FOUNTAINHEAD INSIGHTS

How Yields Affect Literally Everything

December 2022 – Explorations

One of the prevailing investment themes of 2022 was rising interest rates, and their impact on financial markets. To put it simply, interest rates affect literally everything! When the Federal Reserve raises the fed fund rate, it ripples through all asset classes, both debt and equity. Every investment is re-priced.

And every market participant is affected. A material shift in prevailing interest rates changes the calculus with respect to the optimal mix of a company's capital structure. A company's chief financial officer must analyze the appropriate capital structure based on market dynamics and attempt to achieve the lowest possible cost of capital, which, until recently, has undeniably been debt financing for those companies that can access debt markets.

Figure 1 created using Dall-E from OpenAI

Institutional and retail investors alike have investing goals that may necessitate a change in their exposure as well as evolving views and interests based on a material shift in the underlying interest rate environment. At minimum, it's necessary to have an understanding of potential short- and long-term implications of a rate move.

Meanwhile, Wall Street tries to cater to companies and investors alike while considering their own goals. They do this by continuously creating products offered to both parties, and who in turn are ultimately responsible for understanding both investment and structure, as well as all the complexities that come with them. This is true of generally "good" investment innovations (for example, ETFs generally) and the "bad" ones (such as complex derivative of derivative products that create artificial methods of "yield") that are marketed to them.

In this Explorations, we provide a few examples to illustrate the dynamics of the fixed income marketplace and how it is intertwined with literally every potential investment available, thereby affecting all market participants.

For purposes of this analysis, let's illustrate the concepts by reviewing three different types of hypothetical companies[1] focused on the agriculture sector:

- **Tomato Farm**: A thousand-acre farm growing greenhouse tomatoes. The farm owns all sorts of machinery that assists in growing and harvesting their tomatoes.
- **Agri-Tech**: A start-up software company that provides analytics on soil to control water and pesticide use more efficiently for crop growth.
- **Agrochemical**: A large American-based, publicly listed, multi-national pesticide company.

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[1] All numbers and other specifics are made up for educational purposes and are intended solely to illustrate the concepts discussed. These "companies" do not represent any actual investment.

All three companies need to calculate their optimal mix of capital. Investors need to assess the potential value and their resulting interest level in the offered investment.

The Tomato Farm can use their machinery for collateral and therefore may be able to attract relatively "cheap" collateralized loans. If their machinery is known to have a value of $20 million on the secondary market and their land is worth $5 million, then investors should be rather comfortable in lending $20 million vs. the $25 million in machinery and land given they believe that in the case of a default they can take over and sell the land and machinery (the collateral). If the Tomato Farm is in an emerging market, where governance and regulation is under-developed, there would be materially lower confidence in this ability as compared to in a developed country like the US, where the agreed upon rules are quite clear.[2]

Figure 2 created using Dall-E via OpenAI

Asset-backed lending (meaning having collateral to cover the loan if the business fails or doesn't make payments) would be the desired approach for the Tomato Farm, as it will significantly lower their cost of capital. If the Tomato Farm needs more funding then the aforementioned $20 million, they will need to analyze whether equity or debt is cheaper. Any further funding would be subordinate to the asset backed debt already in place. The Tomato Farm and potential investors would need to assess expected annual distributions (whether in coupon or dividend form), potential upside (e.g., potential to increase yield, increased land value) and other characteristics in aligning on the right medium and characteristics of the offering.

The Agri-tech company has nothing to collateralize. Therefore, investors would demand a significant yield to entertain providing a loan.[3] This company would most probably look to raise equity, assuming there is a reasonably large upside opportunity. In this scenario investors would likely use the traditional method of discounting future cash flows in order to assess the current valuation. An estimate is made regarding future sales (revenue), costs and ultimate profit. That profit is discounted to the present based on the company's cost of capital. The company's cost of capital will be based on an assessment of risk applied to a risk-free rate. ***And that is how equity is connected to fixed income.***

Given all company related characteristics remain constant but the risk-free rate increased 4% in a short time period, as it did in 2022, the company value would have declined materially based purely on the shift up in yields. In the following example, based on simple hypothetical inputs in a discounted cash flow (DCF) model, the decline in value for Agri-tech would be 13.1%![4]

[2] For example, if the farm is in Venezuela and the farm defaults, there may be no means to extract or sell the equipment. Or the government could just decide to take it over. Rule of law and regulation is extremely important to capital markets.

[3] There is some crossover point where equity investors should prefer a debt offering (e.g., 40% annualized yield with the right to take over the company in a default). The company may offer a convertible note where the debt converts to equity in an effort to lower the upfront yield. That said, given a startup typically is spending down capital received relatively quickly, the idea of material coupon payments does not make much sense (these would most likely be PIKed – meaning paid in kind, creating all sorts of other issues). The point is, startups with no reasonable collateral generally raise equity instead of issuing debt.

