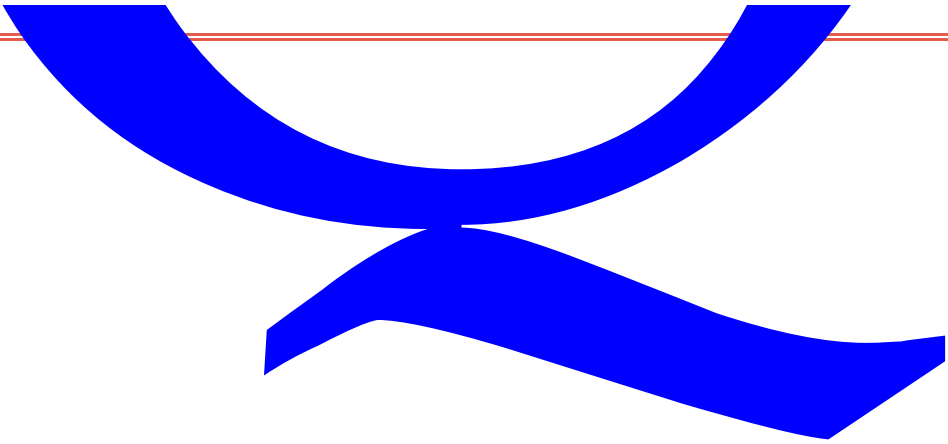




FALL 2013 SEMINAR REVIEW

The Four Seasons, Scottsdale Arizona
Sunday, October 13, 2013 through Wednesday, October 16, 2013



ECONOMIC GROWTH, ASSET VALUATION And SKILL

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THE INSTITUTE FOR QUANTITATIVE RESEARCH IN FINANCE

Seminar Review

Fall 2013: “Economic Growth, Asset Valuation, and Skill”

October 13 – 16, 2013

The Four Seasons, Scottsdale, AZ

Overview and Summaries

Fall 2013 Q-Group Meeting Summary

Diana R. Harrington
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Economic Growth, Asset Valuation and Skill was the title of the Fall 2013 Q-Group Meeting that was held from October 13-16 at The Four Seasons, Scottsdale, Arizona. An apt title but the title did not give an indication of the variety of the ideas presented and the strength of the presentations. A more appropriate title might have been, *Great Presentations, Timely Ideas, and a Newly Named Nobel Laurite to Hear and Cheer*.

To start the presentations, **Peter Koudijs**, Stanford University, takes us on a tour of how news about stocks and stock prices moved from London to Amsterdam in the 18 century. You might ask why look at this history? His answer is speed: the movement of market news at that time was determined by the speed of sailing boats from London to Amsterdam. Sailing ships took an average of four days between the two ports, much slower than news travels today. By studying a slower time we can study how information was incorporated into security prices, thus shedding light how relevant news travels today. Koudijs finds that private information is not the result of transmission speed but of insiders having superior sources of information. Only the speed has changed, not the process.

Another look at what moves prices, was presented by **Shimon Kogan**, University of Texas at Austin. Using a textual analysis methodology on an information extraction platform, “Stock Sonar,” he analyzes phrase level patterns to determine if a news article contains relevant news. His total observations equal 1.2 million, thus making it clear that web based software can do more and faster than old fashioned hand collection. He does not just

show how to collect and interpret news faster, Kogan uses the data to reconsider Roll’s 1988 finding that there is little relationship between news and stock price movements. Using his data, Kogan finds evidence to overturn Roll’s result.

Robert Shiller’s CAPE Ratio has made news recently in two ways. First, his ratio provides evidence used by some pundits who are saying, in the Fall of 2013, the stock market overvalued. Second, he made news on October 14, 2013, when he received a Nobel Prize for this idea the day before he was to be present to Q-Group.

