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Sloth Speed: Finance Classes Slow to Incorporate Important Research

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Abstract

Traditional finance contains may models which misrepresent human behavior. In order to mathematicise the field and make it more like hard sciences, economics in the 20th century presupposed that people act "rationally." In economics, rationality means adherence to the neoclassical model, which presents persons as utility maximizers. This presupposition was useful for certain applications but dominated the academic landscape. Later, the Chicago School of Economics built on the rationality premise, advocating less regulation in favor of the free market. The Efficient Markets Hypothesis was built on these same ideas and argued that markets have a wisdom that individuals do not. As a result of his belief in this hypothesis, former Fed Chairman Alan Greenspan stood idly by a market dabbling with novel financial instruments. Though at one time uneasy, he soon became convinced that rising stock prices were not a concern. When the 2008 financial crisis occurred, he was left to admit, before Congress, that the markets were not as wise as he assumed. The type of economics that led up to the catastrophe was faulty. For example, traditional economics tends to oversimply reality. Additionally, applying statistics to markets is erroneous since constituent actors are not independent of each other. Behavioral finance, the component of behavioral economics that deals with markets, presents human tendencies which impact the financial world. Therefore, it is important to include behavioral finance in introductory courses so business graduates can have the information they need to prevent future crises. Several behavioral ideas are summarized in this paper to give the reader an understanding of what the field entails and how it differs from the rationality premise.

As well, the paper examines a selection of course syllabi, textbooks, and CFA bodies of knowledge to find out if behavioral economics, which may play such an important role in preventing calamities, is included in introductory courses. The findings about the field's

inclusion in textbooks is especially interesting as one publisher includes a commentary concerning their choices regarding this matter in their text. In all, however, behavioral finance is covered to a limited extent in the materials examined. There are several reasons for this, including explanations from behavioral finance itself. In the future, publishers and universities should approach the teaching of finance differently. They should present the truth of finance, even if it is not as neatly organized as what has been taught for decades.

Universities Play an Important Role in Mitigating Crises

Universities are expected to impart knowledge and skills, applicable to particular careers, to individuals according to the areas of study they have chosen. Often, what is taught is expected to be relevant and informed by the contemporary environment, especially in fields that significantly evolve and change. The degree of change in curricula is, in part, dictated by the nature of the subject; it is quite evident that the field of history does not change quite as rapidly as computer science. Finance is one area of study that evolves at a quicker pace – it is influenced by the economy, policy, technology, and various other factors. As the economy strengthens or weakens, as laws and regulations change, and as technology progresses and transforms the communication of information and the speed at which decisions are made, those who work in finance must adapt. However, changes to curricula must not only follow these kinds of changes in the environment, they must also proceed from new research and discoveries related to the field. In fact, research is one of the central functions of a university and it is quite appropriate that a well-regarded school would integrate relevant discoveries about developments in a particular profession into its courses. For example, the faculty of Columbia Business School document such continual adjustments in their own institution: “With advances in high-frequency trading and a growing interest in behavioral finance, the [Columbia Business School Finance and Economics] division’s research is rapidly evolving, as has been the case since the School’s foundation” (Ang et al., 2016, p. 1).

It is indeed crucial to make these adaptations, not only to benefit students, but also because Finance has such a large impact on society. Janet Yellen, the former chair of the Federal Reserve explains finance’s role in society in a speech in 2005 entitled “Finance and Society:”

> First and foremost, financial institutions channel society's scarce savings to productive investments, thereby promoting business formation and job creation… The financial sector also helps households save for retirement, purchase homes and cars, and weather unexpected developments… Expanded credit access has helped households maintain living standards when suffering job loss, illness, or other unexpected contingencies… [F]inancial development, up to a point, has disproportionately benefited the poor and served to alleviate economic inequality.

Yellen lists many other roles that the financial sector plays. She highlights, however, that when these companies have the wrong incentives, much harm can occur:

> Unfortunately, in the years preceding the financial crisis, all too many firms took on risks they could neither measure nor manage…The result was the most severe financial crisis and economic downturn since the Great Depression. Almost 9 million Americans lost their jobs, roughly twice as many lost their homes, and all too many households ended up underwater on their mortgages and overburdened with debt. To be sure, some individuals and families borrowed unwisely, but too often financial institutions encouraged the behavior that resulted in such excessive debt.

In the speech, Yellen explains that lenders and borrowers symbiotically contributed to conditions that led to the financial crisis. Thus, it is important to understand why people make decisions the way that they do. Finance is not conducted in a laboratory. People, with various occupations and interests make financial decisions based on their determinations and preferences. While much research has attempted to model the behavior of markets, these models fail when studies are conducted to see how people actually make decisions. Therefore, studying real-world phenomena – how people, institutions, governments act is essential. Daniel

Kahneman and Amos Tversky demonstrated, for example, that the expected utility theory, which attempts to model decision-making, is inconsistent with how people actually make decisions (1979). Nevertheless, faulty models will still persist if history is disregarded. If researchers study the way people make decisions and how those decisions may cause catastrophes, future mistakes may be avoided. That is why the faculty of Columbia Business School, for example, explain in the following quote that the university pays substantial attention to crises, since learning from previous disasters can help mitigate future ones:

> Much of the research done at Columbia Business School in the last decade is informed by the 2007-08 financial crisis. [Patrick] Bolton, for instance, has found that accounts of past crises teem with patterns and potential lessons for business managers and regulators alike. Had regulators, for example, paid closer attention to the savings and loans crisis of the 1980s, precipitated in part by changes to regulations that increased risks and worsened eventual damage, they could have prevented some of the problems the markets in 2007. Similarly, today European financial institutions are suffering the same agonizing difficulties faced by Japan after 1989. (Ang et al., 2016, p. 9)

If the mistakes that led up to previous crises are not studied and, furthermore, if some of the lessons from these mistakes are not communicated to students in universities, graduates who go on to have careers may not be equipped to learn from history. Moreover, if students are taught theories that do not hold, partially or entirely, academia may be causing students to perform suboptimally in their future jobs.

One area of finance that universities should not neglect is behavioral finance. Behavioral finance presents simple, behavioral explanations for phenomena unexplained by more traditional finance theories.

For example, according to Ang et al., neoclassical economics could not satisfactorily diagnose that familiarity with companies was the reason people tended to invest solely in domestic companies. Generally, people are urged to diversify their investments to decrease the risk of negative consequences from a single investment. If an investor has many holdings, a mishap causing one investment to do poorly will not bear as much on the person's portfolio as if that was their only holding. However, investors choosing not to add securities of foreign companies to their portfolios can present itself a mystery. However, simply looking at investors' tendencies, their biases, and behaviors can prove insightful. Often the solutions to these mysteries are intuitive as well. It makes sense that an investor may not want to invest in companies they are unfamiliar with.

Another instance where traditional theories fall short comes from the Nobel-Prize-winning economist, Harry M. Markowitz, according to Joe Nocera, writing for the New York Times (2007). His article, entitled "Can We Turn Off Our Emotions When Investing?" explains that, "When it comes to investing, most of us simply don't act rationally" and "Having watched the way investors have behaved since the Crash of '87, I've come to believe that most human beings are simply not hard-wired to be good investors." Nocera says that neither small investors, nor himself, nor Markowitz, who won the aforementioned prize for his role in crafting modern portfolio theory, actually do the things that theories and models dictate that we should. Instead of allocating his portfolio according to models that minimized his risk, Markowitz plainly admits to being swayed by emotion. Jason Zweig (2007) quotes him explaining,

> I visualized my grief if the stock market went way up and I wasn't in it — or if it went way down and I was completely in it. My intention was to minimize my future regret. So I split my contributions 50/50 between bonds and equities (p. 4).

Here, it is evident that someone who played a role in making finance theory did not follow it himself. Therefore, how can it be expected that that anyone would?

These are just two examples, but behavioral phenomena explain things that courses have not traditionally paid attention to. Columbia's courses, at least, find value in incorporating this area of study: "Even courses in asset pricing and corporate finance are now more open to considering why market behavior might deviate from fundamental value. Tetlock says that students appreciate discussions about investors making mistakes and inefficient financial markets…" (Ang et al., 2016, p. 14).

