,078.68

So FocusInvestor.com has an intrinsic value of $379,078.68, assuming a 5-year business life. If FocusInvestor.com were a public company with shares of stock you

would simply divide the intrinsic value by the number of shares outstanding to receive the intrinsic value per share amount.

This discounting process is similar to valuing a bond. Bonds have a coupon rate and a maturity date that determine its cash flows over the life of the bond. When all the coupon payments are added up and divided by an appropriate discount rate the current price of the bond will be determined.

Model 2: Accounting

Accounting is the language that business results are reported in. Being able to understand this language is part of the toolkit every investor needs to have. When examining accounting, you must be aware of its limitations. Accounting figures do not always give a complete picture of what is happening to a business. Therefore, a thorough understanding of accounting, and its limitations, is essential. I would recommend examining the book, The Interpretation of Financial Statements by Benjamin Graham as a place to start studying accounting.

Model 3: Legal System

A legal system must exist that strongly protects copyright and trademark rights in order for a capitalist system to function properly. What business would want to spend the time, energy, and capital necessary to develop a product into a well-known brand if anyone is free to use the developed brand for their own purposes?

Model 4: The Five W's

When trying to solve a problem always try to discover the who, what, when, where, and why behind it. This can provide key insights into the problem. When trying to solve a problem in this manner, also try to think of the problem backwards. As Carl Jacobi, an eminent algebraist, was fond of saying, "Invert, always invert."

Mr. Munger also identified several examples from his second speech on worldly wisdom to show how thinking backward affected the process of developing Coca-Cola.

- What don't we want in a new drink? Aftertaste. Consumers should be able to drink large quantities of Coke at one sitting without being deterred by a bad aftertaste.

- Develop the product in such a way that large shipping costs can be avoided. This makes it much easier to distribute the product on a large scale.

- The product should not be easily duplicated so include in the formulation of the product items that are hard to duplicate or better yet keep the list of ingredients secret. This can add a certain mystique to the product as well as making it harder to duplicate.

- With a successful launch of the product competition will soon be forthcoming so plan to deter the competition by keeping the formulation of the beverage a closely guarded secret. The company can also deter competition by driving the business forward as fast as possible to develop a critical mass.

Always think problems through backward and forward. Look at what could destroy competitive advantage and see how these factors can be avoided. Always try and disprove an initial assumption instead of just accepting it as fact. This will improve your knowledge of all factors influencing your assumptions.

Model 5: Basic Statistics

Statistics is the process of examining the characteristics of a sample group of interest. Statistics are used everywhere in the modern world. Polls are always being taken that may influence government policy decisions. Clinical trials determine whether to approve drugs for human use. DNA matching based on statistical tests is used in courts with increasing frequency. Statistics is a science dedicated to getting answers from numbers.

Here are several relevant concepts:

Mean

This is one of the more common statistics you will see, and it is very simple to calculate. All you have to do is add up all the values in a set of data, and then divide that sum by the number of values in the dataset.

Let's say you are calculating the average (hypothetical) salary at Berkshire Hathaway:

- The CEO makes $100,000 per year
- Two managers make $200,000 per year
- Two accountants make $45,000 per year
- Two secretaries make $30,000 per year

To get the mean, you add all the salaries together for a total amount of $650,000. Then, divide that total by 7, which is the total number of people employed at the corporate office. This gives you the mean salary of this sample, which is $92,857.

When examining the result, make sure you understand that the two manger's high salaries exaggerate the mean salary. When examined closer, only three people out of the seven make close to the mean salary in the example. This leads us to discuss the next topic, the median.

Median

The median is the statistic of choice when you want to get some idea of what the average employee at Berkshire is drawing per year in salary. When thinking of the average employee we are trying to determine what the employee in the middle of the dataset earns.

Again, this statistic is easy to determine because the median literally is the value in the middle. Just line up the values in your set of data, from largest to smallest. The one in the middle is your median salary.