In the first of two papers on the CAPE Ratio, Shiller’s longtime friend and colleague, **Jeremy Siegel**, Wharton School, University of Pennsylvania, presents “The Shiller CAPE Ratio: A New Look.” First, admitting that it gave him great pleasure when Shiller was awarded the Nobel, and second, that he felt awkward coming before Shiller’s presentation and presenting, what he said should not be considered a criticism of the CAPE, but a description of the inadequacy of Shiller’s data. Siegel points out that the critical input, earnings, fails to take into account changes in accounting rules and in dividend policy over the past few years. Siegel’s results show that the CAPE ratio overstates market excesses and can, as it does now, signal more price excess that is warranted. Alternative earnings measures might, Siegel says, be better in signaling “irrational exuberance.”

Robert Shiller, Yale University, then presented his paper, “Changing Times, Changing Values: A Historical Analysis of Sectors Within the U.S. Stock Market 1872-2013.” He starts by agreeing with Siegel completely, before describing his

construction of a more robust CAPE ratio, the Relative CAPE. Critical to his work is the construction of data from 1870s to 2012 for three sectors: industrials, utilities and railroads. He creates and discusses a hypothetical trading strategy that, he reports, is currently being implemented.

Interest never flags when trying to understand whether manager skill exists. **Marcin Kacperczyk**, Imperial College, London, creates a Skill Index, a weighted average of market timing and stock picking skills. Using it he finds that there is evidence that managers do have skill. Moreover, he finds that managers who can time the market also are skilled stock pickers: they reallocate their attention from stock picking in periods of market expansion to market timing in recessions. Rational attention allocation is the real skill Kacperczyk identifies.

Is it skill, or luck? That is the underlying question, and **Michael Mauboussin**, Credit Suisse, addresses the skill/luck conundrum in his Monday evening dinner address, “The Success Equation: Untangling Skill and Luck in Business, Sports and Investing.” Outcomes, he says, should be thought of as a mixture of two distributions - skill and luck. Some activities, like chess, rely heavily on skill, while others, such as winning the lottery, depend on luck alone. Most are, however, a combination of skill and luck. Over time the distribution of skill has narrowed and although it increases while you are young, it declines as you age. The age of peak skill is different for different activities. He tells this highly skilled audience that among a group of highly skilled people, luck becomes more important.

Following on the skill luck theme, **Jason Hsu**, Research Affiliates, LLC introduces stock picking monkeys into his analysis. He compares the performance of a variety of strategies; including high risk strategies, to that of a U.S. Cap. Weighted Benchmark, finding the Benchmark underperforms all the strategies he tests. He then takes an unusual step and compares the benchmark

to the inverse of the active strategies. Again, the benchmark underperforms all the strategies. In come the monkeys and the monkey of Malkiel’s monkey strategy outperforms. The reason Hsu says, is that the index itself has a value/small tilt and thus all non-capitalization weighted indices should outperform a capitalization weighted benchmark.

Jay Ritter, University of Florida, assails the staple of international asset allocation decisions, forecasted growth. Ritter says that is not that economic growth is bad, particularly for people, it is whether it benefits shareholders. If it does not benefit shareholders, he asks, should investment managers and analysts be obsessed with it? Looking at data from 19 countries with continuously operating stock markets, he finds little relationship between real per capita GDP growth and real stock market returns. There are a number of possible explanations but Ritter settles on one: stock returns are not determined by economy-wide performance, but by the actions of the company itself. Real dividend growth has a higher correlation with high stock returns.

Q-Group participants had asked to have a session on risk parity, and the response was the session called, “Risk Parity: Where Will It Take Us Next Year?” Risk parity targets a specific level of risk and more equally divides it across all portfolio assets. Two presenters weighed in on the question of where it will take us.

The first was **Cliff Asness**, AQR Capital Management with a presentation entitled “Risk Parity: An Application of Finance 101 (plus low beta investing).” Risk parity, he says is the most basic stuff in finance. Typically an investor levers or lends to enhance or reduce the risk of holding the maximum Sharpe Ratio portfolio. But in a world where low beta stocks outperform high beta stocks, risk adjusted, the actual Security Market Line is higher and more sloped. If the goal is to achieve high returns, leveraging a risk-diversified portfolio is superior to holding all equities.

