
PRACTITIONER’S DIGEST

The “Practitioner’s Digest” emphasizes the practical significance of manuscripts featured in the “Insights” and “Articles” sections of the journal. Readers who are interested in extracting the practical value of an article, or who are simply looking for a summary, may look to this section.



THE SUCCESS EQUATION

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Yu (Ben) Meng

In his article “The Success Equation” Yu (Ben) Meng, chief investment officer of the California Public Employees’ Retirement System (CalPERS), breaks down “success” into its component parts — skill, a clear understanding on one’s comparative advantages, and luck — and reviews the key questions CalPERS is asking itself to prepare for, and not only survive but thrive in, the next market downturn.

Drawing from Mr. Meng’s first presentation as chief investment officer at the January 2019 meeting of the CalPERS Board of Administration, the article discusses the limitation of past performance as a reliable indicator for success and instead poses the two components he sees as driving success — skill and luck. “Skill” being the ability to change the shape of the future return distribution, and “luck” as drawing a favorable outcome from that future return distribution. Mr. Meng believes that as investors, to get the odds on our side there are things we can do to improve our skills as well as things we can do to mitigate the impact of bad luck.

“The Success Equation” shares some of Mr. Meng’s strategic thinking as he seeks to harness the power of skill and mitigate the impact of random luck for CalPERS’ investment program. It also reveals strategic initiatives he is leading at CalPERS. While no equation can guarantee success, Mr. Meng believes this framework improves CalPERS’ chance of achieving success. CalPERS is the largest defined benefit pension system in the U.S. with over \$374 billion in assets under management as of August 23, 2019.

FUNDING LONG SHOTS

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John Hull, Andrew W. Lo and Roger M. Stein

Despite the success of modern capital markets in fostering growth and innovation across all industrial sectors, there are a number of potentially transformative technologies that are currently struggling to get the necessary funding to become commercially viable: geo-engineering solutions to address global

warming, fusion energy, quantum computing, Alzheimer's therapeutics, vaccines for many infectious diseases, etc. There is little debate regarding the benefits of these technologies to society, so why has it been so difficult to raise investment capital?

The answer lies in the fact that these technologies are all examples of “long shots,” investment opportunities that share four common features: (1) they require large amounts of investment capital, often upfront; (2) they have long gestation lag — sometimes more than a decade — during which no cash flows are generated and/or additional capital investment is required; (3) they have low probabilities of success; and (4) if successful, their payoffs are very large relative to the initial investments. Terms such as “large amount of capital,” “long gestation lag,” and “low probability of success” are necessarily ambiguous and often context-dependent, hence from the perspective of academic finance, long shots are ill-defined. However, from the practical perspective, investment professionals, investors, and entrepreneurs understand all too well the challenges of long shots, and often refer to the dearth of funding for these projects as the “Valley of Death.”

In this article, we ask whether portfolio diversification and securitization techniques can be used to structure portfolios of long shots so as to make their risk/reward profile more attractive to a broad range of conventional institutional investors. If so, such techniques could dramatically increase the pool of available capital to fund long shots, many of which have social value far beyond their private-sector returns.

Securitization is a particularly effective tool in dealing with scale and risk. Just as a traditional asset-backed security (ABS) is used to segment the risks in a portfolio of loans or credit default swaps to appeal to a broader range of investors, a “research-backed obligation” (RBO) can be structured as a series of debt and equity tranches to distribute the risks in a portfolio of long-shot R&D projects. For example, in a simple RBO structure consisting of just three tranches — a senior tranche, a mezzanine tranche, and an equity tranche — structured under a strict priority arrangement, the cash flows from successful projects would flow first to the senior tranche until it has received its specified principal and interest payments. If there were sufficient cash flows remaining, these would then flow to the mezzanine tranche until it has received its specified principal and interest payments. Residual cash flows would then be allocated to the equity tranche.

Our secondary goal is to distinguish projects that can be handled by the private sector from those that must, at least in the early stages, rely on some type of government support. Although long shots may not exhibit “market failures” in the traditional economic sense, i.e., externalities or public-goods aspects, we propose a new kind of market imperfection: the combination of outsized scale of investment needed to achieve acceptable levels of diversification and their high levels of risk — as measured both by duration and probability of success — which make such investments difficult to undertake using current investment vehicles.