Nevertheless, it is unclear how many universities across the country are willing to carve out space from traditional material to include behavioral finance. Behavioral finance, largely, is a departure from mathematical models and is instead a documentation of human tendencies in particular circumstances. Additionally, many of these tendencies present exceptions to matters traditionally taught in finance. Despite these complexities, omission of the area of study can be a disservice to students.

Behavioral finance is important as it explains things that traditional finance cannot and may help the economy avoid crises. Therefore, not only should finance majors learn about it, but also other business majors. It makes sense, then, to include behavioral ideas in introductory finance courses. Despite decades of research and rising popularity, behavioral finance, though, is still overlooked in many introductory classes. This paper explores the extent to which these classes include behavioral phenomena and why they may choose not to. While neoclassical economics, the Chicago School of Economics, and the Efficient Market Hypothesis present a market that is rational and quantifiable in contrast to behavioral economics, which can explain phenomena that traditional ideas cannot and help prevent future crises, introductory finance

classes and textbooks often exclude the latter area of study because it is inconvenient to abandon orthodox ideas for ones that are not as neat or mathematical.

Deficient Orthodoxy Necessitates Behavioral Finance in Academia and Beyond

The Rise of Neoclassical Economics

Classical economists of the 1800s theorized that the value of an item would be equal to the costs incurred to produce that product (Weintraub, n.d.). However, since a purchaser may be willing to pay far more, or less, than the production cost, another basis for value had to be adopted (Weintraub, n.d.). Marginalism offered a convincing framework for the attribution of value and laid the groundwork for the rise of neoclassical economics (Weintraub, n.d.).

According to Steven E. Rhoads (n.d.), Marginalists examined a key dialectic regarding the value of a good or service: how can a certain thing, on the whole, be more valuable to society relative to other goods, yet be desired less by the average person? Rhoads explains that, for example, though one can live without diamonds, one cannot live without water; however, since most have enough water, people would rather have extra diamonds than extra water. In other words, after one was satisfied with water, one does not desire an additional unit and consequently does not value it. On the other hand, most are not satisfied with the number of diamonds they have. Here, there is a distinction between total utility and marginal utility: the former explains how valuable something is in absolute terms and the latter how valuable an extra unit of it is. When economists think in marginal terms, they consider whether the benefit of an additional unit will exceed the additional cost.

Neoclassical economics incorporates the idea of *marginal utility*, where entities pursue their goals until the additional, or marginal, cost exceeds the marginal benefit (Weintraub, n.d.). One of the central ideas to neoclassical economics is that people chiefly want satisfaction and companies chiefly want profit (Kalimeris, 2018). Neither of these entities ceases to desire their respective goals, so they continuously work to fulfill the others' want through transaction: people buy, and firms sell (Kalimeris, 2018). People buy goods and services from companies in order to attain the highest satisfaction possible and corporations sell to people in order to attain the highest profit possible (Kalimeris, 2018). People continue to buy from firms until the marginal cost for another good or service is too great for the amount of satisfaction they will receive and companies sell until making another product or service costs them more than the marginal profit they would receive (Weintraub, n.d.). People also sell their labor to firms to the extent that the satisfaction they will get from an additional dollar earned exceeds the dissatisfaction inflicted in the marginal labor needed to earn that dollar (Weintraub, n.d.). Companies buy the labor of people to the extent that the profit generated by the purchase of marginal labor exceeds their expenditure on that labor (Weintraub, n.d.).

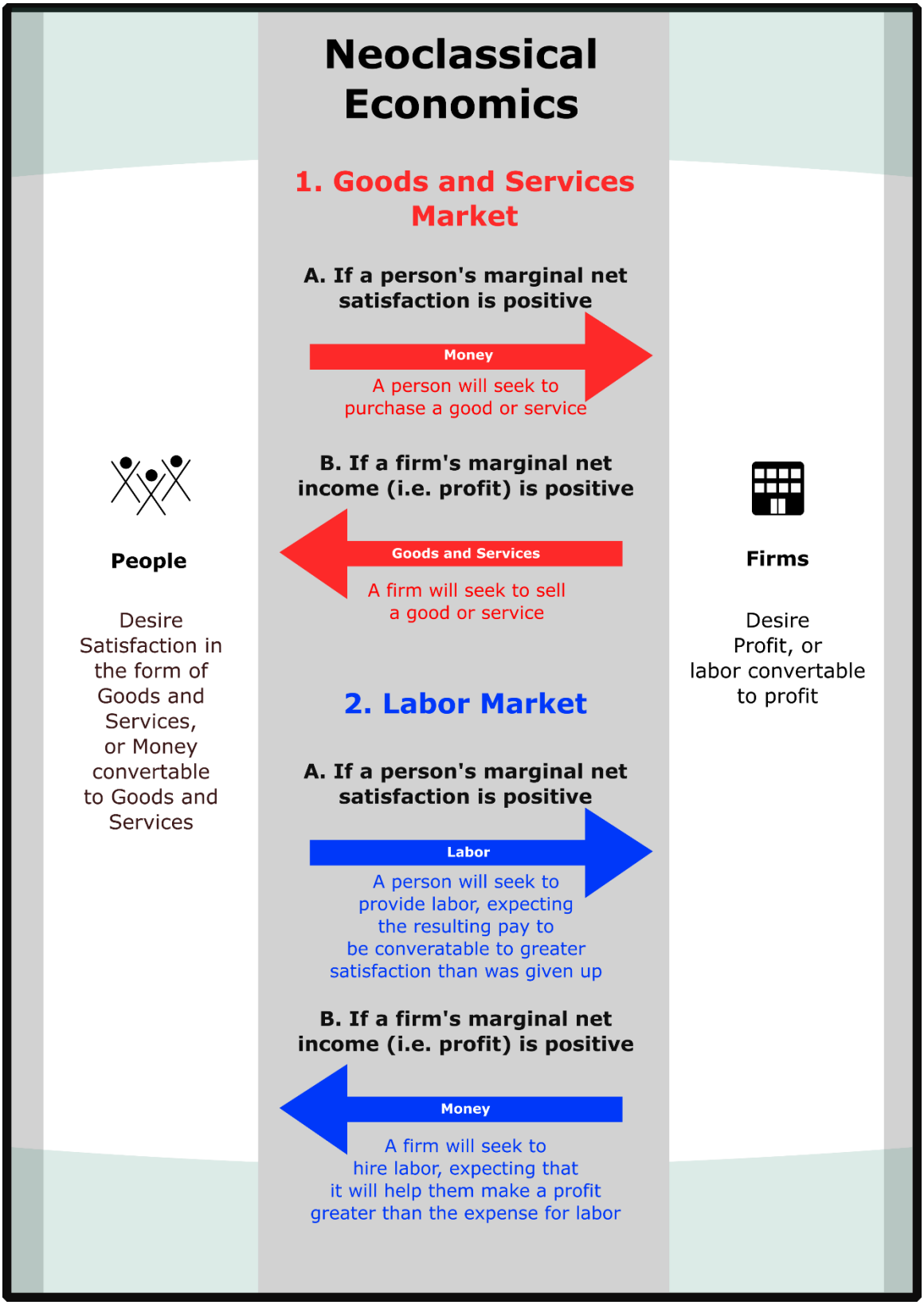

Figure 1. Describes a part of neoclassical economic theory (Weintraub, n.d.) (Kalimeris, 2018).

Neoclassical Economics' Mathematic Rationality

In recent times, neoclassical economics became the dominant school of thought in academia. E. Roy Weintraub (n.d.), professor at Duke University, writes in the Concise Encyclopedia of Economics that, in the 20th century, a desire to make the study of economics more esteemed led to the rise of neoclassical economics:

> How did such an orthodoxy come to prevail? In brief, the success of neoclassical economics is connected to the 'scientificization' or 'mathematization' of economics in the twentieth century. It is important to recognize that a number of the early Marginalists, economists like William Stanley Jevons and F. Y. Edgeworth in England, Leon Walras in Lausanne, and Irving Fisher in the United States, wanted to legitimize economics among the scholarly disciplines.