The second, **Paul Kaplan**, Morningstar, expected

to provide a counterpoint, largely agreed with Asness. In general, he points out that there is no closed-form solution for the weights in a risk-parity formula and it is marketed as an intuitive approach to asset selection. The implied returns, however, for a risk-parity model is quite different from one that is equal weighted. Leverage aversion may not be a risk-parity portfolio but a tactical strategy to offer the best returns in an environment. At present, the best returns would come from low volatility stocks, not bonds.

Douglas Breeden, Duke University, says that the Federal Reserve and European Central Banks can and do affect the entire probability distribution for future interest rates, not just the means and variances. The tools he uses are wholly arbitrage based and non parametric and

do not rely on assumptions about statistical estimates for the volatility process nor on the pricing function for actual market option prices.

Ken Smetters, University of Pennsylvania, looks at the “annuity puzzle.” The puzzle is why reality does not match the predictions in 1955 by Yaari who showed that annuities should dominate all non-annuitized investments due to the mortality credit. Smetters finds that Yaari’s conclusion is strong and holds until he introduces stochastic survival probabilities and bequest motives that are not dependent on initial health status. By introducing those changes, Smetters finds 63% of households should not annuitize any wealth. In fact, younger households should short annuities by buying health insurance. The puzzle is not why households do not annuitize but why so many households do.

Summaries

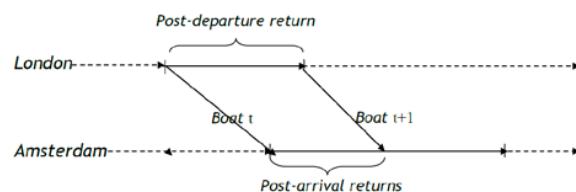
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Those Who Know Most: Insider trading in 18th c. Amsterdam

Peter Koudijs
Stanford Graduate School of Business

How is private information incorporated into security prices? This is the question that Peter Koudijs researches using information from the market for English securities from 1771-1777 and 1783-1787, periods characterized by peace on the European continent. His interest is in how the information that traveled between the stock market in London to the secondary market in Amsterdam. Koudijs suggests that the arrival and departure of mail packet boats, sailing ships between the ports of London and Amsterdam, signaled the possible arrival of new information about such things as prices in the London market. This era, Koudijs says, provides a unique opportunity to infer how insiders or informed agents trade on their information and the process by which private signals are revealed to the market as a whole.

The packet boats carried both public news including newspapers which contained stock prices and private letters. They were practically the only source of news. Although the exact sailing time between London and Amsterdam depended on the marine weather conditions, the median travelling time was 4 days. Ships left on preset days (Wednesday and Saturdays), thus making information arrival relatively discrete. This discrete arrival of information, depicted below, allows the identification of how information is revealed over time.



Koudijs gathered what was needed to study the information flows between these two ports from Dutch and English newspapers:

1. Daily stock prices in London and three times a week in Amsterdam.

2. Arrival and departure dates from both ports.

In addition, to estimate sailing time, he gathered marine weather data from a Dutch observatory.

Using this data he reconstructs the arrival dates of sailing ships and examines the movement of English security prices between ship arrivals. Two models of information dispersion were considered by Koudijs:

1. Agents with private information act in a competitive fashion without taking into consideration the impact on prices. They trade right after they receive a private signal and do so aggressively. Thus, the privately-informed immediately reveal their private information.
2. Insiders are strategic and take into account the price impact of their trades. They understand that profits fall as prices become more informative and thus constrain their behavior. Price discovery, the process by which private information is incorporated into price, is prolonged.

Koudijs says that strategic behavior is not a sufficient condition for slow price discovery.

