The Equity Risk-Premium Puzzle: A Behavioural Finance Approach

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Introduction:

The purpose of this study is to examine the equity premium puzzle through the lens of psychology and its influence on the field of finance, using the extensive research on the "equity premium puzzle" first appeared in 1985, using historical data from the U.S. capital market, conducted by Mehra and Prescott (the latter was awarded the Nobel Prize in Economics in 2004 for his work on business cycles). This puzzle remains unresolved to this day and continues to be an important topic in finance, as it interests both academics—who study it for the purposes of research and theoretical completeness—and market practitioners, who frequently use the equity risk premium to make long-term return forecasts for investment portfolios.

What follows is an analytical presentation of the puzzle and the traditional theory surrounding it, as well as an extensive discussion of the most prominent behavioral explanations.

Description of the equity premium puzzle:

The equity premium puzzle refers to the excessively higher historical excess return of equities compared to risk-free investments—i.e., investments conducted at the risk-free rate, such as U.S. 3-month Treasury bills or U.S. 10-year Treasury notes. Consequently, the equity risk premium is generally calculated as:

Equity Returns % – Bond Returns %

At this point, the central question arises—the reason the word "puzzle" is used—which is: *How much higher should stock returns theoretically be?*

In theory, the equity premium reflects the additional risk that equities carry relative to safe (risk-free) investments. Academic studies have estimated the actual historical equity premium to be approximately between 5% and 8%.

Average Period	Stocks – T Bills	Stocks - T Bonds
1928-2013	7.93%	6.29%
Std Error	2.19%	2.34%

(source: Damodaran, 2014)

Period 1926-2000	Value of 1$ Invested in Stocks		Value of 1$ Invested in Bonds	
	Real	Nominal	Real	Nominal
	266.47$	2586.52$	1.71$	16.56$

However, this large number suggests something unexpected: for such a premium to exist, investors would need to be far more risk-averse than commonly assumed. Benartzi and Thaler (1996) illustrated this clearly by showing that if a premium on the order of 6% were real, then investors would require an extremely high coefficient of risk aversion—so high that they would be indifferent between receiving a sure payoff or taking a 50–50 gamble with drastically different outcomes. Such extreme values contradict more reasonable estimates of risk aversion and therefore seem unrealistic.

Traditional rational-valuation models often predict a much lower theoretical risk premium—around 2% to 3%. Another issue is the variability of the premium across time. For instance, during the first half of the 20th century, it is estimated at about 5%, whereas in the second half it rises to around 8%. This suggests that the size of the premium is dynamic and changes according to portfolio risk and time.

In conclusion, it is clear that equities must offer some premium due to their higher risk: dividends are not fixed, equities rank lower in the capital structure, and returns display higher

volatility. If investors allocate more capital to equities, demand pushes prices up, reducing future returns and shrinking the premium over time.

Below, we examine how researchers have approached the phenomenon using rational models, why these explanations are often insufficient, and how behavioral theories provide additional clarity.

Relationship with and implications for traditional theory:

Over time, various rational explanations have been proposed for the equity premium puzzle. One central argument, explored by Reitz and later supported by Barro and Weitzman, is that the market may be inefficient. Using evidence that equity returns do not follow a normal distribution—as assumed by rational models—they highlight the negative skewness and kurtosis of returns, caused by rare but extreme negative events. These events deter investors from taking equity risk unless they receive a significant premium.

However, even catastrophic events (such as major crashes or crises) have not overturned the long-term upward trend of equities, meaning this explanation alone is insufficient.

Another line of reasoning concerns survivorship bias, the idea that historical datasets primarily reflect markets that survived significant disruptions. Critics argue that this bias inflates the observed U.S. equity premium.