Weintraub explains that there was a desire to make economics more like physics, describing its phenomena in precise and mathematical terms, making it analogous to the study of the dynamics of the natural world. By making it more aligned with reputable established scientific ideas, economics gained legitimacy: "Agents were like atoms; utility was like energy; utility maximization was like the minimization of potential energy, and so forth. In this way was the rhetoric of successful science linked to the neoclassical theory, and in this way economics became linked to science itself" (Weintraub, n.d.). Neoclassical economics adopted a caricature of a human being in the process of creating a mathematical model of economics. In fact, economists would come to call this caricature of a person "economic man" or "homo economicus," whose primary trait was his complete "rationality," or his strict adherence to the neoclassical model in his economic choices (Kalimeris, 2018). The rational person always seeks to maximize their utility (Hayes, 2019). In contrast, one who deviates from the model would be

called “irrational” (Kalimeris, 2018). In this way, economics repurposes these terms which have a broader or different colloquial usage.

These ideas have been foundational: “The paradigmatic core of neoclassical theory forms today's economic ‘mainstream’ and dominates economics education and research” (Lara Boerger & Exploring-Economics-Team, 2016). Detractors, however, have been vocal for decades. In 1994, Munir Quddus and Salim Rashid explain that the neoclassical approach that was developed is certainly useful, but it has severe limitations, and a number of Nobel Laureates began to argue that its pervasiveness has starved the field of important alternative approaches to economics. They write that “…the question whether some mathematics is useful has now turned around to whether only that which is mathematical is useful.”

Chicago School of Economics

Ideas emanating from the Chicago School of Economics gained popularity during the twentieth century and were based on neoclassical thinking (Akhilesh Ganti, 2019). According to its reasoning, if all humans act rationally, and markets are composed of rational participants, then the market will allocate resources so that they will be found in the places where they are most valuable (Hess, 2017).

According to Richard M. Ebeling (2006), J. Laurence Laughlin was appointed head professor at the time of the school’s founding in 1892. Laughlin had a profound impact on the trajectory of the institution: “An uncompromising advocate of laissez faire and free trade, Laughlin may be said to have set the tone for much of the department for the next hundred years” (Ebeling, 2006). The Chicago School’s influence grew after Milton Friedman joined in 1946, writes Ebeling. Along with George J. Stigler, he promoted the idea that government regulation

was an anathema to freedom and opportunity. This represented an evolution of thought at the Chicago school: “A considerable difference exists between the present generation of Chicagoans and the earlier generation. Whereas Simons attacked monopoly and unions as vigorously as he attacked government, Friedman and other modern Chicagoans concentrate their attack almost entirely on government intervention” (Miller, 1962, p. 65).

Indeed, the Chicago School is unique, writes H. Laurence Miller, Jr. in 1962, marked by a blending of theory and reality, and applied broadly:

> What does distinguish [the Chicagoan] from other economists are a number of closely related attributes: the polar position that he occupies among economists as an advocate of an individualistic market economy; the emphasis that he puts on the usefulness and relevance of neo-neoclassical economic theory; the way in which he equates the actual and the ideal market; the way in which he sees and applies economics in and to every nook and cranny of life; and the emphasis that he puts on hypothesis-testing as a neglected element in the development of positive economics. (p.65)

Miller argues that the Chicago School wants to replace many of the government’s roles with “…the market system of rewards and penalties” (p. 66). In fact, Miller explains that Chicagoans are wary of social organizations beyond a family, though, he conceives, anecdotally, that an adherent to Chicagoan thought might try to create a market in that institution as well. Unlike other economists, Chicagoans fail to distinguish between the conceptual qualities of idealized markets and those of such markets as do exist and operate, ignoring a great deal of phenomena: “…problems of adjustment to change, to inequalities in market power, and to uncaptured external economies and diseconomies” (p. 66). Miller highlights that Chicagoans discount the impact of unions and oligopolies on market efficacy or, in passing, advocate for

such to be eliminated: “They feel that it suffices to point out that public policy ought to do away with these concentrations of power, or, like Friedman, they maintain that they do not alter significantly the essential competitive nature of the economy” (p. 67). It is a quite nuanced ideology: everything should not be placed in the domain of a market wherein there are no rules; on the contrary, Friedman and others prefer rules to active government intervention, eliminating such practices as member banks borrowing from the Federal Reserve (Miller, 1962).

Friedman, in A Monetary and Fiscal Framework for Economic Stability (1948), proposes “institutional arrangements” in pursuit of “long-run objectives… political freedom, economic efficiency, and substantial equality of economic power” (p. 246). He believes that, largely, there is a consensus among economists about these objectives, but that they are too broad to put into practice. Therefore, he makes three propositions, which reveal the nuance of his view on government involvement in the economy: “(1) Government must provide a monetary framework for a competitive order since the competitive order cannot provide one for itself. (2) This monetary framework should operate under the ‘rule of law’ rather than the discretionary authority of administrators” (p. 246). In the third objective, he concedes that “general fiscal measures [rather than] specific intervention” would work alongside the market to decrease inequality during a transition to a “truly free market” (p. 246). Friedman believed that a government’s institution of frameworks, enforcement of laws, and implementation of general measures, would suit these generally agreed-upon long-term objectives better than would intervention by agents of the state. Government administrators, then, who agreed with Friedman, would take such a laissez faire approach.

Crisis of Belief

In *The Myth of the Rational Market*, Justin Fox (2009), explains how the crisis unfolded. During the nineteen years that Alan Greenspan was the chairman of the Federal Reserve, new financial instruments were created during a time of unprecedented growth in the stock and bond markets. Greenspan, though at times showing apprehension, was delighted, explaining that the market created new mechanisms to distribute risk to those with the appropriate risk aversion. Greenspan believed in rational market theory and the efficient markets hypothesis (EMH), so, when he became worried about rising stock prices, the subsequent further increase in stock prices pacified his fears. This is because the EMH says that the market always knows better: "…[A]s more stocks, bonds, options, futures and other financial instruments were created and traded, they would inevitably bring more rationality to economic activity. Financial markets possessed a wisdom that individuals, companies, and governments did not" (Fox, 2009, pp. 13-14). After the financial crisis, Greenspan openly admitted that his view of the world, which he for 40 years held and thought was demonstrably correct, was incorrect in front of the House Committee on Government Oversight and Reform (Fox, 2009). One of the greatest proponents of the Efficient Markets Hypothesis had admitted that the supposedly wise markets had instead produced a disaster.

Jason Van Bergen (2011), who writes for *Forbes*, argues that markets are becoming more efficient, but they are far from fully efficient. For example, the hypothesis assumes that all investors have the same strategies and are looking for the same opportunities through which to execute those strategies. Bergen explains that this is clearly not the case. Additionally, he says that there would not be such a wide variation in profitability from investor to investor; neither would there be people like Warren Buffet, who beat the average market return year after year. In

order for markets to be fully efficient, everyone would need to value stocks the same way, using a quick, advanced system devoid of emotion, yielding identical financial results (Bergen, 2011).

Since markets are not fully efficient and grave crises can occur when the markets are left alone, one may wonder how a belief to the contrary evolved. Interestingly, the EMH was much milder and narrower in scope during its infancy:

> The twentieth-century version of the rational market theory was different – both more careful and more extreme… Most of the scholars who backed this hypothesis early on didn't mean for it to be taken as a literal description of reality. It was a scientific construct, a model for understanding, for testing and engineering new tools. All scientific models are oversimplifications. The important test is whether they're useful. This particular oversimplification was undeniably useful, so useful that it took on a life of its own. As it travelled … [across prestigious institutions, it] strengthened and lost nuance. (Fox, 2009, pp. 15-16)

Quddus and Rashid (1994) argue that describing economic phenomena quantitatively requires oversimplification of reality. They explain that mathematics can produce extremely precise figures, but that the precision is misleading. Specifically, they argue that certain human components of economics, such as morality, philosophy, and cultures cannot be captured by mathematics. "Mathematical modeling, no matter how sophisticated, is thus incapable of capturing the complexity and richness of the real-world economy. As a result, quantification is often a false prophet, promising much more than it can ever deliver" (Quddus and Rashid, 1994, p. 255). In other words, if ideas of morality, philosophy, and various cultures have not been modeled, and those are relevant considerations in economics, then economics has not been modeled quantitatively.

