Risk is not Sufficient to Generate a Return on Investment

Benjamin A. Jansen[1]

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This paper shows that theories focused solely on risk, and investors more generally, as the driver of asset returns may not be sufficiently reflecting relevant asset price inputs. This conclusion largely stems from prevalent asset pricing theories ignoring the firm side supply of value into their financial securities.

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[1] Contact: Benjamin.Jansen@mtsu.edu, Middle Tennessee State University, Murfreesboro, TN. I thank seminar participants at MTSU and Southwestern Finance Association annual meeting for their feedback. All remaining errors are my own.

1. Introduction

What is relevant to an asset's price? A cornerstone of financial economics is the positive association between risk and return, typically causally induced via risk through investors utility functions. This relationship follows early research in our field by Markowitz (1952), Sharpe (1963), Lintner (1965), and Black (1972). Cumulatively, they show that risk is positively related to returns largely through risk-averse investors. Despite research following these papers which show that the assumptions necessary to build these models as well as the models themselves are not empirically supported, we still rely on the conclusions of the models. In this paper, I discuss how not only does risk fail to empirically explain returns, but risk is also an economically unsound ground on which to build a model that explains the return process, particularly for residual claim assets.

Generally, the goal of empirically testing a theory is to bridge the gap between what the theory states and what we observe in the world. There is much research that questions the empirical efficacy of CAPM and the risk and return relationships as characterized by financial economic theory. Blume and Friend (1973) argue that mean-variance models are theoretically and empirically incapable of explaining asset returns. Fama and French (1992, 1993, 1996) show that CAPM alone "cannot explain expected return." Many papers since have shown considerable explanatory power in stock returns outside the scope of CAPM. For example, Lewellen (2015) presents evidence that 14 firm characteristics in addition to beta may be used to forecast the firm's expected stock return. Jansen (2021) shows that cash flow growth has significant economic and statistical explanatory power in stock returns, while Beta is largely statistically insignificant after controlling for cash flow growth. Often, though not always, these studies

conclude that the association they find between an explanatory variable and asset returns is some risk factor.

However, in spite of there being much empirical research showing asset pricing models fail to explain returns, there has been little work showing the flawed economic reasoning underlying the theories explaining why risk may generate a return on investment. This paper discusses why risk is an insufficient characteristic to explain returns. The central concept is simple: risk does not explain enough of an asset's price, particularly for residual claims assets, to generate the entire return process.

An integral law in financial economics is that prices reflect expected discounted future cash flows. There is evidence for occasional violations of this law, such as Lamont and Thaler (2003) and Anderson and Jansen (2022). But, evidence generally suggests the law of one price typically holds. While it may be difficult to estimate expected future cash flows of an asset, it is similarly difficult to estimate the appropriate discount rate applicable to these cash flows. In equilibrium, the discount rate is equivalent to the expected return of an asset. After Markowitz's (1952) and Sharpe's (1963) seminal work linking expected returns to the riskiness of the security, financial economists use the risk and return (RR) relationship to estimate returns: risk increases the expected return of an asset.

An assumption our field has made since at least the inception of the RR framework is that investors are the principal factor in a firm's asset value. However, investors are the demand side of the market, not the supply side. Additionally, there is a problem in using the RR framework when estimating the expected return to a residual claims asset, such as equity. Shareholders in a firm have a claim to the cash flows that firms generate above the claims of higher order claimants to the firm. A firm's goal is to maximize these residual claims. RR implicitly assumes

that the role of a firm in maximizing value is attained at the point in which risk is compensated. However, the goal of the firm is an unbounded goal to maximize shareholder value indefinitely. In other words, the firm is acting to continually increase shareholder value, not merely compensate shareholders at a certain threshold. This reflects an inconsistency in using risk to reflect the entirety of the return process. Once risk is fully compensated for, the firm continues to engage in value-adding activity. Therefore, there is no sufficient point in which risk is merely compensated, but firms continually try to maximize cash flows and therefore increase shareholder value. This paper outlines how RR fails to conform to the unbounded nature of maximizing shareholder value and what the implications for this incongruity are.