Figure 14: Worldwide annualized equity risk premium (%) relative to bills and bonds, 1900–2018
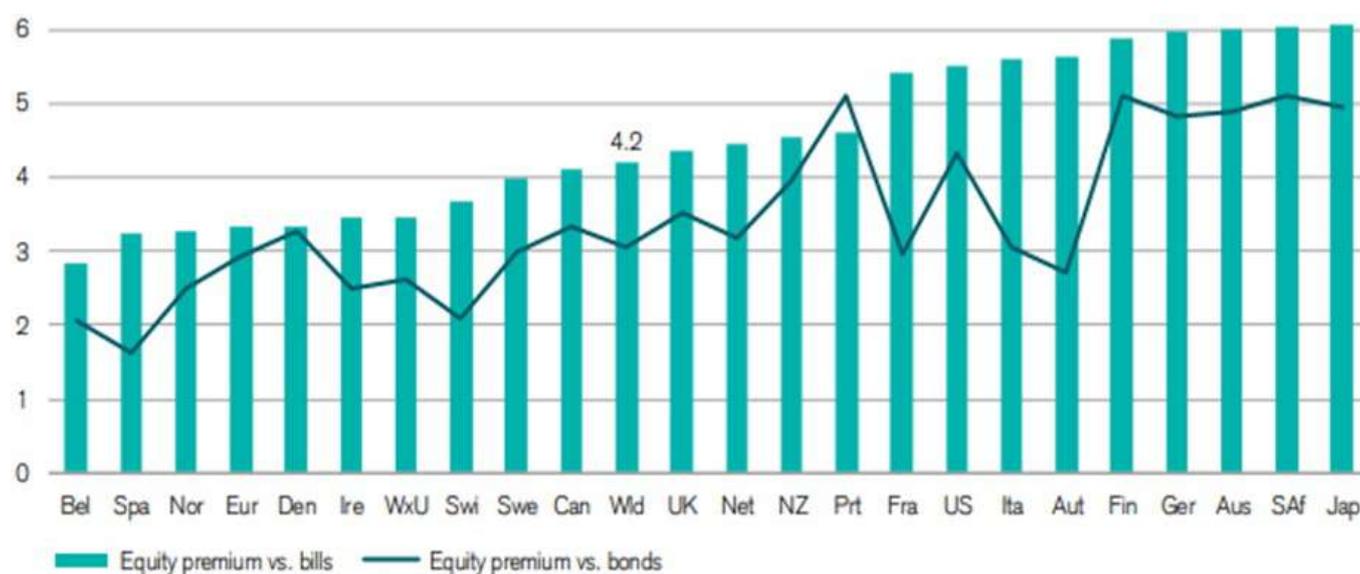
Sources: Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and Global Investment Returns Yearbook, Credit Suisse, 2019. Not to be reproduced without express written permission from the authors.

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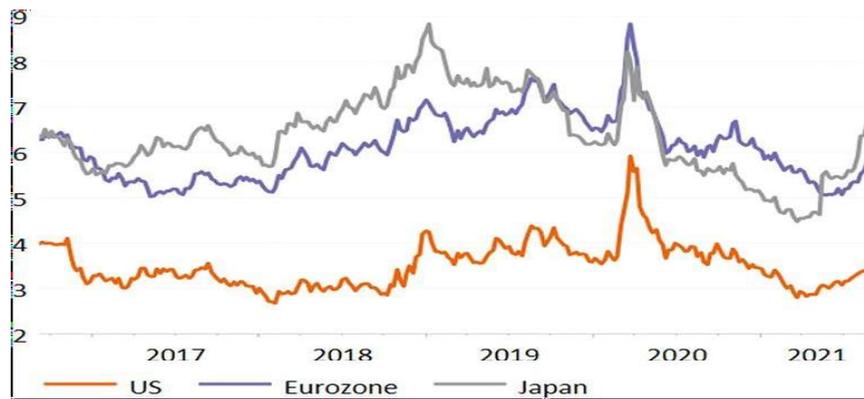
(source: NN Investment Partners)

Yet examples of markets that temporarily shut down or suffered severe downturns, but later recovered, raise doubts about this explanation.

Some researchers examined long-term datasets (e.g., Siegel's work extending data back to 1802). Although these studies suggest lower bond returns over time and thus a lower long-term premium, the puzzle remains, as the premium remains unexpectedly high even across nearly two centuries.