Moreover, applying statistics to the market was a tempting but contentious ordeal, according to Justin Fox (2009). The normal distribution, useful in observations of nature, was being used in the development of nuclear bombs, but markets seemed to have a glaring disqualifying characteristic. Fox points out that the constituent causes for phenomena summarized by a bell curve were numerous, random, and independent. In markets, however, investors' actions are dependent on others' – for instance, one investor may copy the actions of another, excluding them from being classified as normal (Fox, 2009). Therefore, it is erroneous to apply statistics to markets in many cases.

Robert J. Shiller, author of *Irrational Exuberance* (2010), writes that, "If the millions of people who invest were all truly independent of each other, any faulty thinking would tend to average out, and such thinking would have no effect on prices" (p. 509-510). Shiller explains, however, that if the contrary is true, then it can cause financial crises: "But if less-than-mechanistic or irrational thinking is in fact similar over large numbers of people, then such thinking can indeed be the source of stock market booms and busts" (p. 510). According to Shiller, people exhibit herd behavior, which will be summarized in a later section. Thus, human behavior plays a role in financial catastrophes. Failing to consider and examine this behavior would be similar to failing to investigate a calamitous crime scene and neglecting to consider suspects. The scene is studied, at the very least, to prevent the same perpetrator from doing it again. Likewise, the behavior of market participants must be studied in relation to financial crises. To be clear, not because of criminal action, but because market actors exhibit certain behaviors which, if not identified, may lead to more crises.

Behavioral Economics and Finance

Chronology and Relevance

The significance of behavioral economics has grown in stages. A severe interest arose in the 1990s, gaining it legitimacy in academia:

> While research in behavioral economics goes back to at least the middle of the twentieth century…, it is largely in the last decade of the twentieth century that behavioral economics developed from a vague and broad research area pursued by a small number of researchers at an even smaller number of academic institution to a large, widely recognized subfield within economics. (Weber and Dawes, 2005, p. 90)

In 1990, Weber and Dawes explain, barely any of the top economics departments had behavioral economists. The opposite was true at the close of the decade. Then, just after the turn of the millennium, Daniel Kahneman and Vernon Smith, who were some of the early and influential researchers in this field, won the 2002 Nobel prize in economics (Weber and Dawes).

After the financial crisis, the ideas of behavioral economics not only gained popularity, but gave it a face, so to speak. The 2010s saw two separate years of behavioral Nobel Laurates – in 2013, Eugene Fama and Lars Peter Hansen received it and in 2017, Richard Thaler was awarded the prize (Pisani, 2019). As previously discussed, the financial crisis challenged the EMH, which holds that the markets have a certain wisdom and inherent rationality (Fox, 2009). Thus, behavioral economics' pertinence to finance, specifically, was highlighted as a result of the crisis.

It is important to make a small distinction. According to Costa, Carvalho, & Moreira (2018), *Behavioral finance* is the study of the discrepancy between mathematical financial theories and real-world phenomena by examining how human tendencies influence markets. They write that it is a derivative of *behavioral economics*, focusing more the field's application

to financial investments. They explain that, at the general level, the research and theories that undergird *behavioral economics* and *behavioral finance* are nearly identical; it is primarily in the application that they differ. *Behavioral finance*, then, pertains to how the ideas of *behavioral economics* are applied to finance. While both terms are used in academic research, a survey by Costa et al. of articles in the *Web of Science* database suggests that *behavioral economics* is about four times prevalent as *behavioral finance.* This paper is primarily concerned with the latter, but the reader should understand that the two are identical at best and complementary at worst.

Overview of Behavioral Economics

Gary Stix (2009) points out that the success of the economy is dependent on the psychology of the population and that people often rely on gut feelings rather than complex analyses of available information when making economic decisions. Since their decisions are not grounded in economic fundamentals, the tide of public sentiment can cause a population to get excited about seemingly excellent investment opportunities or turn unfavorable and cause a panic very quickly. This was witnessed in the financial crisis, as a number of behavioral phenomena propelled people to invest until homeowners began to default on their mortgages under pressure from rising interest rates. Stix highlights that behavioral economics serves not only an explanatory role, describing the mistakes of the past, but also paves the way forward, helping economic actors avoid common pitfalls.

One such behavioral phenomenon is called the “availability bias.” Amos Tversky and Daniel Kahneman (1974) explain that when an event is recent and prominent in one’s mind, one may overestimate the probability of that situation occurring. For instance, if a plane mysteriously disappears, and it is reported on the news that it has crashed, people around the world may feel

anxious about flying due to the notorious recent event, despite the extremely low probability of this calamity occurring to them. However, Tversky and Kahneman emphasize that there need not be a real event or situation to impact one's perception of the likelihood of a given possibility. For example, simply thinking about the numerous ways a business venture may be troublesome, they write, may lead one to overestimate the likelihood of it failing.

A very similar facet of behavioral finance is called the "law of small numbers." According to an encyclopedia biography entitled, "Daniel Kahneman," by the Library of Economics and Liberty, people take patterns they see, over just a few trials or a short period of time and conceive notions from that pattern. Quite simply, this misconception about the weight of small samples can affect investors' decision-making. For instance, the law of small numbers can impact one's perception of an individual's skill, though such a determination may be premature: "…[I]f a mutual fund manager has had three above-average years in a row, many people will conclude that the fund manager is better than average, even though this conclusion does not follow from such a small amount of data" ("Daniel Kahneman," n.d.).

Another phenomenon that behavioral economics describes is called herding. John Maynard Keynes (1936) juxtaposed long term investors with *game-players*. He writes that though it may seem that a person who remains focused on long-term information in the midst of short-term movements may gain a profit, there are several reasons why this is not the case. One reason is the independence the investor would require: "Furthermore, an investor who proposes to ignore near-term market fluctuations needs greater resources for safety and must not operate on so large a scale, if at all, with borrowed money…" (Keynes, 1936, p. 157). Keynes writes that the investor will be viewed negatively by those he must answer to, such as banks, for going against the grain. The banks, boards, etc. will be especially impatient with the investor if he

incurs loss: “if in the short run he is unsuccessful, which is very likely, he will not receive much mercy. Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally” (Keynes, 1936, pp. 157-158). This results in strange phenomena. For example, Scharfstein and Stein (1990) write, that while money managers seemed to agree that the market was overvalued in October 1987, they were reluctant to divest: “If the market did continue to go up, they were afraid of being the lone fools for mission out on the ride” (Scharfstein & Stein, 1990, p. 465). On the flip side, they point out, if everyone did not gain together, they would all lose together, forgoing personally directed blame for the cushion of common failure. This is called herd behavior: “…under certain circumstances, managers simply mimic the investment decisions of other managers, ignoring substantive private information” (Scharfstein & Stein, 1990, p. 466).

Yet another example of behavioral finance is risk aversion for gains and risk seeking for losses. According to researchers named Daniel Kahneman and Amos Tversky (1979), when presented with two choices, people are more likely to choose the option where gain is certain, even when this contradicts expected utility theory: “In expected utility theory, the utilities of outcomes are weighted by their probabilities. The present section describes a series of choice problems which people’s preferences systematically violate this principles” (Kahneman & Tversky, 1979, p. 265). The researchers conducted experiments where two choices were given to participants, one where the chooser has a strong possibility of winning a sum, and another where the chooser is sure to win a sum. They were set up in such a way that the expected return, which is each possible amount multiplied its respective probability and summed up, was greater for the choice where a gain was uncertain. Still, by large margins, participants would select the option where gain was certain. Another experiment juxtaposed a vacation package visiting three times

the number of counties than the second option. However, the probability of winning the tour that included three countries was 50%, while the one-country tour was certain. Almost eighty percent of participants chose the option where they were certain to win, though the expected return for the uncertain option would be 1.5 countries – that is, three countries multiplied by a .5 chance. However, participants seem to take on risk when faced with the possibility of loosing money. In one experiment, people were told that they had been given 2,000 units of currency. Almost eighty percent of respondents chose to possibly lose 1,000 with a 50% probability rather than lose 500 with certainty when told to pick between the options. Though the expected return was equally negative in both, 84% of the same group of respondents chose the certain gain in a separate question when the expected return was likewise equal. Thus, Kahneman and Tversky's research shows that, when dealing with a choice between a sure amount and a probable amount, people tend to avoid risk if the decision concerns gaining an amount and seek risk if the decision concerns losing an amount.