To examine the data, Koudijs uses the classical two period model of strategic insider trading developed by Kyle (1985). This model posits that an informed trades slowly over time. The rate at which private information is incorporated into prices depends on when the agent expects the private signal to be publicly revealed. Using his Amsterdam and London packet trade data, Koudijs finds:

1. Private information is slowly revealed to the market; the speed depends on how

long insiders expected it to take for the private signal to be publicly revealed.

2. Price movements in Amsterdam between the arrival of boats were correlated with the contemporaneous (but as of yet unreported) returns in London. This is consistent with the presence of a private signal that is slowly incorporated into prices in both markets.
3. The time to arrival of the next packet, impacts the speed of revelation. The initial co-movement of Amsterdam and London prices was stronger when the next boat was expected to arrive early. This is consistent with strategic behavior on the part of the insider.
4. The importance of private information is underlined by the response of London prices to price discovery in Amsterdam: conditional on its own price discovery, the London market updated its beliefs based on price changes in Amsterdam.
5. The co-movement between Amsterdam and London reflected permanent price changes: it is unlikely that the co-movement was the result of correlated liquidity trades or other transitory shocks.

The arrival of news through channels other than the official packet boats did not account for the empirical results.

One important thing about his study that Koudijs noted was that information flows during these time periods were less complex than flows today. Moreover, they can be perfectly reconstructed. Since information arrived in a non-continuous way, clean

identification of private information was possible. The fact that the lengths of time over which insider information remained private in Amsterdam varied exogenously and this allowed for a direct test of the strategic behavior of insiders.

Koudijs is aware that historical results can be generalized or may not be relevant today. About this he says three things:

1. While insider trading has become illegal since the 18th century and one might think that private information has therefore become less relevant, empirical evidence does not square with this conclusion.
2. The speed of information transmission was a lot slower and more infrequent in the 18th century. However, private information itself, the fundamental thing, was not the result of primitive communication technology but the result of London insiders having access to superior sources of information. This is similar to today where corporate insiders are likely to be better informed than the market as a whole.

Koudijs concludes that while he studied a different venue in a different time, only the speed of transmission has changed. While different today – more advanced technology makes private information much shorter lived, and markets have not become more information. Long-lived private information, held by monopolistic agents is as relevant today as it ever was.

The Surprising “Alpha” from Malkiel’s Monkey and Upside-Down Strategies

Jason Hsu
Research Affiliates LLC¹

Investment practitioners and many academics are understandably preoccupied with identifying strategies based on stock characteristics that can deliver high risk-adjusted returns. Many have translated these strategies into portfolio weighting schemes to create indices that outperform the Cap-Weighted Benchmark. Hsu focuses on indices whose weights are rebalanced annually and are based on volatility, market beta and downside semi-deviation. He finds that all of these alternative indices produce higher returns and higher Sharpe Ratios than the U.S. Capitalization-Weighted Benchmark, as shown in the following table

[High Risk Strategies Outperform Cap](#)

Simulated U.S. Strategies, 1964–2012			
Strategy	Return	Standard Deviation	Sharpe Ratio
Volatility Wt ¹	12.2%	19.1%	0.36
Market Beta Wt ²	11.9%	19.8%	0.34
Downside Semi-Deviation Wt ³	12.1%	18.9%	0.37
U.S. Cap Wt ⁴	9.7%	15.3%	0.29

Is this the pot of gold? Before we leap, let’s have some confirmation, and Hsu provides it.

To confirm these results Hsu inverts each of the strategies. He anticipates that the inverted algorithms will underperform the benchmark by a roughly same amount it had outperformed. They did not. Not only do the inverted algorithm strategies not perform as expected, they outperform the benchmark (following table). This outcome was unexpected.