[4] To be clear, this is a pure technical change in value due to the change in the risk-free rate that investors should take into consideration along with numerous other factors that may result in shifts up or down in value.

Cost of Capital:			***5%***	***9%***
	Year	**Expected Cash Flow**	**Discounted Value**	
	1	$ 1,000	$ 952	$ 917
	2	1,000	907	842
	3	1,000	864	772
	4	1,000	823	708
	Terminal Value - 5	5,000	3,918	3,250
Present Value			$ 7,464	$ 6,489
Current "Earnings"			1000	1000
Current "Price / Earnings"			7.46	6.49
Decline in value solely due to interest rate increase				***-13.1%*** [5]

The Agrochemical, multi-national company, has the luxury of accessing equity and debt markets relatively easily. They have reasonable expectations regarding revenue and earnings and an audited track record. Given that over the last decade or so yields have been incredibly low, they most likely adjusted their capital mix in favor of debt. They would issue debt and buy-back equity. This is in fact what happened in the markets, with record buybacks over the last decade.[6]

The Investor

While the answer for some investors may have been to simply stay away from the largest investable asset class in the world, the reality is that debt markets, with their interest rate characteristics and assessed valuations, affect *every* investable market in the world. Furthermore, there are infinite flavors of debt, some that have characteristics that indeed look very "equity" like. The point is, it benefits every investor to have an appreciation of this important and dynamic asset class.

Figure 3 created using Dall-E by OpenAI by inputting "The Investor by Vincent Van Gogh"

For example, an investor in the Agri-tech company who believes in the long-term viability of its analytical software may still have an intact thesis despite a real 13% reduction of current value. Meanwhile, a long-term investor in the Agrochemical company would have benefited from the fact that the company was able to receive favorable debt financing. In fact, if the Agrochemical actively shifted their debt-to-equity ratio in favor of cheaper financing over the last decade, then they most likely used a portion of their borrowed proceeds to purchase back shares, further benefiting the investor.

Now, it is important to understand that there are differing levels of information in the marketplace based primarily on the size of the company and the type of

[5] Internally created hypothetical illustration for educational purposes. Does not represent any actual investment.
[6] [Record Buybacks Could Be Over. And Investors Might Be Relieved - Bloomberg]

financing used. When analyzing the above investment opportunities, the multinational has the most readily available market data from which to form a view on value.

Given Agrochemical is a multinational, public company, they must publish audited financials. Rating agencies like S&P Global Ratings will conduct due diligence and provide a rating that equates to the likelihood of default, among other considerations, that further assists the marketplace in forming an opinion on a "fair" coupon level for issued debt.

Expected yield considerations for Asset-backed securities, like the offering the Tomato Farm would seek to issue, also have a lot of relevant information available in public markets. As such, an investor would need to do a bit more work in understanding the true steps in collateral value and process to take over and sell equipment in the event of a default. Given the materially smaller size of the Tomato Farm and the lower presumed liquidity in the market for this debt, it will most likely be priced at a significant premium and with additional investor safeguards to the more public asset-backed security market.

Finally, to align on a reasonable value for the Agri-Tech startup is almost impossible. There is little information in this market, and it is generally very costly to attain (e.g., through Pitchbook).

Historically, this is where an investor's options ended. However, financial wizardry has created many benefits for the end investor. Which brings us to…

<u>Wall Street</u>

Financial innovations over the last few decades have been material, with some, like the advent of the ETF, generally providing material benefits to the investor. With these benefits has come increased complexity and the opportunity for bad actors. Once upon a time, an investor wanting to diversify a specific exposure would simply need to purchase many similar securities with wide bid-ask spreads and costly transaction fees. Now there are a variety of methods and structures to inform an exposure, all with their own nuances and characteristics that must be understood in order to achieve an optimal investment.

Figure 4 created using Dall-E by OpenAI by inputting "a 3D image of Wall Street"

For example, an investor may decide they simply want the type of risk vs. return the Agrochemical company provides but with ample diversification for a variety of (good) reasons. The investor may want to strip out the risk associated with a single company but capture the general return profile. This type of exposure can be accessed through an ETF or mutual fund or, if the investor is larger and more sophisticated, perhaps through a financial contract called a credit default swap (CDS).

Wall Street also assists companies in structuring, pricing, and introducing offerings and finding differing ways of incorporating and/or splicing company financing needs within investment products.