Introductory Courses Incorporate Very Little Behavioral Finance

Since behavioral economics and behavioral finance have such significance, it is logical to assume that their ideas would be incorporated into introductory classes. Since this paper concerns behavioral finance, it will investigate the extent to which behavioral finance is included into introductory finance courses. Core principles are communicated in these classes, whereas subsequent classes expound on specific portions of the field. With traditional finance containing shortcomings and behavioral finance explaining actual phenomena, it would seem that behavioral finance would be more important for practical application in a student's career or research. Additionally, since other business majors or minors may only take an introductory

finance course, they may never learn about behavioral phenomena and how it influences investors and markets.

Syllabi

One method of investigating whether introductory finance courses contain elements of behavioral finance is to look at syllabi from leading business programs. To that end, three lists were found which enumerate the most highly ranked universities in the United States: best overall, best finance, and best business. The first two lists were from U.S. News and World Report, which has ranked schools for 35 years (Morse, Brooks, & Mason, 2019). The schools that were ranked one through 10 in U.S. News's list of *2020 Best National University Rankings* (n.d.) were recorded. Since two schools were tied for 10th place, a total of 11 schools were recorded from that list. Next, U.S. News's top ten schools in the *Best Undergraduate Finance Programs* (n.d.) list were recorded. Lastly, 20 schools from Forbes were recorded from a list entitled, *The Best Business Schools* (n.d.). Since the lists overlapped significantly, 24 unique universities were recorded in all. If the lists made reference to a specific school within a university, only syllabi from that school within that university would be considered. If a university was listed more than once, and the listing specified a school within that university, only syllabi from that school would be considered.

Syllabi for introductory finance courses in these schools were searched for using a search engine. Additionally, course catalogues of some universities were used to ascertain the names of introductory courses, especially if the search engine yielded no initial results. Only syllabi that met certain criteria were selected. The courses could not have finance prerequisites and had to be from 2017 to 2020. Additionally, courses were disqualified if they were found to be graduate only. A maximum of one qualifying syllabus per school was permitted. In the end, seven schools

with relevant syllabi were found. These were Columbia University (2018), Harvard University (2020), Indiana University—Kelley (2017), NYU Stern (2019), University of Pennsylvania (2019), University of Texas at Austin (2017), and Yale University (2019).

All syllabi had at least a description of the course and a course topic schedule. The information therein, and elsewhere in each syllabus, was considered when ranking each course on a scale of zero to four. Syllabi that mention market efficiency, specifically, received at least one point. While this does not constitute a discussion of behavioral finance, it opens up the possibility of inefficient markets and discussion of what field of study must be adjoined to more traditional finance principles to explain the discrepancy between the conceptual market and the actual market. In fact, all of the syllabi that make mention of behavioral finance include it within discussion of the question of market efficiency.

Syllabi received at least two points if they mention bubbles or rationality. A syllabus that directly mentions behavioral finance received at least a three. Finally, if a syllabus dedicated a week to behavioral finance, meaning, for example, three hours of a three-credit class, it received a four. Due to the significance of behavioral finance, this paper argues that a week dedicated to behavioral finance is the bare minimum for introductory course. The resulting scores are as follows:

Table 1

Behavioral Finance Inclusion in Introductory Courses of Top Universities

University	Score
Columbia University	2

Harvard University	3
Indiana University (Kelley)	0
NYU Stern	1
University of Pennsylvania	1
University of Texas at Austin	3
Yale University	3

The average score for behavioral finance inclusion was 1.8. Only Indiana University received zero points, but no university received four points. This means that none of the courses dedicate an entire week to behavioral finance. Only three out of the seven syllabi, namely those pertaining to Harvard University, University of Texas at Austin, and Yale University, mention behavioral finance. Harvard's course topic schedule contains a day concluding with behavioral finance, immediately after discussion of mutual funds, portfolio construction, and different forms of trading based on an investor's degree of belief in market efficiency. The University of Texas at Austin lists, "Efficient Capital Markets & Behavioral Challenges" as the topics for one of the classes in the course topic schedule. Lastly, Yale University's course discusses behavioral context within a larger discussion that day of whether markets are efficient. Syllabi of NYU Stern and University of Pennsylvania mention market efficiency, but do not discuss behavioral finance. The course at Columbia discusses bubbles in the final lecture after the topics of valuation and pricing, but the syllabus makes no mention of behavioral finance.

Thus, behavioral finance is only mentioned in fewer than half of the syllabi in the sample. By contrast, all of the courses discussed either the capital asset pricing model (CAPM) or the Security Market Line (SML). Similarly, time value of money concepts were found in every syllabus. Stock options were discussed in six out of the seven courses. The same number explicitly discussed bonds or fixed income securities in their syllabi. Lastly, three out of the seven mentioned Modigliani and Miller.

Textbooks

Another method of finding out if behavioral finance is being incorporated into introductory classes is to look at the content of textbooks. While a course may not cover all the information contained in a textbook, courses are often structured around textbooks. Every syllabus in the previous section listed a textbook associated with the course. Five different author groups were represented in the list of seven syllabi. The only repeating author group, represented by three courses, was Ross and Westerfield. These authors were accompanied by Jordan in two of the represented textbooks and by Jaffe in the third.

Marcus B. Alves, professor at Pace University, in response to a request for the names of the textbooks used at introductory finance courses, identifies three books used at Pace (M. B. Alves, personal communication, November 20, 2019). Two of them are written by Ross et al., reinforcing the popularity of these authors. These were *Essentials of Corporate Finance* and *Fundamentals of Corporate Finance*. The third book is *Fundamentals of Financial Management* by Brigham and Houston. Alves says that, in addition, *Principles of Managerial Finance* by Zutter and Smart is used in other universities. The two books by Ross, Westerfield, and Jordan, which are used within the university, and one book, by Zutter and Smart, used without, will be examined below.

Essentials of Corporate Finance

Essentials of Corporate Finance by Ross, Westerfield, and Jordan is in its 10th edition (2020). It is divided into nine parts and 18 chapters. It discusses CAPM extensively in chapters 11, "Risk and Return," and 12, "Cost of Capital." Time value of money concepts are covered, as well as bonds, while stock options do not seem to be included, besides a singular mention in chapter 14, "Dividends and Dividend Policy." Modigliani and Miller propositions are discussed, which are presented in chapter 13, "Leverage and Capital Structure." Thus, all but one of the topics that were identified in the previous section as common to many or most syllabi are also to be found in *Essentials of Corporate Finance.*

As for topics associated with behavioral finance, the book discusses market efficiency in chapter 10, "Some Lessons from Capital Market History." Market efficiency is a topic that naturally, though not necessarily or even usually, lends itself to the discussion of behavioral finance.

It also briefly discusses the concept of bubbles in chapter 15, "Raising Capital." Defining a bubble as "a situation in which prices are bid up to irrational, and unsustainable, levels," (p. 503) it asks, regarding the internet bubble at the turn of the century: "Was it really a bubble? Let us say that, at a minimum, there were instances of valuations that are very hard to reconcile with economic reality" (p. 503). There are also a handful of other instances where a rational or irrational actions are discussed, though it seems possible that the authors believe the colloquial definition is enough for a student to correctly interpret the terms as they are never explicitly defined, only pairing "irrational" with "unsustainable" in the aforementioned quote.