Looking further Hsu finds that these same results hold for global stocks using the same weighting schemes and for U.S. and global stocks indices that utilize fundamental weights such as book value, 5-year average earnings, a blend of fundamentals, and earnings growth. Not only do fundamentally weighted indices outperform, the inverse strategies outperform. Hsu goes on to say that the following smart beta strategies also outperform:

- Diversity Weighting - a blend between cap weighting and equal weighting.
- Fundamental Weighting - strong fundamentals deliver high returns.
- Maximum Diversification - return is proportional to volatility.
- Minimum Variance - low risk generates high return.
- Risk Cluster Equal Weight - equally weighted country/industry clusters.
- Risk-Efficient - return proportional to downside semi-deviation.

As did the inverse of the smart beta strategies!

How can this be? What is going on? This is what Hsu sets out to discover. He and his co-authors first ask if Burton Malkiel might have been right when, in *A Random Walk Down Wall Street*, he wrote, “A blindfolded monkey throwing darts at a newspaper’s financial pages could select a portfolio that would do just as well as one carefully selected by experts.”

¹ Joint work with Robert D. Armott and and Vitali Kalesnik, Research Affiliates LLC, and Phil Tindall, Towers Watson Limited

Challenged by Malkiel's contention, Hsu tests with a blindfolded monkey. To be clear, he does not actually use a monkey: it would be time-consuming and costly to arrange for a monkey to throw darts at the Wall Street Journal's stock pages, not to mention dealing with the problem of tracking down 50 years of archived copies of WSJ stock lists. Instead he simulates a dart-throwing monkey by picking a random 30-stock portfolio out of the top 1,000 largest market capitalization-weighted stocks once a year. These random stock selections are equal-weighted to form a "Malkiel monkey" portfolio. Only twice did the simulated monkey underperform the Capitalization - Weighted Benchmark. Even simulated monkeys do better.

Ditch the algorithms and the computer farms, grab some Wall Street Journals? No, Hsu says the source of these odd results lies in the data. When he looks at a four-factor model decomposition for the U.S., and finds that the data is tilted toward value and small size stocks. Hsu finds the same tilts to small and value when he looks at the global and fundamental data. In fact, he finds the same bias in all non-cap weighted strategies (shown in the following table), including the inverse strategies.

Value and Size Factors Risk Strategies

All non-cap-weighted strategies have value and small size tilt

Strategy	Annual FFC Alpha (%)	Alpha t-stat	Market Exposure	Size Exposure	Value Exposure	Momentum Exposure
Volatility Wt ¹	0.23	0.46	1.10	0.55	0.16	-0.04
Market Beta Wt ²	0.56	1.01	1.13	0.54	0.13	-0.09
Downside Semi-Deviation Wt ³	0.26	0.52	1.10	0.52	0.17	-0.04
Inverse of Volatility Wt ¹	0.58	1.13	0.97	0.28	0.33	-0.03
Inverse of Market Beta Wt ²	0.86	1.07	0.91	0.25	0.43	0.03
Inverse of Downside Semi-Deviation Wt ³	0.48	0.95	0.97	0.28	0.33	-0.02
U.S. Cap Wt ⁴	0.00	0.00	1.00	0.00	0.00	0.00

Finally, Hsu asks, what we are to make of the result that popular strategies, when inverted, produce outperform the strategies themselves? Hsu says that intuition about the results can be gleaned from the following relationship that holds true for any portfolio:

$$E[R_p] = E[R_{ew}] + n \times \text{cov}(w_i, r_i)$$

The expected return on any portfolio (p) is equal to the expected return on an equally-weighted portfolio of n securities plus n times the cross-sectional covariance between the portfolio weights of each security (i) and its returns. Hsu argues that due to mean reversion the covariance between market capitalization weights and returns is negative. Hence, the right-hand-term in the above equation is negative for a market capitalization weighted index. For any other weighting scheme Hsu expects this term to be close to zero. This suggests that all non-capitalization weighted indices should outperform those that are cap-weighted. Hsu concludes that it is the benchmark that is skewed, not the inverse results that are odd.

