Global Financial
Private Capital

I Wager That Pascal Would Agree

SYNOPSIS

- Blaise Pascal was a brilliant mathematician and philosopher, and his "wager" can be used as a proxy for gauging investment risk against expected return.
- Long-term government bonds have been on a tear, but the lessons from Pascal tell us to proceed with caution.
- Speculators should focus more on the risks associated with owning this asset class than any future reward.

PASCAL'S WAGER

Blaise Pascal was a brilliant seventeenth century mathematician and philosopher. His work has since touched everything from statistics and computer science all the way down to our understanding of air pressurization.

He was also a devout Catholic and devised a compelling argument for why one should believe in God. His case was predicated on the notion that while it's impossible to prove whether or not God exists, people should believe in God regardless. How he arrived at this conclusion is quite interesting and worth discussing in greater detail.

If God does exist, then belief would lead to infinite joy in heaven, while disbelief would lead to eternal damnation in hell. However, if God does not exist, then belief would have a finite "cost" of giving up sins, and disbelief would result in a finite "benefit" of sinning during a lifetime.

The table below summarizes his views:

	GOD EXISTS	GOD DOESN'T EXIST
BELIEVE	Infinite Upside	Finite Cost
DON'T BELIEVE	Infinite Downside	Finite Gain

Pascal is doing nothing more than a standard cost-benefit analysis. If God exists, no matter what the costs are of believing when alive, they are always outweighed by the benefits of heaven. Similarly, however large the benefits of atheism are, if God does exist, those benefits are massively countered by the infinite cost of going to hell.

Pascal's Wager is an excellent example of using mathematical thinking via probabilities and outcomes to determine a course of action…

Said another way, trying to determine whether or not God exists is a moot point because risking an infinite loss in the form of an eternity in hell for just a few years of sins and sleeping in on Sundays is not logical. Hence, we should all just believe in God.

Pascal's Wager is an excellent example of using mathematical thinking via probabilities and outcomes to determine a course of action, and it can be applied to countless decisions that we face on a daily basis. In particular, I find it to be greatly beneficial for assessing investment risk.

PASCAL WOULDN'T OWN TOO MUCH

Turn on any of the financial news networks and one of the more popular stories is the incredibly strong performance of long-term Treasury bonds over the past few years. Those who bought these assets betting that the Fed would continue to keep interest rates lower for longer have made a killing, but before investors get the urge to join this party, it's important to know how these securities function and who typically buys them.

Any discussion of government bonds must begin with the "yield curve," which is a plot of current interest rates on government bonds ranging from one month

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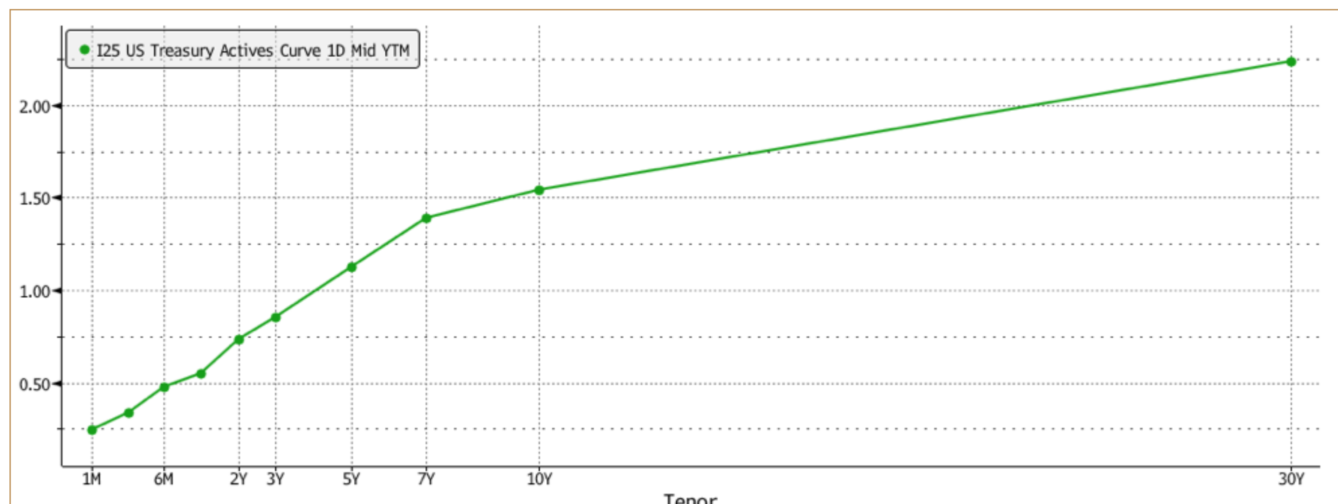
up to 30 years. In a normal economic environment, this curve slopes upward because investors typically demand more return from bonds that have longer investment time periods.