Behavioral Finance, however, is not discussed in the book. As mentioned, the textbook discusses market efficiency. In a section entitled "Capital Market Efficiency," the text describes the behavior of stock prices and explains that some investors attempt to profit from mispriced stocks. However, this is used to explain how arbitrage eliminates mispricing. While this is a very important and foundational concept in the natural attributes of markets, it is not always true, as the book itself suggests when it notes the difficulty of justifying the prices during the Internet Bubble. So, while the topic of market efficiency is a great way of introducing behavioral finance concepts, the authors omits it completely, noting in the introduction to the section that much must be left out:

> The concept of market efficiency is a rich one, and much has been written about it. A full discussion of the subject goes beyond the scope of our study of business finance. However, because the concept figures so prominently in studies of market history, we briefly describe the key points here (p. 337).

The authors indicate how occurrences in market history necessitate the inclusion of certain discussions, but omit behavioral finance, which recent market crises have made relevant, pertinent, and popular. Still, the only mention of behavioral finance in the book is on the third physical, unpaginated page, where other McGraw-Hill books are catalogued. *Behavioral Corporate Finance: Decisions that Create Value* by Shefrin is one of 17 books promoted in the "Financial Management" section of the list entitled, "The McGraw-Hill Education Series in Finance, Insurance, and Real Estate."

Fundamentals of Corporate Finance

Fundamentals of Corporate Finance by Ross, Westerfield, and Jordan is in its 12th edition (2019). It contains eight parts and has 27 chapters. CAPM is a topic covered in Chapters 13, "Return, Risk, and the Security Market Line" and 14, "Cost of Capital." Time value of money is discussed in several chapters. Bonds are covered extensively as well. Options are the primary topic of chapter 24, "Options and Corporate Finance." Since this book seems to be intended to cover the "fundamentals," not just the "essentials," though these terms are subjective, it is not unreasonable that this textbook covers options, while *Essentials of Corporate Finance* does not. The Modigliani and Miller Propositions are topics found in Chapter 16, "Financial Leverage and Capital Structure." Thus, this textbook covers all of the topics that were examined for inclusion in the syllabi. It covers both select topics that were found to be in all the syllabi, the two that were found in almost all the syllabi, and also Mogliani and Miller, which was covered by only three.

Now, the level of inclusion of topics related to behavioral finance must be evaluated. Market efficiency is discussed in this book, as in the last textbook, in a chapter called, "Some Lessons from Capital Market History," chapter 12. Section 12.6 of the chapter, "Capital Market Efficiency" is very similar to the section discussing the topic in *Essentials of Corporate Finance*. In fact, it even has the same disclaimer as the other text, verbatim, about the matter being too broad to be covered in much detail but must be included due to its relevance to market history. However, in *Fundamentals of Corporate Finance*, this disclaimer does not preclude the discussion of bubbles or rationality. In fact, though not present in the chapter 12, behavioral finance is discussed towards the end of the book.

Chapter 22 of the textbook is called, "Behavioral Finance: Implications for Financial Management." The chapter begins with a discussion about bubbles and how stock prices might,

quite evidently at times, be inflated. The chapter defines behavioral finance and describes how it might influence the actions of an investor. It explains that though being aware of behavioral finance concepts may not shield an entity from losses, it can help prevent those that are predictable. The sections details biases, such as overconfidence, framing effects, such as loss aversion, and examples of heuristics, such as the law of small numbers.

As a textbook that seems to be a more comprehensive version of *Essentials of Corporate Finance*, it makes sense that this book would include more topics. However, this paper argues that behavioral finance is an essential part of finance, having practical implications and historical ramifications. So, including it in the more comprehensive book is better than nothing, but not adequate when compared with the subject's importance.

Principles of Managerial Finance

Principles of Managerial Finance (2019) by Zutter and Smart is in its 15th edition. It has 8 parts and 19 chapters. The Capital Asset Pricing Model is covered in part four, "Risk and the Required Rate of Return." It is introduced in the first chapter in that section, chapter 8, "Risk and Return." Part two, "Financial Tools," contains chapter 5, entitled, "Time Value of Money," which discusses its namesake. Bonds are a topic in chapter 6, "Interest Rates and Bond Valuation" and options are covered in chapter 17, "Hybrid and Derivative Securities." Modigliani and Miller is briefly discussed in chapter 13, "Leverage and Capital Structure" under the heading, "Capital Structure Theory." *Principles of Managerial Finance* discusses all the topics examined for inclusion in the syllabi that relate to traditional finance concepts.

As for topics near the field of behavioral finance, the book discusses market efficiency in chapter 7, "Stock Valuation." It explains the assumptions of market efficiency and explains how

investors may try to make a profit by determining if a stock price is inconsistent with the stock's value. Unlike other textbooks, *Principles of Managerial Finance* does not present the reader with apparent examples of such circumstances, forgoing a discussion of bubbles. However, it does present a clear definition of rationality: "Rational buyers and sellers use their assessment of an asset's risk and return to determine its value" (p. 314). In addition, the book acknowledges the field of behavioral finance after discussing market efficiency:

> Although considerable evidence supports the concept of market efficiency, a growing body of academic evidence has begun to cast doubt on the validity of this notion… This focus on investor behavior has resulted in a significant body of research, collectively referred to as behavioral finance… Ongoing research into the psychological factors that can affect investor behavior and the resulting effects on stock prices will likely result in growing acceptance of behavioral finance… Although challenges to the efficient-market hypothesis, such as those presented by advocates of behavioral finance, are interesting and worthy of study, in this text we generally take the position that markets are efficient (pp. 315-316).

In this brief synopsis of the significance of the field, the book also mentions that many researchers have shown that investors' emotions play a role in markets.

Perhaps the authors believe that behavioral considerations are, though these are just speculative possibilities, not very significant, infrequently relevant, somewhat esoteric or fringe, too convoluted or preliminary, or something else. Whatever the case, it does seem strange that the book would mention behavioral finance's popularity in academia, predict its increasingly conceded validity, and affirm it as "interesting and worthy of study," yet omit extensive discussion on the basis of the authors' view of market efficiency, without refuting behavioral

objections. On the contrary, in fact, the book dedicates a text box on page 317 to briefly exploring some of the tenets of behavioral finance, such as herding and mental accounting.

Analysis of the results

Of the three textbooks examined, only *Fundamentals of Corporate Finance* covers behavioral finance extensively, while *Essentials of Corporate Finance* does not discuss the topic at all. As the books have the same authors, the exclusion of behavioral finance in the latter seems to be a deliberate decision – perhaps they do not deem it "essential." *Principles of Managerial Finance* acknowledges the field's popularity in research and predicts its growth in widespread acceptance. It even includes a small section, sampling some ideas of behavioral finance. Nevertheless, the book chooses to omit extensive discussion of behavioral finance due to the authors' view on market efficiency. It does not present a rebuttal against the fact the researchers have shown behavioral influences on investors' actions.

CFA Bodies of Knowledge

According to Julia Kagan, writing for Investopedia, the CFA Institute provides various services to finance professionals (2019). The organization provides various learning programs and certifications and also publishes a code of ethics for persons in the industry. "Chartered Financial Analyst" is a designation granted by the CFA institute to qualified individuals with work experience upon passing three of its exams, Kagan explains. It is quite popular and esteemed: "The CFA charter is the professional standard of choice for over 31,000 investment firms worldwide. There are more than 150,000 Chartered Financial Analysts in 165 countries" (Kagan, 2019).

The institute maintains bodies of knowledge in consultation with experts to keep their services at the forefront of the state of the field:

> We continuously evolve the CFA Program by connecting with practicing investment management professionals, university faculty, and regulators to determine the critical knowledge, skills, and abilities that are needed in an investment role today… We refer to this process as practice analysis. ("CFA Program Practice Analysis," n.d.)

The bodies of knowledge, which are informed by practice analysis, are used to formulate CFA courses and exams ("CFA Program Practice Analysis," n.d.). Since the bodies of knowledge are both informed by, among others, educators – and professors may aim to prepare students for this important exam, they can be expected to correlate what is taught in university courses. Though not necessarily reflective of what is taught in introductory courses, the bodies of knowledge may dictate what is important in the finance field, and, like textbooks, can make teaching of behavioral finance more likely in introductory courses, depending on the extent of inclusion in their own contents.