In summary:

- Yields affect everything
- Companies adjust their cap tables
- Markets (via investors) adjust company values, and
- Wall Street is constantly innovating – some of those innovations are good, and some bad
- This all creates opportunity, as well as risk and complexity

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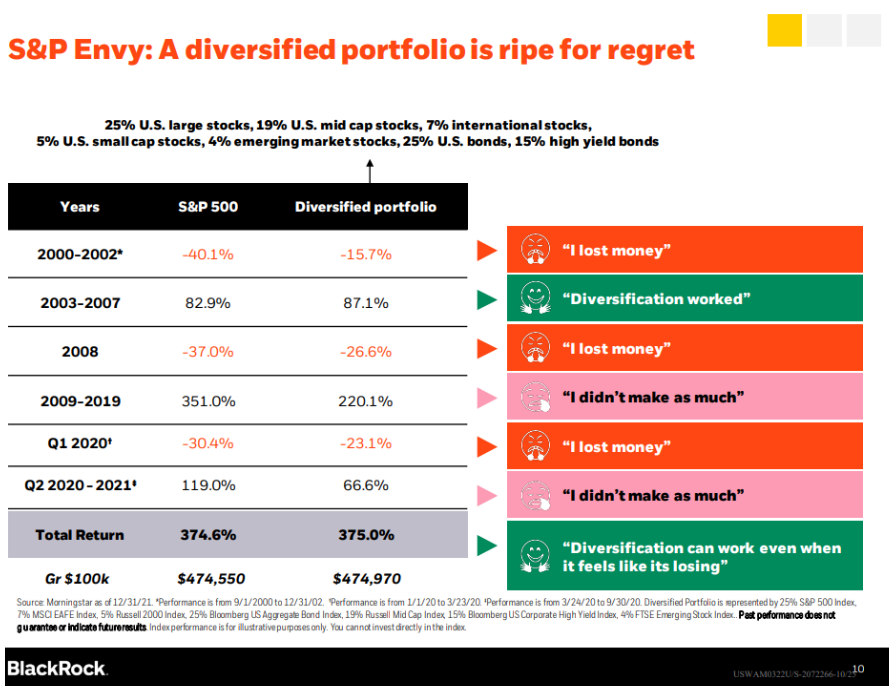
I certify that the preceding Explorations was written entirely by me. Beyond spell-check and low-level grammatical suggestions, no AI was involved in the writing of this exploration. However, all the graphics in the first section were created (not simply found online) by Dall-E by OpenAI.

Why the certification? Well, OpenAI has created the ability to write a rather convincing paper on pretty much anything. In my school days, I had to go to a physical library to find sources. Nowadays, students have the world of information literally in the palm of their hand and now do not need to bother with more than a sentence to knock out seemingly B/B+ material – with every blessing there is a curse, but I do feel bad for teachers.

During the first week of January, Fountainhead held our annual internal offsite conference. Beyond being a great opportunity to team build and further enhance our culture, it was a time to align on initiatives for 2023, as we continue to focus on providing best in class offerings and service to our clients. We also had the opportunity to host some wonderful external speakers.

Blackrock[7] presented on behavioral finance. A couple of my favorite slides:



[7] Investment Management & Financial Services | BlackRock – we use products from Blackrock within our model portfolios

Our investment team has focused more on fixed income relative to equity over the last few years as both risk-free yields and spread over risk-free yields were near historical low levels. Yet, fixed income represents a significant portion of the investing world and has traditionally been a method of lowering volatility in the portfolio. Additionally, fixed income comes in many flavors ranging from government bonds with limited risk all the way to products that have more equity-like characteristics. And, as mentioned above, yields affect ***ALL*** investments. We invited two managers to speak to us about what they were seeing in the fixed income world:

Reams Asset Management[8] reviewed relative value of the various sectors within the public fixed income marketplace. They also touched on how the strong dollar affects international returns and the fact that they use CDS in affecting a beta exposure to a specific market given its materially better liquidity characteristics. I think this is an example of Wall Street innovation at its best.

FS Investments[9] focused on private fixed income markets – a nice complement to the discussion had with Reams. Specifically, they discussed which structure types to use when the underlying security is less liquid and how that may better protect investors. They also discussed the various exposures available and their current assumed risks and potential rewards.

One of the biases we have in our model portfolios is an allocation to firms focused on Robotics and Artificial Intelligence. Increasingly automated manufacturing, factories, and, eventually, travel, seems inevitable. And the rate of innovation over the last few decades seems to be increasing. Moore's law has held true now for over half a century.[10]

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[8] Our Firm | Reams Asset Management – we use products from Reams within our model portfolios
[9] FS Investments | A leading alternative investments asset manager we recommend some investments offered by FS
[10] Taken from the ROBO Global presentation discussed below.

ROBO Global[11] wowed us with the continued innovation within the robotics and artificial intelligence sector. How exactly is Amazon able to deliver to us an item among millions of products within a day? Well, the robot always knows where literally everything is and can just bring over the shelf to the point of placing on the truck – they never get tired, need a bathroom break, forget where something is, or crack a joke, they just do their job… The image that struck me the most though was the robot that was part of the surgery team in one graphic shown (above). I am not sure how I would feel with a group of human and robot surgeons hovering over me on an operating table, but I imagine a robot has a more exacting hand (no flinching, sneezing etc.).

[11] Robotics Fund Investment Opportunities - ROBO Global Robotics & Automation Index ETF is the first robotics stock portfolio for investors (roboglobaletfs.com) – We use products from ROBO Global within our model portfolios.