Here again are the employee salaries at Berkshire Hathaway:

$100,000
$200,000
$200,000
$45,000
$45,000
$30,000
$30,000

So the average salary at Berkshire is the salary that splits the numbers into two groups, $45,000. That's the median.

Standard Deviation & Normal Distribution

Statisticians have a value, called standard deviation, that tells them how widely the values in a set are spread apart from each other. A large standard deviation tells you that the data is fairly diverse, while a small standard deviation tells you the data is pretty tightly bunched together. Standard deviation is an extremely important concept to understand.

The standard deviation is kind of the "mean of the mean," and often can help you find the story behind a data set. To understand this concept, it can help to learn about what statisticians call normal distribution of data.

A normal distribution of data means that most of the examples in a set of data are close to the "average," while relatively few examples tend to be on an outlying extreme.

Let's say you are writing a story about sleeping habits. You need to examine people's typical sleeping habits. Like most data, the numbers for a group of people's average sleep time per night will probably turn out to be normally distributed. That is, for most people, their nightly time spent sleeping is closely aligned to the general populations median sleeping rate per evening, with fewer people sleeping a lot more or a lot less than the mean during a typical evening.

When you think about it, that's just common sense. Not that many people are getting by on an hour's worth of sleep a night or on twelve hours a night. Most people lie somewhere in between these two extremes.

As Francis Galton wrote in 1889, "Whenever a large sample of chaotic elements are taken in hand and marshaled in the order of their magnitude, an unsuspected and most beautiful form of regularity proves to have been latent all along."

All normally distributed data, when presented in graphical format, will resemble something like a standard "bell curve" shape.

The standard deviation is a statistic that tells you how tightly all the various examples are clustered around the mean in a set of data. When the examples are pretty tightly bunched together, and the bell-shaped curve is steep, the standard deviation is small. When the examples are spread apart, and the bell curve is relatively flat, that tells you have a relatively large standard deviation.

One standard deviation away from the mean, in either direction, on the horizontal axis accounts for somewhere around 68 percent of a sample group. Two standard deviations

away from the mean account for roughly 95 percent of a sample group, while three standard deviations away from the mean account for about 99 percent a sample group.

Regression to the Mean

Regression to the mean is a statistical phenomenon in which high or low results tend to be followed by more average results. In the 1800's, Sir Francis Galton planted sweet pea seed and calculated the average diameter of 100 seeds produced by each plant. He discovered that the seed diameters "regresses toward the mean", in the sense that the smaller peas seeds had somewhat larger offspring, and larger seeds had somewhat smaller offspring.

One word of caution, remember when applying this reasoning to common stocks that revision to the mean in company profits is a statistical explanation, not an economic one.

Model 6: The Engineering Idea of Backups

The idea of having a backup process available in case of an emergency is crucial. This applies to the investment process also. Think of it this way, investors must make a progression of decisions when examining a company for possible investment. For example, what is the current interest rate environment, what will the companies rate of return be on retained equity in the future, will managers continue to make rational allocation decisions? That is why, once the decision has been made to make an investment in the company, the margin of safety concept is used as a backup just in case some of your calculations or estimates may be proven wrong in the future.

Unfortunately bad things can happen in life so it as always wise to plan ahead for these future possibilities.

Model 7: The Engineering Idea of Breakpoints

While all successful investors have an in-depth understanding of the company they are investing in, investors should keep in mind that over analysis of information can lead to trouble. When analyzing investments it is important to remember that the number of decisions to be made should be kept at a minimum. Doesn't this seem to be an odd statement? Look at it this way, the more decisions that have to be made along the investment process, the more likely errors will crop into our decision or estimates we have made. Avoid complexity whenever possible. The old maxim of KISS (Keep it Simple Stupid) has strong merit.

Model 8: Physics

Physics is the science that investigates how the universe functions. Sir Isaac Newton combined two earlier discoveries, the laws of planetary motion and the observation that a falling mass accelerates at a uniform rate, to discover gravity. Equilibrium is a key factor in his theory since is the state in which opposing forces are in balance. Ever since Sir Isaac Newton presented his theories scientists have believed that the universe is very structured and that they just need to understand the principle pieces of this structure to understand the whole system.