Long shots play a key role in innovation — they are the means by which some of society's biggest challenges will be met — and the well — established financing methods of portfolio diversification and securitization are ideally suited for dealing with these challenges because of the scale and scope of debt markets and their risk-sharing capacity.

RATINGS VERSUS SPREADS AS INDICATORS OF PRICE RISK**PAGE 42***Martin Fridson, CFA, Begum Ipek Yavuz, Kai Zhao and Yan Yu*

To active managers who do not have the luxury of being evaluated solely on their long-run performance, which describe most of those practitioners, market-wide price swings are a major concern. It is important to them to know how vulnerable their portfolios are to underperformance, whether through comparatively high sensitivity to market movements during downturns or comparatively low sensitivity to market movements during upturns. Both portfolio managers and risk managers need some means of quantifying these sensitivities.

Two metrics are available to corporate bond managers for gauging sensitivity to market swings that arise from changes in credit risk, namely, agency ratings and “market ratings,” i.e., yield spreads over default-risk-free Treasuries. We compared the two metrics’ effectiveness by measuring their performance in two periods in which Treasury yields were almost unchanged, but in which a high yield bond index’s spread-versus-Treasuries widened or tightened substantially. In both test periods, the correlation with an issue’s price change was more highly correlated with its spread than with its agency rating. The correlations were stronger in the bull market period than in the bear market period. Our findings were little changed by introducing other factors that might affect issues’ price sensitivity, such as rating outlooks and duration.

Several previous studies compared ratings and spreads as predictors of default. Other research focused on whether spreads or ratings more promptly reflected changes in individual issuers’ credit quality. Our study breaks new ground by comparing ratings and spreads as tools for managing the risk of market-wide price swings.

TILT NICKELS TO DIAMONDS: AN ORTHOGONALIZATION APPROACH**PAGE 51***Wenfeng Wu, George Xiang and Tong Yu*

Alternative index products often achieve improved performance at the cost of increased exposure to risk. This study proposes a portfolio tilting strategy to control portfolio exposure to risks for enhanced equity indices using fundamental factors. We extract orthogonalized fundamental factors by projecting selected fundamental factors onto risk factors. Then for a chosen benchmark index, we estimate its sensitivities to fundamental factors by regressing the constituent weights on orthogonalized fundamental factors, and adjust the parameters from the regression to construct a potentially more efficient index product.

We apply the portfolio tilting strategy to develop a hypothetical equity index using returns on assets, net sales, and long-term debt as fundamental factors. We find that the new index significantly outperforms its benchmark, the Russell 1000 index, in the sample period from 1987 to 2014 by 1.2 percent per year, and that the tilted index fares better in turbulent market conditions than its benchmark. We show that a key advantage of the tilted index is its low exposure to tail risks. If this type of index product were to gain a substantial share of the index market, we expect the proposed strategy to incentivize corporates to make more effective decisions with less exposures to risk-prone factors.

**DON'T GET CARRIED AWAY: UNCOVERING MACRO CHARACTERISTICS
IN CARRY PORTFOLIOS****PAGE 70***Marco Aiolfi and Yesim Tokat-Acikel*

Investors are increasingly showing interest in risk premia strategies across asset classes. Carry is one of the most studied premia. To successfully execute a risk premia strategy, it is essential to understand the ways macroeconomic conditions affect individual premia returns. The literature reports that carry strategies are commonly exposed to business cycle, liquidity and volatility risks; however, evidence of direct links has never been clearly established. We build on this research by directly measuring the macroeconomic characteristics of carry factor portfolios, namely real economic growth and inflation exposures. By pairing methodologies commonly used to derive fundamental characteristics of equity portfolios, we are able to identify macro linkages that have not previously been made evident. Our holdings-based and factor-mimicking portfolio analyses provide insights into the behavior of carry strategies across various asset classes.

This approach allows us to derive a time series of the carry portfolios' macro characteristics. We can then estimate the average macro characteristics over our full analysis period. Additionally, while the net embedded inflation and growth characteristics are time-varying, we find that payoffs to carry portfolios are only weakly related to time variation.

Finally, we find that carry portfolios are akin to ranking assets on country-specific inflation or growth. These findings are relevant for investors, and can be used to build multi-asset carry portfolios that are better aligned with investors' goals. For example, investors might want to neutralize undesired macro characteristics embedded in the portfolio, or modify such characteristics by tilting the portfolio composition toward individual carry strategies. Our results provide a link between the well-known macroeconomic exposures of traditional asset classes and those of carry risk premium.