- Other rational explanations include:
- High trading or information costs,
- Demographic factors influencing corporate performance,
- Adjustments to utility functions within asset-pricing models,
- The possibility that investors truly have high risk aversion,
- Statistical illusions in the measurements.

Even collectively, these explanations fail to fully resolve the puzzle.

3A. Myopic Loss Aversion

Myopic loss aversion is one of the most influential behavioral finance concepts used to explain the equity premium puzzle. It emerges from the interaction of two key psychological tendencies: loss aversion and mental myopia.

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Loss aversion—first formalized by Kahneman and Tversky—is the tendency for individuals to experience losses more intensely than equivalent gains. Empirical evidence suggests that losses are psychologically weighted about twice as heavily as gains of the same magnitude. This means a small loss often triggers a disproportionately negative emotional response, overshadowing rational evaluation of long-term outcomes.

Mental myopia, or myopic thinking, refers to a cognitive bias in which individuals focus excessively on short-term outcomes while neglecting longer-term implications. In the context of investing, this manifests as frequent monitoring of portfolio values, heightened reactions to day-to-day volatility, and a general failure to appreciate long-run compounding and mean reversion. Mental myopia often arises from emotional reactions, institutional reporting cycles, and the way financial information is presented. As a result, investors may become overly sensitive to short-term fluctuations and underestimate the stability of long-term growth.

When these two biases operate together, they form a powerful and often destructive pattern: frequent evaluation magnifies the emotional impact of losses, reinforcing the perception that equities are excessively risky. Investors may respond by reducing their risk exposure, selling after downturns, hesitating to buy when prices dip, or missing long-term compounding opportunities. Such behavior systematically leads to suboptimal timing decisions and significantly lower long-term returns than the market average.

Thus, myopic loss aversion offers a compelling behavioral explanation for why investors demand an equity premium far larger than that predicted by rational models.

3B. Mental Accounting and Representativeness

Mental accounting, introduced by Thaler, is a behavioral framework describing how individuals assign different subjective values and meanings to identical sums of money depending on their mental categorization. Instead of viewing wealth as one integrated pool, people create psychological "accounts"—for bills, vacations, savings, investments, and so on. Because each account carries different emotional significance, individuals may behave inconsistently across categories, making decisions that do not align with their overall financial well-being.

In investing, mental accounting influences how individuals evaluate risk:

- Some investors treat all stocks as one account.

- Others create separate mental accounts by sector, country, or industry.

- Still others evaluate each stock individually.

Depending on how the accounts are mentally structured, people may form distorted risk perceptions. For instance, an investor who separates technology stocks into a single mental account may react disproportionately to a downturn in that sector, such as during the dot-com crash, concluding that equities as a whole are too risky.

This tendency is reinforced by the representativeness heuristic, another behavioral bias. Representativeness leads individuals to judge the attractiveness of an investment based on how closely it resembles past successes—or failures. Investors may assume a rising tech stock will continue performing well simply because it matches the "profile" of previously successful companies, ignoring fundamental analysis and broader diversification principles. Conversely, they may generalize a few poor outcomes—such as a declined sector or a failed investment—to all equities, becoming overly pessimistic.

Representativeness and mental accounting together produce a potent combination: investors segment their portfolios into emotionally charged categories and then evaluate each category using intuitive but misleading narratives. This results in overconcentration in "winning" categories, excessive risk-taking in some accounts but undue caution in others, and ultimately irrational investment behavior that deviates from optimal diversification.

3C. Narrow Framing

The narrow framing effect refers to the tendency for individuals to analyze decisions in isolation rather than as part of a broader whole. In investing, this means judging each stock or trade separately instead of understanding how it contributes to total portfolio risk and long-term strategy.

When investors frame decisions narrowly, short-term market movements can take on an exaggerated emotional significance. A small dip in a single position may be perceived as a major setback, prompting rash decisions such as panic selling or withdrawing from promising opportunities. Likewise, narrow framing intensifies sensitivity to losses—individual declines appear catastrophic even when the overall portfolio remains healthy.