Equilibrium Theory in Business

Economics used the equilibrium theory at length to explain how markets & economies worked. This in turn eventually developed into the Efficient Market Theory that states stock prices and their intrinsic values are always in equilibrium.

Complex adaptive systems are a system in which many intertwining parts continually change behavior patterns in response to changes in environmental stimuli. The stock market is a perfect example of a complex adaptive system. Since the stock market is continually changing it can never be in a state of equilibrium. This means that at times the stock market can present the investor with companies being valued at prices both higher and lower than their respective intrinsic values.

Critical Mass

Critical mass in nuclear physics is the minimum amount of a given fissile material necessary to achieve a self-sustaining fission chain reaction.

The greatest changes in the way the world operates do not occur in a single moment of time, but rather as a progression of events and developments that move people toward a whole new viewpoint. Sometimes this process can take a significant period of time but events eventually develop momentum, which can result in them reaching a critical mass.

Knowing when a business has reached a critical mass is extremely important. Coca Cola, for example, has developed a distribution system, which has achieved critical mass. Coca Cola delivers their products all over the globe. It would take billions of dollars for a new competitor to replicate this system.

This is the kind of competitive advantage an investor should be watching for when selecting businesses for possible investment.

Model 9: Know your Cognitive Limits

Always think of what are the concerns behind the interests involved in situations. The subconscious mind tends to malfunction; humans tend to think using mental shortcuts. Keep this in mind when applying your conclusions to a given situation.

I would refer readers to Model 15: Social Proof/ Psychology of Investing for a more detailed discussion of mental shortcuts.

Model 10: Microeconomics

Here are some key points to be learned from Microeconomics.

The law of demand states that there is an inverse negative relationship between the price of the commodity and quantity demanded.

Factors affecting the demand:
- Income
- The price of a good
- Current fashion trends
- Substitutes

- Complimentary goods
- Expectation of change in future income and wealth

The law of supply states that there is a positive relationship between the price of the good and the quantity supplied.

Factors affecting the supply:

- The price of a certain good
- The current prices of inputs required to produce a good
- The current technology available to produce the goods

Income and Substitution Effects

A fall in the price of a commodity has two effects:

- The consumer enjoys an increase in real purchasing power, because they can buy the same amount of the good for less money, and thus, have money left for additional expenditures
- They will consume more of the good that has become cheaper, and less of the goods that are now relatively more expensive

These two effects occur simultaneously but the distinction can be drawn between them for analytical analysis.

a). Substitution effect

This effect measures the change in the purchase of a good resulting from the change in its relative price alone. In this case, the utility (satisfaction) remains constant but the price changes.

b). Income effect

It is a change in the consumption of a good resulting from the change in the purchasing power of money that occurs as a result of a price change. In this case, the price remains constant but utility changes.

Elasticity

Elasticity is the measure of sensitivity of one variable in relation to another variable.

Price elasticity of demand - measures the sensitivity of quantity demanded to price changes. It tells us what percentage change in the quantity demanded for a good will be following an increase in the price of that good.

Determination of Price Elasticity of Demand

- People will consume more of the good that has become cheaper, and less of the goods that is now relatively more expensive.

- The availability of substitutions

    - The more substitute goods there are for a good when prices rise, the more elastic is the demand for good.

- The period of adjustment to price changes.

    - The demand for a good is generally more elastic in the long run, than in the short run, because people generally find more substitutes for a good as time goes by.

- The portion of a consumer's budget allocated to the product.

    - Large percentage increases in the price of goods that constitute small portions of your total budget might have little effect on your purchases of these goods, if you regard them as necessities.

Monopoly

Monopoly is a market structure in which only one producer, or seller, exists for a product that has no close substitutes.

Characteristics of monopolies*:*

- There is only one firm supplying the entire market, and many buyers & consumers
- The firm sells a unique product, which has no close substitutes
- The firm has market power (that is it can control it's price)
- Entry into the market is restricted, e.g. due to high costs and some special barriers to entry. A social, political or economic impediment that prevent firms from entering a market.