Global Body of Investment Knowledge

The CFA Body of Investment Knowledge (GBIK) is intended to be a continuously updated, thorough, 85-page outline of what that a Certified Financial Analysist, at any level of experience, may encounter pertaining to finance (CFA Institute, n.d.). It is not limited to established concepts, tradition, and orthodoxy, instead it aims to be on the forefront, to contain pertinent matters concerning investments (CFA Institute, n.d.).

As expected, the GBIK contains CAPM, time value of money, bonds, options, and the Modigliani and Miller propositions. It also includes market efficiency. Bubbles are mentioned but are minor points. Behavioral finance is mentioned throughout but is a relatively minor topic.

As expected, the GBIK includes behavioral finance, but to a much lesser extent than more traditional concepts.

Candidate Body of Knowledge

The CFA Candidate Body of Knowledge (CBOK) is a narrower version of the BGIK – including only those concepts which would be part of the CFA Program (CFA Institute, n.d.). knowledge of these concepts are foundational to a career in the industry: "The Candidate Body Of Knowledge (CBOK) represents the core knowledge, skills, and abilities generally accepted and applied by investment professionals globally" ("Candidate Body of Knowledge (CBOK),", n.d.).

The CBOK outline does not specifically mention CAPM ("Candidate Body of Knowledge (CBOK)," n.d.). However, CAPM is on the CFA exam, even at a level one (Sahajwani, 2019). According to "Candidate Body of Knowledge (CBOK)" (n.d.), the topic areas do include time value of money, bonds, and options. The CBOK also includes Modigliani and Miller in the form of "Tax impact on investment decisions." The CBOK does not, however, specifically mention market efficiency, bubbles or rationality. Behavioral finance is mentioned on the outline, though. This topic can be found on the CFA level III exam (Sahajwani, 2019).

In the CBOK, all of the select traditional concepts, which were looked for in the syllabi and textbooks, were present. Behavioral finance is also part of the CBOK, but is a minor part.

Summary

To recapitulate, behavioral finance is discussed in three of seven syllabi of introductory finance courses, though it comprises a very small part of their course schedules. Meanwhile, two of the three textbooks mention behavioral finance, one covering it over a whole chapter, the other only providing a brief synopsis of its history in research a brief summary of its tenets. Additionally, both the CFA GBIK and CBOK include behavioral finance, though the topic is a relatively small component of the test.

The results of the examinations into syllabi, textbooks, and the CFA bodies of knowledge suggests that behavioral finance is not discussed in the majority of introductory classes. However, behavioral concepts are *not* non-existent in introductory finance, they are merely secondary and peripheral topics, when they are included. The fact that behavioral finance is not standard in finance textbooks reinforces this phenomenon, as all sampled syllabi listed a textbook, even if it wasn't mandatory for students to purchase. Textbooks tend to cover many more topics than courses do, meaning that even if textbooks include behavioral finance, that is no guarantee that courses will. Still, if textbooks inform the curriculum of introductory classes, inclusion in the book will make inclusion in the class more likely. The fact that behavioral finance is a small part of the CFA body of knowledge and is part of the CFA level III exam is significant and solidifies the topic as a mainstream and essential component of finance. However, this does not guarantee inclusion in introductory courses, even though the bodies of knowledge are partially informed by university faculty.

Why So Little Behavioral Finance is Taught

Behavioral finance explains how individuals behave when faced with certain choices. Omitting behavioral finance in an introductory course is a choice, so interestingly, behavioral finance itself may have some explanations.

Explanations from Behavioral Finance

Herding

As previously mentioned, "herding" is the phenomenon where individuals follow or copy the inclinations and choices of others. Robert Schiller explains that, "A fundamental observation about human society is that people who communicate regularly with one another think similarly" (2010, p. 509). This idea can be applied narrowly, such as to the financial decisions of investors, but it can also be applied broadly to everyday decisions. In his book, Schiller cites many experiments, specifically some by Solomon Asch, Morton Deutsch and Harold Gerard, and Stanley Milgram, which show that people are willing to betray their intuition to agree with the wisdom of the crowd or an expert.

In fact, this herding was actually discovered in the 36 available finance texts in the late 1970s: "A review of all the texts available in 1979 shows a remarkable similarity in material. Except for Solomon and Pringle, who eschew episodic material, all others follow the pattern of Weston. Of course, there are differences in presentation…" (Norgaard, 1981, p. 41). Richard L. Norgaard writes, "Still the material assumed to be a part of the basic course has been agreed upon. In such a market, innovative texts are unlikely to survive" (p. 42). He writes that publishers solicit reviews from professors. However, the book ends up being an "average product" (p. 42), since the professors are from a broad set of universities. Then, other textbooks copy the strategy of successful books, so that none are very unique.

Publishers, then, may exhibit herding behavior when they examine what is being already taught to inform what their own book should teach. Also, when one publisher uses another publisher's book to inform the content they should include, rather than innovate, they are herding.

Moreover, this can have a circular effect, since instructors prefer to use textbooks in their courses, rather than compile materials from various sources, according to Marcus Braga Alves (personal communication, April 20, 2020). When asked what barriers there are to the inclusion of behavioral finance in introductory courses, Alves answers that the most significant barrier is behavioral finance being omitted from textbooks. Similar to the findings of this paper, Alves laments that textbooks omit the topic altogether. Those that do include behavioral finance ideas, he mentions, cover it "superficially." Professors could choose to include the ideas independently, but Alves says that both they and students tend to find this less suitable. They, "prefer the structure provided by the most popular textbooks to the breadth offered by materials selected from different sources. Textbooks usually provide closely related supplementary support materials (e.g., PowerPoint presentations, test banks), which make both teaching and learning easier." Perhaps not much has changed since 1979, when it could be said of many textbook writers: "Innovation is not a consideration, but style, format, and ease of reading are" (Norgaard, 1981, p. 43). Catering to the customers by streamlining was customary in the 1970s: "A teaching package might include workbooks, sets of questions, slides, cases, and answer books as well as the text" (Norgaard, 1981, p. 41) Now, more than ever, publishers can provide the whole, all-in-one package. Along with textbooks, they can include slideshows and pre-made exams, as Alves points out, but also digital homework, quizzes, and certain step-by-step explanations, as many

students are familiar with. These are undoubtedly convenient resources, but they seem to come at the expense of innovation.

Thus, one can see how instructors may be inclined to follow, in their course, what the publishers decide to include. By doing so, they are exhibiting herding. Additionally, if the publishers only include what they have surveyed from professors, it is merely a feedback loop, where no innovation can occur. Publishers and instructors would have to choose to deviate from their peers in order to break the loop and include behavioral finance. But if their peers exhibit herding, they are unlikely to follow this breakaway minority.

Loss Aversion

Loss aversion, according to Matthew Morey, professor of finance at Pace University, is another reason that could prevent professors from including behavioral finance (personal communication, April 11, 2020). As mentioned, there has been a feedback loop between finance textbooks and professors for decades. If behavioral finance has been omitted for so long, it may be embarrassing for instructors and publishers to admit that they were mistaken not to teach behavioral ideas. Previously, this paper explained how people are willing to take on more risk in a scenario where they might lose money, than in in scenario where they may gain money. People very much dislike the prospect of losing money. This can perhaps be extended to dignity – often people try to save face. Many will relate to having once been wrong but being reluctant to admit it and accept the "dishonor." It is not as painful to compete for some additional honor and not receive it, as it is to lose an honor previously awarded. Likewise, an athlete that won gold the previous year is more dismayed at falling short in the current year than an athlete of the similar caliber, but no previous victory, who performs just as poorly. Likewise, a publisher which has a reputation is unlikely to include much behavioral finance when their stated presuppositions are

antithetical to it. How might *Principles of Managerial Finance* (2019) by Zutter and Smart, for example, significantly include behavioral finance in future versions if current versions include such a sentence: "…Although challenges to the efficient-market hypothesis, such as those presented by advocates of behavioral finance, are interesting and worthy of study, in this text we generally take the position that markets are efficient" (pp. 315-316). A new finance textbook, on the other hand, may be more inclined to take this approach, but instructors may nevertheless herd to the established ones.