2. The Unstated Assumption

Modern Portfolio Theory (MPT) and the resulting CAPM dominate financial economic thought about understanding asset prices. These theories are built upon assumptions of investors, particularly that investors are risk averse, maximize their utility, have perfect access to information, and endeavor to maximize their risk-return profile. A contrived conclusion from the investor focused axioms of asset pricing models is that the relevant determinant of security prices are necessarily the investors.

The unstated assumption built into these models is that the only relevant factor in determining an asset's price, and therefore its return, are the investors in that asset. This in turn implies that a firm's business operations are independent to the returns of its securities. This conclusion is false because it is incongruous with the foundational time value of money framework that the value of an asset is the expected discounted future cash flows the asset will generate. Firms generate cash flows which are then used to pay capital providers, either

contractually or residually. These are the expected cash flows from which asset prices are then linked to.

A better way to consider investors contribution to the market clearing price is to consider the basic supply and demand equilibrium. When we're looking at a capital security market, what reflects the demand curve and what reflects the supply curve? To answer this question, we can consider who controls the supply of capital securities. Do investors issue IPOs? No, firms do. Do investors engage in share repurchase programs? No, firms do. Do investors convert convertible bonds to stocks? No, firms do. Firms control the supply of their capital securities, which investors demand to allocate their capital to. This conclusion is in line with studies, such as Scholes (1972), Shleifer (1986), and Gompers and Metric (2001), that show investor demand for capital securities is downward sloping. If the demand side, i.e. investors, of the market are evaluated we must also evaluate the supply side, i.e. firms, to have a market clearing model of asset prices.

Assuming that investors reflect the entirety of the market equilibrium ignores the supply side of that market. In effect, investor-based theories ignore the supply side of the market and therefore price the demand curve. The problem with this is if we only study the demand curve and argue that this reflects the market clearing equilibrium of supply and demand then we ignore the necessarily relevant supply side; this is what asset pricing theories to-date generally do.

3. Necessity

What is needed for an asset price to exist? Asset returns are generated from the asset's price and following changes to that price. Therefore, in order for a return to be generated the price must exist. A limit test suggests that risk is not the determining factor of an asset's price

and therefore not a determining factor in its return. Consider the value of an asset: *Pt* = *Et* (*mt*+1*Pt*+1), where *Pt* is the price today, *mt*+1 is the discount factor, and *Pt*+1 is the price at time t+1 (i.e. the sum of discounted expected future cash flows). How does the value of an asset change as the inputs to its value approach zero?

Time→0 then P_t = *Et* $(1 * P_{t+1})$= $P_{t+1} \rightarrow P_t$. If the time decreases toward zero between when the expected cash flow occurs and the present time, then the value of the asset approaches its expected cash flow itself. Discount rate→0 then P_t = *Et* $(1 * P_{t+1}) \rightarrow P_{t+1}$. If the discount rate of the asset approaches zero, then the value of the asset approaches the sum of the expected cash flows. Finally, Cash flow→0 then P_t = *Et* (m_{t+1} *0) →0. If the expected cash flows of the asset approach zero, then the asset's value declines toward zero as well.

The only limiting factor in the asset containing any value at all is the expected cash flow. So long as the asset is expected to generate some cash flow, it will have value. But, the asset need not be discounted at all for it to continue to have value. Yes, in reality there is some discount rate that will equate the present and future values. However, it is not the discount rate that generates the necessary component of an assets price; assets still have value if there is no discount rate.

Additionally, investor expectations in and of themselves do not produce the cash flows generated by the firm. These cash flows are generated via the firm's production irrespective of investor activity and beliefs.

4. Sufficiency

A sufficient condition for an asset price to exist hinges on the condition itself. IFF risk is a sufficient condition for an asset price to exist and change over time then risk is all that is

needed to be observed for returns to exist. Discussed above and in Jansen (2021), expected cash flows are necessary for asset value to exist. Therefore, the need for cash flow precludes the sufficiency of risk to be the determining factor of an asset's price. There is also much empirical evidence that shows risk does not fully explain returns. Furthermore, even if the RR framework is sound, idiosyncrasies of investors utilities can lead to changes in asset prices in the short run (see Kahneman and Tversky (1979) for examples). Yes, our measure of risk itself may be faulty. But, if the measure of risk is faulty why are we relying on the conclusions of these faulty theories that are, at best, empirically contested?