Model 11: Advantages/Disadvantages of Scale

The advantage of scale to a business is terribly important so I have decided to place this as a separate model instead of being placed into the economic model. For instance, can you imagine trying to build a global distribution system to match Coca-Cola or tying to match the brand name (and image) of Wrigley's chewing gum? Once a certain scale of operation is reached, it becomes extremely hard for a competitor to come along and build up a matching system.

The disadvantage of scale occurs when a company has a great system in place but becomes lethargic and content with its position, and does not defend it as aggressively, which may allow another competitor to enter its markets.

Model 12: Pavlovian Association

Classic Conditioning is when you experience a stimulus that elicits an emotional response time after time. In addition to the primary stimulus there is also a neutral stimulus that gradually takes on the emotional properties of the primary stimulus.

As an example suppose you had happy memories as a child of going to your grandparent's home. Their house though always had a slight odor of mothballs present.

Now whenever you smell mothballs you experience the fond memories of time spent at your grandparent's house.

This ties into Pavlovian mere association, when a consumer drinks a Coke for instance we want them to remember the good times they have been involved in while drinking Coke.

Instrumental Conditioning is when you chose to continue to continue or discontinue a behavior depending on whether you receive positive or negative reinforcement about the behavior.

Trademarks are great for business to have, especially if they are widely recognized and a good image is associated with the brand. People tend to associate good images, or feelings, to a brand they enjoy. That is why, for instance, Coca-Cola is always trying to explain the benefits of drinking Coca-Cola in its marketing campaign.

Model 13: Competitive Destruction

The best industry to invest in is an industry where the participants act in a rational matter. When they don't act in a rational manner, competitive destruction can be a result. An example of this behavior can be observed in the airline industry. When one airline was in bankruptcy, it was allowed to keep operating at a loss, thus dragging other competitive companies down to its levels.

Try to invest in companies that have a legal monopoly, or an oligarchy that has rational industry competitors.

Model 14: Surfing

People tend to follow the latest hot ideas. For example, when the internet craze began, the herd decided the internet stocks were the path to quick wealth so they piled into them, driving their stocks to ever higher valuations. The herd later decided that business-to-business stocks were the hot sector, and drove those stock valuations to ridiculously high levels.

Use your own reasoning and don't just blindly follow the path the majority is taking.

Model 15: Stock Market is like a Pari-Mutuel System

For instance, investors in the market are willing to bet on future growth rates, or returns on equity, by how high (or how low) they collectively price a stock in the market.

Some investors are attracted to "long shot" investments, which in horse racing terminology would be the horse that has 100-1 odds against it winning the race. Other investors will only bet on the favorites, and not take into account what (or how low) their payoff would be if the horse wins the race.

The best way to win at the horse races, just as in investing, is to study the performance of the horses involved in the race, and wait until the public incorrectly prices the odds of a particular horse winning a race. That is when a big bet should be placed, and only

then. Investors need to control any urges to get in the game just for the stake of being in the game.

Model 16: Social Proof/ Psychology of Investing

Social proof is when we try to determine if our assumptions are correct by polling other people to see if they concur with our conclusions. People have been taught that what the crowd is doing is the correct behavior to imitate. This is the flaw in Social Proof, just because the crowd is doing something doesn't mean it is right. Don't be lulled into mindless and reflective behavior just because others verify your false assumption.

Social proof is why you often hear advertisers say their product is America's favorite! They try to convince us we don't need to confirm this fact for ourselves, because America already has.

In the investment world, you can often see social proof in operation. When the Motley Fool advised investors it was adding Celera Genomics to its Rule Breaker portfolio, the price of its stock skyrocketed as other people rushed to get in.

When people are uncertain, they tend to look to others for answers. They attempt to confirm their beliefs by finding others that think along similar mindsets. They may ignore evidence that does not confirm what they believe to be the truth.