For example, the yield of a 2-year government bond is lower than a 30-year bond because any rational investor should demand more yield for locking up principal for longer. The chart below shows the current yield curve for the U.S., which indicates this very relationship.



Source: Bloomberg, Aviance Capital analysis

The shape of a normal yield curve tends to indicate a sharp rise in yield up until around 5 years and then tapers off the further an investor goes out on the curve. Meaning, an investor can almost double the yield by owning a 5-year Treasury bond versus a 2-year, but a 30-year Treasury bond only offers slightly more yield than a 10-year.

Curious investors may question why an investor would be willing to own anything more than a 5-year Treasury bond if the yield no longer rises proportional to the maturity. Locking up capital for decades poses big risks to investors, so it may appear baffling that investors who buy these securities are only receiving a few more basis points to shoulder so much inflation risk.

NOTE*: A basis point equals 1/100th of one percent. If a 10-year Treasury yielded 1.6 percent, and a 5-year Treasury yielded 1.3 percent, then the longer dated Treasury bond would yield 30 basis points more but also require a holding period twice as long.*

Such a question is a very good one, and the answer has to do with the profile of an investor who would want to lock in such a long-term return up front. Until recently, the majority of these securities were purchased by pension funds and insurance companies who engage in a practice called "asset-liability matching."

For example, if a pension manager calculated that the fund would need to pay its recipients $50 million in thirty years, which is a liability for the fund, they could purchase 30-year Treasuries today, which is an asset that would return that exact amount in 2046.

These investors who need to match assets to liabilities are far more concerned with meeting their obligations than beating investment benchmarks, so they are willing to forego higher returns for the safety of knowing that the money will be there when they need it.

There is a third type of investor that has come on the scene over the past few years who has no interest in asset-liability matching. These are speculators who have been placing big bets that global interest rates would continue to fall, and there's no denying that

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the returns have been strong due to the interest rate sensitivity inherent within longer-term debt.

However, what the pundits rarely point out is the amount of risk that these speculators have assumed along the way. To put it lightly, Blaise Pascal would not approve.

IMPLICATIONS FOR INVESTORS

One vital lesson from Pascal's Wager is that even if the odds that something will happen are small, we should still consider that slim possibility if the potential consequences are enormous.

In March, I wrote about the rising interest rate risk across global government bond markets. As bond yields continued to fall towards – and even beyond – zero, investor returns had become incredibly vulnerable to small movements in bond prices and yields. At one point, a whole year of income could have been erased by a tiny uptick in interest rates.

For example, back then, all it would have taken to erase the next 12 months of returns in German 10-year government bonds was a five basis point rise in the yield. Japan was closer to one basis point (again that's 1/100th of one percent). More broadly, a half-percentage point increase would have wiped out $1.6 trillion of value in the global government bond market, according to research from Bank of America.

The situation is now even more alarming in some regions, and those speculators who have no intention of holding a 30-year government bond for decades would benefit from the teachings of Blaise Pascal.

Many pundits feel that central banks, particularly the Fed, will continue to keep interest rates lower for longer. Admittedly, I tend to agree. This scenario would continue to benefit the speculators, but what if we are all wrong? What would happen if rates began to rise or if a central bank changed their policy on a whim?

These questions are not so far-fetched. For example, back in January 2015, the Swiss National Bank (SNB) announced that they were ending a currency peg against the Euro. This move shocked the investment world, particularly since a few days prior they had announced that the peg would stay in place, and the resulting volatility was some of the most violent ever witnessed in currency markets and put a lot of professional money managers out of business.

Since a precedent exists for central banks to occasionally catch investors flat-footed, let's assess the impact of a surprise interest rate hike via a modified Pascal's Wager below.

	FED SURPRISES	FED DOESN'T SURPRISE
OWN A LOT	Bloodbath	Smaller Expected Gains
DON'T OWN A LOT	Dodge A Bullet	Life Goes On

At the moment, long-term Treasuries screen as very expensive relative to two years ago. This means the expected return (benefit) going forward is smaller, and the risk to the downside (cost) is larger.

Therefore, if rates stay lower for longer and central banks don't surprise us, then these assets may rise in price but not as much as in the past due to current valuations. However, if they do surprise, even as improbable as it may seem, it could be a bloodbath for anyone with too much exposure who did not get out in time. In such a scenario, I would wager that Pascal would ignore the pundits and keep any allocation to long-term Treasuries to a minimum.

Sincerely,

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