This tunnel vision undermines diversification. A component of a well-balanced portfolio may appear unattractive when viewed alone, leading investors to abandon strategies designed to reduce overall risk. Narrow framing also encourages excessive trading, as investors chase short-term results rather than adhering to a long-term, disciplined investment plan. Increased trading typically results in higher costs and lower net returns.

Escaping narrow framing requires investors to "zoom out," viewing each decision in the context of long-term goals, portfolio interactions, and compounding benefits. Without such perspective, narrow framing contributes heavily to short-sighted, emotionally driven decisions and helps explain why investors systematically overestimate risk—one of the key forces sustaining the equity premium puzzle.

Behavioral Explanations of the Puzzle

One of the foundational behavioral explanations for the equity premium puzzle comes from myopic loss aversion, introduced by Benartzi and Thaler (1995) and grounded in Tversky and Kahneman's Prospect Theory (1979, 1992).

Loss aversion refers to the empirically observed tendency for individuals to react more intensely to losses than to gains. Evidence consistently shows that losses weigh on investors roughly twice as heavily as equal-sized gains. In other words, a negative change of X% reduces perceived utility about twice as much as a positive X% increases it. This asymmetry is a cornerstone of behavioral finance, illustrating that investors process risk in ways fundamentally inconsistent with purely rational models.
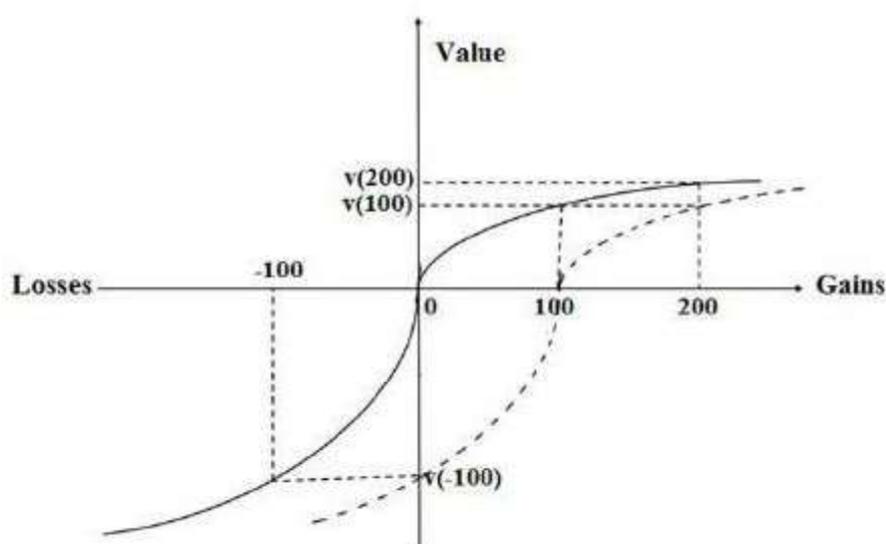
The "myopic" component describes investors' inclination to evaluate their portfolios too frequently—daily, monthly, or annually—rather than considering the long-term trajectory of their investments. When viewed over short intervals, stock prices exhibit considerable volatility. Thus, an investor who frequently checks performance is more likely to perceive equities as highly risky.