We can avoid the dangers of social proof by becoming aware of situations where the blind following of social proofs provides us with incorrect data. Then, we can turn off this blind following, and react appropriately to the new stimuli.

Psychology of Investing

The efficient market theory states that since the stock market is so quick to adjust to new information security prices very quickly represent all the information available. This is not a realistic tenet; investors tend to fall prey to their emotions and as a group may decrease a stock price below intrinsic value when bad news reaches them. Conversely, they tend to increase stock prices to levels above intrinsic value upon hearing good news. Letting emotions rule your investment decision-making can lead to substandard investment returns. In an effort to understand how these emotions affect the investment decision-making process, several common emotional errors will be covered in the hopes that, once known, they can be avoided

The most common thought processing error occurs when shortcuts are used to make decisions. Behavioral Finance calls these shortcuts heuristics. These shortcuts are vital in other aspects of our life. Imagine making the decision on what type of bread to buy when at the store with the same intensity as making the decision on what college to attend after graduating High School.

These shortcuts are influenced by several psychological factors:

Availability Bias - People tend to have a stronger memory of information recently obtained or information that makes a strong impression. These memories can influence the decision making process when making investment choices. An example of this behavior is shown when an investment choice is made based on information recently

related via a television interview since it confirmed information obtained earlier. This is done even though the investor understands the need for fundamental independent research.

Representativeness - Most people make decisions based on stereotypes they have developed over time. Reversion to the mean is an example of this psychological factor in action. For instance, many people believe that the market may decline in value just because it has gone up every year for the last five years. This is not a rational way to look at the situation. The market is not subject to a decline simply because it has risen for a significant period of time. There will always be many factors involved in any move in the direction of the market.

Another related example of Representativeness is Gambler's Fallacy. A gambler tends to believe the notion that if a fair coin has landed on heads six times in a row, it is more likely to land tails up with the seventh toss. In fact, the coin has the same chance of landing heads up or tails up on any given toss so any given streak of heads up or tail up means nothing when considering the probability of which side will land facing up with the last toss.

This can be seen in the investing field when investors watch for trends in the movement of a stock's price or earnings. These investors have come to the conclusion that since a businesses stock price or earnings have increased the last four quarters it will certainly continue in the fifth quarter. Sentiment is a term that will often be heard spoken by followers of this process. They look for their decisions to be confirmed by what the "herd" believes. I fail to understand the rationally of this investment selection process.

Hersh Shefrin says it best in this quote from his book, Beyond Fear and Greed:

"The point is markets behave a lot like coin tosses. Coin tosses produce interesting patterns, but past patterns provide little if no guidance about how to predict patterns of the future."

Overconfidence – Most investors believe they possess superior stock selection capabilities. In fact, most investors would probably be better off selecting a passive investment like a low cost index fund. As has been shown in the Barber and Owen report, most investors fall prey to over stimulation and trade in and out of their holdings much too frequently. This trading increases the amount of choices that must be made correctly, it increases trading costs, and more taxes will be paid. All of these factors tend to result in under performing the market average.

Anchoring – Investors have the tendency to stay on a course of action once it has been decided upon. For example, if investors watch a businesses stock price trade within a certain price range they can come to believe it should continue to trade within that range and make future purchase or selling decisions based on these ranges. Let the business economics decide when to buy or sell, not the price range the stock is trading in.

Excessive Optimism – Investors should realize they will not always make the correct decision in the investing process. When an error is made, the important thing is to examine how it occurred and vow not to repeat the same mistake. They should also realize that it is not rational to expect the market to always increase 24% year in and year out (For a look into what Mr. Buffet thinks of future stock market returns, I

recommend his 1999 article in Fortune magazine, which is linked to from the link section of my web site).

Illusion of Validity – Investors often will, in the course of their research into businesses, ignore evidence that goes against the conclusion they may already have made. They may similarly place too high a value on evidence that agrees with their conclusions. This behavior is called confirmation bias and may lead investors to act confidently on views that may be incorrect.