Other Considerations

Matthew Morey also points out that behavioral finance is not as neat or mathematical as more traditional topics (personal communication, April 11, 2020). However, Morey does not lament this, rather he believes, quite reasonably, that students should be urged to think. The reader may recall that economists desired to make the field more reputable in the 20th century and so made it more like physics (E. Roy Weintraub, n.d.). Economics continued on this course so that textbook writers, which believe the rational, efficient models, omit behavioral finance on that basis. Not only were economists eager for mathematization, but so were finance students in the 1970s: "The desire by students for less analytic material directly affected the mathematical content of texts. Mathematics of finance (present value), first introduced by HWD and Johnson, is now considered the most important part of the basic course" (Norgaard, 1981, p. 41). This did not mean, according to Norgaard, that the textbooks were becoming harder; on the contrary the math content was also limited, as there had been pressure for years, from both instructors and students, to make courses easier: "more technical (easy) rather than analytical (demanding)" (p. 41).

Thus, including behavioral finance in textbooks is disadvantageous to publishers because it is contrary to their long-held presuppositions, difficult to integrate with existing material because it is not as mathematical, and not demanded by their customers. It is disadvantageous to instructors and students because they want to make courses less analytical. And, as previously discussed, there is a feedback loop between the two, compounding the problem.

The problem is that difficulty is relative. What is difficult or inconvenient for one student may not be for another. Still many seem to entertain the idea of including or excluding a topic, not based on its importance, but on the basis of how confusing some material may be. It can be argued from both sides: one may argue difficult material should be minimized so students are not left scratching their heads; another may argue that difficult material should take up most of a course so that it can be explained more thoroughly. Interestingly, both arguments can be used against behavioral finance. The idea that behavioral ideas are too confusing has already been discussed, but Scott Sumner (2018) argues that they are too intuitive, and traditional ideas are too counterintuitive and must take up most of a course. He says this about economics courses, but one can easily adapt the argument to finance. Sumner seems to oversimplify behavioral economics in his argument:

> If you tell students that some people have addictive personalities and buy things that are bad for them, they'll nod their heads. And it's certainly not difficult to explain procrastination to college students. Ditto for the claim that investors might be driven by emotion, and that asset prices might soar on waves of 'irrational exuberance' (Sumner, 2018).

Of course, behavioral ideas are more complex than addiction, poor purchasing decisions, procrastination, emotional investing, and bubbles. There is science undergirding behavioral

theories which explains the unique circumstances required to produce, and particular nuances of a behavioral phenomenon. Moreover, just because a student may agree with a certain assessment of human behavior does not mean that they are aware of it, nor may they know how and when to apply it. Certainly, many topics, subjects, and issues throughout the world can be summed up in simplistic terms, but a deeper knowledge, along with guided instruction, is what distinguishes the experts from the dabblers. Of course, there are many situations where expertise in a given topic is pragmatically useless, especially if it consists of esoteric musings based on mistaken or arbitrary premises, but certainly a university is a place to gain expertise, despite the risk of some degree of vanity. Furthermore, traditional finance contains many mistaken or arbitrary premises, but behavioral finance, even if some part should be found to be so characterized as well, is inherently focused on pragmatism. Sumner goes on to argue that behavioral ideas are not so powerful, transformative, or revolutionary as some might imagine. He argues that behavioral ideas did not prevent past crises. This though, does not support exclusion of behavioral finance. On the contrary, if there are crises despite the current regimen of theories and information being taught to college students, is it not time to change the diet? Behavioral finance is specifically designed to address the behavior that might cause financial disasters, and so, by definition, more consideration of these ideas, causing refinement of the field and the discovery of practical applications, is a direct assault on the calamities which, as Janet Yellen (2005) points out, can cause so much devastation. If the issue is efficacy, then the baby should not be thrown out with the bathwater – one can make the field stronger. If, however, the issue is difficulty, then efficacy and pragmatism should override. Publishers, professors, and students may be choosing neat, mathematical orthodoxy, over valuable discussions about the causes of market calamities.

This situation is tragic. Not only does it betray the value of a university course, where ideas may be deliberated without prejudice, but it leaves students ill-equipped. Alves argues that behavioral ideas have real-world value:

> I don't think that any class can overly confuse a student since classes provide an environment that allows us to exchange and share ideas. In the case of Behavioral Finance, students would benefit greatly from a discussion that challenged the predominant views in academia, which generally assume that markets are rational and efficient. The Internet and the Real Estate bubbles are only two of many examples that show how irrational and inefficient markets may be. Students who study Behavioral Finance in an introductory Finance course will undoubtedly be better prepared to make investment and financing decisions when prices increase quickly without the support of the underlying fundamentals. They will also be better prepared to understand the main drawbacks of blindly trust[ing] the asset pricing models presented as reasonably reliable by the traditional Finance courses (Marcus Braga Alves, personal communication, April 20, 2020).

In this quote, Alves explains that classes which present behavioral ideas, in contrast to traditionally taught ideas, and allow students to think, will equip students to understand situations that others, who have not learned such concepts, may not be able to understand.

Matthew Morey also presents this as a matter of the virtue of university courses. He explains that if courses are simplified and students are not prompted to think, then they may not be showing students what finance really entails:

> One reason [the finance textbook in question has not changed much in 20 years] could be that authors want to keep textbooks simple as it is easier for students to understand; having too much questioning of key concepts in the textbook may interfere with a student's understanding. But the flip side of this argument is that we are not conveying to students the realities of finance. Moreover, if we were to teach a finance course that was more open to the new research/realities of finance it may enhance the student's learning as the process of introducing questions to the theories presented forces the students to think critically about the theory. We want our students to understand the material but often the best way for them to do this is to build up the material and then tear it down (Morey, 2012, p. 8).

The format of one-way classroom instruction is so far removed from other daily interactions. Where else might one tolerate being spoken to, at length, with minimum opportunity for response? In other circumstances, such a conversation, where one is largely only spoken to, would be abandoned. Of course, universities are unique, because they are designed for students to learn things which they do know from an instructor who *does* know. Nonetheless, in colloquial conversations with knowledgeable people, if one is genuinely curious, one asks questions, and though the experts does most of the talking, the learner directs the trajectory of the topics of the conversations. And what will the learner likely inquire about? They will likely ask about practical matters. The author of this paper hypothesizes that if universities were to model classes after conversations, such as those where a genuinely curious person gains insight about relevant practical matters from an expert, almost everyone would be benefit greatly. But often, it is too convenient to do what everyone else does, too dishonorable to renounce long-held

practices, and too disruptive to seek truth. These correspond with the last three sections in this paper: “Herding,” “Loss Aversion,” and “Other Considerations” respectively.

The Future of Finance

This paper examined how a mathematicised field of finance evolved from inaccurate assumptions. Those inaccurate assumptions permitted catastrophes that had widely damaging effects. Quite obviously, the way forward is to present a better picture of human behavior to students so that the professionals of tomorrow can make decisions based on a more complete understanding of reality. Universities must pursue truth, regardless of other concerns.

When it come to finance, one appropriate step to take is clear. A more contemplative environment that takes of up the challenge of examining human behavior is a welcome departure from deficient orthodoxy: “[Behavioral finance] requires us to look for answers in human nature to problems that were, until recently, explained only by traditional Finance models that perhaps oversimplified the nature of financial markets” (Marcus Braga Alves, personal communication, April 20, 2020). It is difficult to tackle problems, however, if publishers, instructors, and students do not see that they exist. The risk is that we experience more economic disasters. This is undesirable enough, but the issue is even more fundamental.

The premise of research is that not all is yet ascertained about a particular matter. Undoubtedly, universities should make efforts to convey, to students, the most insightful relevant discoveries about the matter they are studying. If there is a disconnect between research and courses, then universities are doing students a disservice.

The future of finance should be much like the future of academia. It should not hold onto inaccurate ideas, just because they have been taught for a long time and fit within a neat

framework. Of course, this is easier said than done, but this does not mean the effort should not be made. Behavioral finance shows that people make mistakes. However, just because mistakes are inevitable does not mean there should not be an attempt to fix them.

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