In contrast, a long-horizon investor—one who evaluates performance over intervals such as twenty years—faces far less psychological pressure. Historically, equities almost never yield negative real returns over such long periods, making them substantially less risky than they appear in the short term. These observations align with Siegel's findings on the long-run standard deviation of stock returns, discussed earlier in this study.
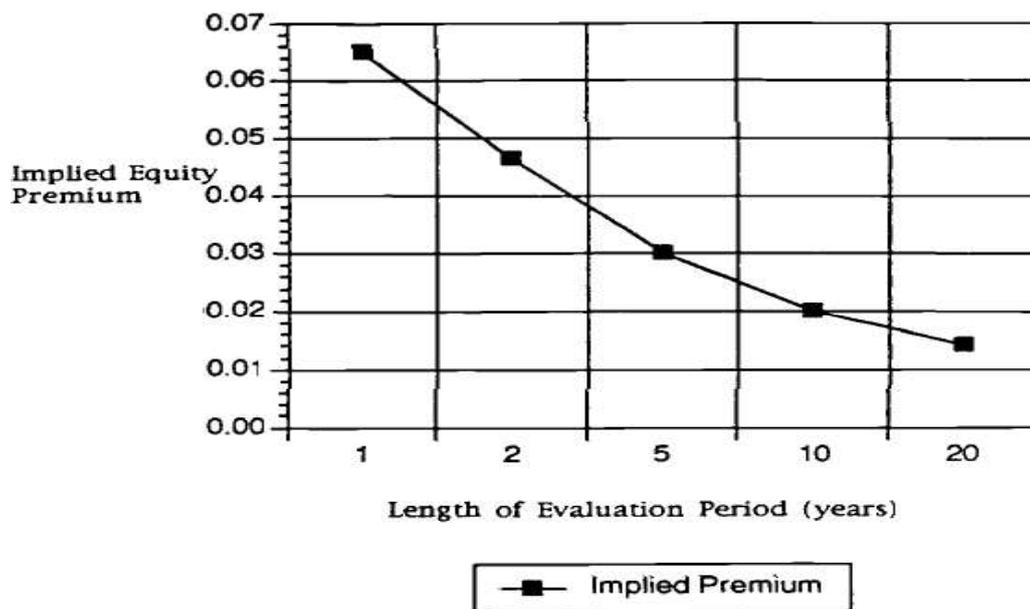

A. Stocks versus T-Bills (Real)
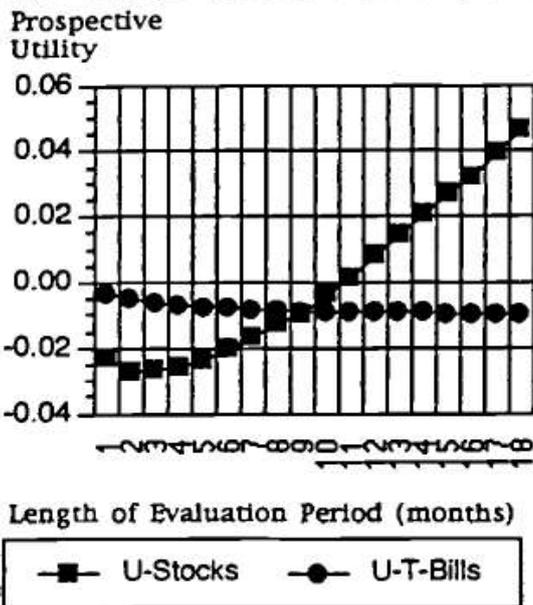
B. Stocks versus Bonds (Real)
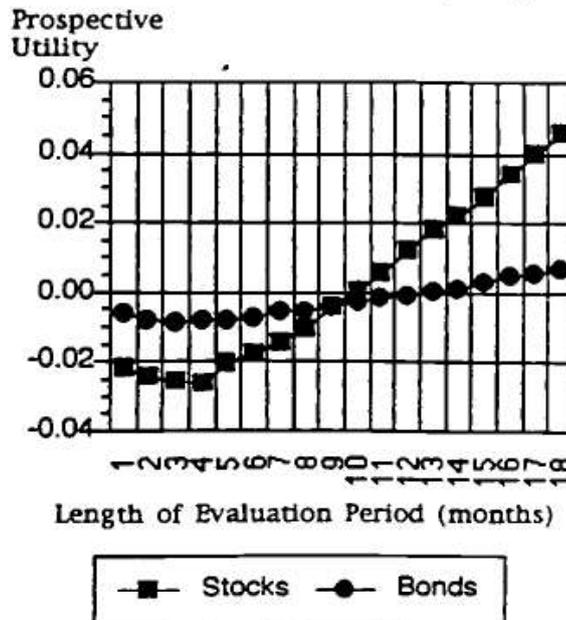
Investment Horizon and the Implied Equity Premium