First Conclusion bias – First conclusion bias derives from a conscious or unconscious tendency on the part of an individual to produce data, and/or to interpret it, in a way that inclines towards erroneous conclusions, which are in line with his or her beliefs. Investors must recognize that this tendency exists and strive to not fall prey to it.

Hindsight Bias – The examination of past market behavior and/or results can lead to extrapolation of past trends to future trends. This is dangerous, as past information is not always a good indicator of what the future will bring. It is always easier to see how markets reacted to stimuli when you already understand what outcome came to pass.

In addition to heuristic-driven errors, frame dependence is another area where investors thought processing abilities might break down. Frame dependence occurs when errors are made in an investor's perceptions of risk and return as a result of how decision problems are presented to them. Three examples will be covered: Loss Aversion & Loss Realization, Mental Accounting and Risk Tolerance, and Regret Complex.

Loss Aversion and Loss Realization

People have a distinct aversion to loss and will avoid the possibility of loss if at all possible. Daniel Kahneman and Amos Tverksky in their 1982 book, Judgement under Uncertainty: Heuristics & Biases, found that a loss resulted in two and a half time the impact of an equivalent gain. This may explain why some people are unable to invest in the stock market; they just can't face the possible loss that may result irrespective to the amount of gain possible. This fact may also explain why lotteries are so popular; the risk of loss is so small on an individual ticket level that the impact of its loss is minimal.

Loss realization is another example of frame dependence in action. If an investment has been made, and the price has since declined, some investors find it difficult to sell and take a loss (This applies only if the business economics have declined along with the stock price). The investor finds it difficult to admit a mistake may have been made when purchasing the investment in the first place and believes the price (or business performance) will rebound. Don't make the mistake of holding onto losing investments because it is too hard to admit an error has been made.

Meir Statman and Hersh Shefrin in a 1985 article in the Journal of Finance confirm the idea that investors sell the winners in their portfolio to early and hold their losers to long. Admit the error, take the loss, investigate how the error occurred and apply the lessons learned in future investing decisions.

Mental Accounting and Risk Tolerance

Mental accounting occurs when people treat money decisions differently based on how the money was earned or what source it originated from. Here are two examples of this behavior:

John has just received $50,000 in a surprise inheritance. He subconsciously considers this "free" money; after all, he didn't plan to have it and didn't work hard to accumulate it. John decides that, rather than investing all of it, he will buy a new car and take a much-deserved vacation. Even though there is nothing wrong with this activity, it is interesting since John would never consider buying a new car or taking a vacation with the $50,000 he has saved in his retirement plan. Hence, he has placed this new money in a different mental account.

Sue has just won $500 in a poker game. She has been lucky and has grown her stake to $600 from the $100 she began gambling with. Sue's mental accounting classifies this additional $500 as free money. Sue decides to risk the $500 in profit, and keeps betting. By the end of the night she leaves happy with $150 in her pocket.

Sue and John have both made mental accounting errors. John made decisions he would normally not have contemplated with the money he received, and Sue was happy leaving with $50 more than what she had entered the Casino with. Sue doesn't realize she has actually lost $450 during her visit because she classified the other $450 in her mind as free money.

To avoid these frame dependence errors, try not to focus on the potential for short-term losses in your investment portfolio. Overly conservative portfolios can result in an under performing portfolio (avoid having a portfolio in 80% US Treasury notes and 20% in stocks). Keep in mind the time frame you have when investing, why worry over a short-term dip in a stock price that has no correlation with its intrinsic value in a company you have investigated thoroughly. Remember, you only have to follow the crowd if you believe they are correct in a given instance. If your reasoning is correct, don't be upset that the crowd is not thinking the same thoughts. Take advantage of the opportunity being presented.

Also remember to focus on the smaller purchases you make in life in addition to the large ones. Significant sums can be saved in aggregate this way.

Regret Complex

Some investors choose investment options they believe will cause them the least amount of regret in the end. This can cause behavior such as not investing in equities but investing in certificates of deposits at a local bank. This choice will minimize the possibility of regret if equities decline but also cause a major loss of wealth over time due to inflation and the better returns stocks may have provided. Some potential investors just can't deal with the possibility of being responsible for making a bad decision, which results in irrational behavior.