5. Example

Enron

Around August 2000, Enron's stock price peaked at $90.00 per share and it was one of the largest public companies in the world. Over the next 16 months, Enron's stock price plummets to $0. Between the peak and plummet there are large drops in the firm's stock price largely tied to an event that took place signaling the firm's current and future performance. For example, the SEC opens an investigation into Enron's accounting on October 22nd, 2001. At this point Enron's stock drops to $21 per share. Enron then enters bankruptcy on December 2nd, 2001, and its share price drops to $0.40 per share. What economic perspective helps to explain this price decline? Each of these events increases the risk and uncertainty of Enron. Under the investor-based RR theory, the rational interpretation is that the decline of the asset is due to an increase in the expected return of the stock because there is additional risk in the asset. On the other hand, from a cash flow perspective the firm becomes increasingly incapable of generating value and the price decline reflects a reduction in the expected cash flow of the firm.

The entire time Enron is failing, investors may expect or demand higher expected returns on their investment due to the higher risk. However, firms do not engage in production in this way. They continually try to increase and improve output to increase their income. Failure to generate cash flow leads to the collapse of firms. Enron failed and investors lost their principal, not because of a change in Enron's discount rate, but because the firm failed to generate cash flow.

The value of firms cannot be solely based on investors, it must include the expected cash flow of the firm. The discounted value of these cash flows may be affected by the utilities and risk profiles of investors, yet these characteristics are not the foundational source of value to a business. A likely more accurate link between expected returns and firm generated cash flows is that the firms generate cash flows with the best of their ability and their asset returns are ex post observed to coincide with the long-run trend of this cash flow growth. This may help explain the equity premium puzzle. The premium puzzle may simply reflect a firm's efforts at maximizing shareholder value, which will be above risk-based explanations of returns if the firms are continually well run.

6. Conclusion

Economists' base understanding of a market stems from the study of the supply and demand equilibrium. This equilibrium is composed of aggregate supply and aggregate demand; where both the supply and demand curve reflect the aggregate activities of the people and institutions who sell and buy the products and services provided. However, I think that financial economists have substituted the aggregate demand for capital for the supply and demand of capital because of the baseline assumption imbedded in investor oriented theories. Investors do

not supply capital securities, firms and governments do. Investors demand the capital securities in which they invest their savings.

If investors are not solely responsible for the return on investment, then risk is neither sufficient nor necessary to generate a return on investment. Whereas cash flow is both necessary and sufficient to generate a return on investment. I think the decoupling of cash flows from asset returns over the last century of financial economic research has led our field astray from a better understanding of the return process. Cash flow is the link between the endeavors of a firm and its asset returns. While it is not atypical for a scientific field to hold on to a theory to explain phenomena when there is not a better existing theory to explain said phenomena, exploring how expected returns are generated may greatly benefit our field's ability to explain the returns we observe and to link asset pricing with corporate finance.

Why is all this important to consider? Exploring different determinants of an asset's price will help us to better understand the pricing process. Our field has consistently explored the asset pricing process through investors. Even anomalies to this process, such as behavioral aberrations from rational investors, are made to fit the RR framework (see Lo (2017), for example). Starting from the ground up, rather than starting our theories from the conclusion of risk necessarily being the explanation for returns and assuming the bedrock is sound, may offer a theory sufficiently broad to explain the empirical findings we have found. Additionally, investment and corporate financial literature have seemingly developed independently from one another. Understanding an asset's price from a cash flow perspective may yield a bridge between these two vital subfields of financial economics.

While this paper itself does not offer a theory to replace the ones we use, it does offer guidance for such a theory to exist. Jansen (2021), however, shows how we can use cash flow

growth as the key measure in asset returns. Cash flows are fundamentally relevant to the value of an asset's price. Any theory which does not explicitly include expected cash flow ignores a foundationally relevant aspect of asset value.

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