(source: Benartzi & Thaler)

However, because many real-world financial processes—taxation, fund-reporting cycles, bonus calculations—occur annually, investors often default to one-year evaluation horizons. Benartzi and Thaler note that this causes many to become indifferent between holding stocks and bonds at exactly the horizon that maximizes perceived equity risk. As a result, investors frequently confuse their true long-term investment horizon with the short-term evaluation horizon imposed by institutional and psychological factors.

The combined effect of frequent monitoring and loss aversion creates a powerful illusion: equities appear far riskier than they actually are, leading investors to demand a disproportionately high premium. Thus, myopic loss aversion provides a major behavioral explanation for the unusually large historical equity premium.

Another influential behavioral explanation centers on mental accounting, originally developed by Kahneman, Tversky, and Thaler. Mental accounting suggests that individuals mentally separate their assets into distinct "accounts," each evaluated separately rather than holistically.

Investors may, for example, classify their equity holdings:

- into one unified mental account

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- into multiple accounts based on industry, geography, firm type, etc.,
- into a separate account for each individual stock, or
- into combinations of these categories.

Depending on how they categorize their holdings, investors reach very different risk assessments. This framework becomes problematic when early evaluations shape overall perceptions. Connected to this is the representativeness heuristic, where investors generalize too quickly based on limited information. If an early subset of "mental accounts" performs poorly, investors may prematurely form the belief that all stocks are excessively risky.

For example, if an investor has grouped all technology stocks into one mental account and experiences a severe downturn resembling the dot-com crash, they may overgeneralize this negative outcome to the entire stock market, leading to excessive risk aversion.

A closely related concept is narrow framing, introduced by Kahneman and Lovallo (1993). Framing refers to the subjective interpretation individuals impose on decisions. Traditional financial theory assumes that individuals evaluate new risks in the context of all existing risks, forming a comprehensive understanding of total wealth risk.

In practice, however, people often evaluate risks individually, disregarding interactions with their broader portfolio. This narrow focus leads to severe misinterpretations of equity risk.

Heaton and Lucas (2000) demonstrate that the risk of holding equities has almost zero correlation with other major sources of risk, such as labor income or other assets. From a rational perspective, equities therefore offer substantial diversification benefits. Yet when investors evaluate each stock in isolation, they ignore this diversification effect and conclude that the individual utility gained from holding equities does not justify the perceived risk.

Thus, narrow framing reinforces the overestimation of equity risk and contributes directly to the formation of a large equity premium.

Conclusion

The equity premium puzzle continues to challenge both traditional and behavioral finance, reflecting a persistent gap between predicted and observed returns. Rational models—such as those rooted in market efficiency, expected utility, or standard asset-pricing frameworks—have

not fully explained why equities outperform risk-free assets by such a large margin over long periods. While these models incorporate economic fundamentals, they often overlook deeper human factors.

Behavioral finance provides meaningful progress by addressing these human elements. Concepts such as myopic loss aversion, mental accounting, representativeness, and narrow framing shed light on the psychological forces that drive investors to misjudge risk, misinterpret market behavior, and make decisions inconsistent with rational long-term optimization. These biases help explain why investors demand a high premium to hold equities, even when the statistical long-term risk is relatively modest.

However, behavioral explanations—though powerful—do not offer a complete solution. A fully satisfying account of the equity premium puzzle must integrate both rational economic reasoning and behavioral insights. The most effective approach is therefore a holistic one, combining empirical data, theoretical rigor, and an understanding of human psychology.

By acknowledging cognitive biases, emotional reactions, and structural decision-making factors, investors and policymakers can better anticipate common pitfalls. When these behavioral components are integrated with disciplined analysis, careful planning, and awareness of long-term goals, individuals are more likely to make informed, realistic, and sustainable investment decisions that align with true financial objectives.

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