The most negative impact having a regret complex can cause is when an investor finds his account in a bear market. If they don't have the right temperament, they will regret ever having invested in equities in the first place and pull all of their money out of the market (probably at the worst possible time), which is the worst possible decision to make. Some investors will have to experience a significant downturn in their portfolio or the market before they know how they will react.

Model 17: Chemistry

Autocatalysis

When a certain process (or reaction) starts to occur in chemistry it will speed up on its own accord when combined with a catalyst. A catalyst stabilizes the reaction and makes it easier for the process to jump to another level. Usually the process itself does not affect the catalyst so it can go on to aid many reactions.

Diversity is a fairly easy concept to imagine in an organization. A list of elements could be produced that any given organization would need in order to be successful. For instance they must be extremely knowledge about the given product, a path into a marketplace for sales and distribution needs to be developed, some leadership skills would be needed, and so on. There must be a limit of diversity of information, roles, ideas, and tools below which, the creation of an enterprise becomes very difficult, if not impossible.

It's a little more difficult, but not much more, to imagine how these different elements do or don't catalyze each other. For example, if the team of people comprising the young enterprise do not or cannot communicate information that makes each other's tasks easier and clearer, chances of that enterprise succeeding are slim. However, if an assembled team has these skills and are able to build on each other's skills sets, the process of autocatalysis can move them far ahead.

This model is important to remember, for when you find something that works well for you keep going in that direction and you should build momentum that will help you reach your goals.

Model 18: Biology

Mr. Munger advises us to think of the Economy like it is an ecosystem. For instance, only the strongest survive or at least help propagate the next generation.

Evolution is the key concept from Biology that investors should understand. Charles Darwin developed his theory of natural selection though careful observation of the wildlife on different islands during his trip aboard the Beagle. He then questioned scientists in a number of different fields to try to answer the questions he had raised during his trip. He mainly questioned how and why species were very similar on landmasses separated by wide distances.

He theorized that natural selection would favor variations that produced some benefit to a species and its survival. These variations, and their subsequent benefits, would be passed on to succeeding generations.

Robert Hagstrom in his book, Latticework: The New Investing, wrote, “Whereas in nature the process of evolution is one of natural selection, seeing the market with an evolutionary framework allows us to observe the law of economic selection.” We can see the process of evolution at work in business. One firm may develop a unique way of producing a product, which allows it to generate more profits than firms in similar lines of business can produce. The other firms in the field must try to imitate the advantage or develop a new one to remain on the same profit level as the evolved firm.

Investors who have studied the investing strategies of the past can also detect an evolution of sorts in investment strategies. The best example of this is to look at how the traditional Graham & Dodd philosophy of value investing underwent a slight evolution when Warren Buffett adapted it to reflect his thoughts on investing.

Model 19: Lollapalooza Effects

The idea of using mental models is taken to its logical and most powerful conclusion when lollapalooza effects are considered. A lollapalooza effect is when several models combine, all heading in the same direction, to produce a given result. The result of this effect can often be quite dramatic. For instance, in order to combat the HIV virus at the present time, a drug "cocktail" has to be used to suppress the virus. One drug is simply not enough.

The key to understanding lollapalooza effects is being able to understand how sets of models relate to one another. Once you understand how they relate to one another you must understand what effect the combination of models will have on a given situation.

An investor should avoid falling prey to a mindset that puts all incoming information into neat separate compartments. Instead investors would be better served if they explored how separate pieces of information interact and take away new information from the lessons learned.

Mr. Munger gave the best example of how models can combine into Lollapalooza effects when he gave a speech regarding Coke's Lollapalooza effects to a Stanford Law School course he endowed entitled, "Business: What Lawyers Should Know."

First Step: Hot or cold beverage?

First Model Involved: Physics. It is assumed that you would know enough physics to understand that refrigeration of beverages would be possible in the future.

Second Model Involved: Physiology. When an individual has been working hard they prefer to ingest cold beverages to provide them refreshment. Also when an individual lives in a hot climate they would naturally seek something cold for refreshment.

Second Step: Create a trademarked brand

First Model Involved: Microeconomics. Create a brand that is familiar to users while distinguishing itself from the crowd of other beverage products.

Second Model Involved: Law. The creators of the new beverage must be able to protect the name and the image of the brand so they can develop both without interference from outside parties.

Third Model Involved: Psychology. The users of the brand must become so familiar with the product that they order it by its trademarked name. The process of ordering the beverage must be a conditioned reflex. For instance when an individual goes to their favorite restaurant they automatically order a Coke. Another conditioning effect that is desired is what Charlie calls, "Pavlovian mere-association effects". This is when the thought of a product brings happy images to mind. This is what the marketing program of Coke wants to convey, all the happy times in which the drinking of Coke was involved.

Third Step: Create a powerful reinforcer

Models Involved: Lollapalooza, Biology, & Autocatalysis. Add reinforcers to develop repeat customers such as food value, the stimulant caffeine, and the sweet flavor of another stimulant, sugar. These factors will combine to get people to develop a taste for the beverage. Another important aspect to consider is to develop a taste for the beverage that is refreshing with no bad affects like aftertaste. Coca-Cola wants people to be able to drink a large amount of their beverage at a time and an aftertaste would possibly deter them from this.

Fourth Step: Create a product that can be easily distributed to the public while not easily imitated

Models Involved: Engineering and Mathematics. It very expensive to ship a heavy product like water so Coke's solution was to just manufacture the syrup. This enabled Coke to save the shipping cost and to keep a tight control on the ingredients of the syrup. After the syrup was combined with water, carbonation was used to give a better overall sensual experience. Also since water is plain looking Coke differentiated its beverage by giving it a deep, dark texture (like wine for instance).

Fifth Step: Marketing and Distribution

Model Involved: Psychology, Pavlovian mere-association. To create brand awareness company signs would be given away to stores so consumers would become more aware of the brand and know exactly where to find it.

Model Involved: Autocatalysis. Sell the beverage in two forms to better distribute it, as syrup to restaurants and as separate vessels filled with the finished product. Then the beverage is spread all over the country as quickly as possible by using a franchise system that will process the beverage into its finished form (can or bottle), help advertise the product, and distribute it in their assigned regions.

Model Involved: Social Proof. Once the beverage is everywhere and the consumer knows about it social proof comes into play. When everyone sees other people always drinking the same beverage they're likely to accept it as the norm and consume it also.

So as you can see the combination of several models heading it the same directional can have powerful effects. When you have a firm grasp of how the models work, and more importantly how they interrelate, you are a gigantic step ahead of most people.

Conclusion

In a 1996 speech, Mr. Munger employed five of what he called "ultra simple general notions". I will re-state Mr. Munger's five notions, which tie into the models which we have discussed in this article:

1. Solve the big no-brainer questions first.
2. Use math to support your reasoning.
3. Think through a problem backward, not just forward.
4. Use a multidisciplinary approach.
5. Properly consider results from a combination of factors, or lollapalooza effects.

Investors should remember to think along these lines when examining businesses for possible investment. An individual investor who teaches himself to analyze everything by combining all these ideas will have a significant advantage over most investors who don't think in these terms.

As with everything investors should develop the models that work best for them. Mr. Munger has provided investors with a fantastic list of models to begin with. Expand your models but don't just accept new models without testing them against the old models. If your models are failing to explain why an event is occurring, test it against the old models and don't make it a part of your new models until the old models have proven to be inaccurate.

If you wish to learn more about this system of mental models I would strongly recommend reading Robert Hagstrom's book, Latticework: The New Investing. It provides an excellent overview of the subject.

I hope the material presented to you in the focused investing series has enabled you to think differently than the crowd and become a better, more thoughtful investor. Please feel free to contact me at focusinvestor@mail.com with any suggestions or comments concerning this series or investing in general.

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