Optimal Annuitization with Stochastic Mortality Probabilities

Kent Smetters

University of Pennsylvania, NBER¹

Smetters starts by reporting that sales of fixed annuities in the United States totaled \$54.1 billion during the first three quarters of 2012, but only a fraction will be held for life. This apparent under-annuitization by households is commonly referred to as “the annuity puzzle” and it is not, Smetters says, just a theoretical curiosity. Annuities are investment wrappers that should dominate all non-annuitized investments because of the mortality credit. Annuities are attractive because of the regular fixed payment coupled with the bet that you will live longer than others in the pool. This bet enhances that yield for those who are long lived. The mortality credit is the payout that can be very large later in a contract holder’s life. This credit comes from pool participants who die and forfeit their assets to the remaining contract holders. This return enhancing feature of fixed annuities was studied by Yaari in 1965 and led him to conclude that households without a bequest motive should fully annuitize their investments. In spite of all the attention his work has received, lifetime annuities paying a fixed amount each year until death are still fairly uncommon. Smetters examines Yaari’s model in an attempt to rationalize its full annuitization conclusion with the fact that annuities are not widely held. He attempts to find flaws with the model by adding numerous market frictions. None break Yaari’s sharp result. When Smetters allows a household’s mortality risk itself to be stochastic, full annuitization no longer holds. Annuities still help to hedge longevity risk, but they are now subject to valuation risk, the risk that you will exit the pool early. Adding this stochastic

mortality risk allows for numerous frictions to reduce annuity demand in Yaari’s model. In fact, Smetters finds that most households should not annuitize any wealth and concludes that the optimal level of aggregate net annuity holdings is likely to be negative. Give these finding, the underutilization of lifetime annuities may well not be a puzzle but rational choice.

For those that are not familiar with lifetime annuities, Smetters says they have three characteristics:

1. It is longevity insurance that protects against the risk of outliving assets.
2. In exchange for one-time premium, the holder receives a stream of payments with certainty until death.
3. Since the lifetime annuity cannot be bequeathed, the principal at death is at risk in exchange for a mortality credit for living.

Social Security and defined-benefit pension funds are life annuities, at least as they currently exist.

Smetters turns to his adaptation of the Yaari’s model assumptions. Yaari assumed that individuals have uncertain life spans, do not have bequest motives and premiums are approximately fair. Smetters adds some modifications in an attempt to break the full optimization prescription:

1. Survival probabilities are stochastic, thus introducing a rate of time preference.

¹ Joint work with Felix Reichling, NBER

2. Investor's health status evolves over time and is not a deterministic function of initial health status and subsequent age.
3. Health care shocks produce correlated reductions in income and increases in costs.
4. Health shocks impact the present value of annuity payments making the present value for short lived annuitants lower than those who survive longer. This introduces valuation risk when the annuity is acquired.

Using his modified multi period model Smetters finds that:

1. If households are sufficiently patient and mortality probabilities are the only source of uncertainty, full annuitization is still optimal.
2. If a bad mortality update is correlated with an additional loss (income or expenses), incomplete annuitization can be optimal, even without ad-hoc liquidity constraints.
3. If households are sufficiently impatient then incomplete annuitization may be optimal even without any additional loss. This can be achieved using a customized annuity that is a function of the annuitant's rate of time preference.

When Smetters' stochastic lifecycle model is

used to simulate optimal annuitization, even with no bequest motives or asset-related transaction costs, most households (63%) should not annuitize any wealth. Indeed annuitization is mostly found with wealthier households where the costs correlated with health shocks are small relative to assets, and older and sicker households where the expected mortality credit is large relative to the valuation risk.

To summarize, Smetters lays out the details of his three-period model and how it compares to that created by Yaari. He shows that the original Yaari prediction of 100% annuitization of wealth is very hard to break when survival probabilities are assumed to be deterministic, as is standard in the model. However, when the survival probabilities themselves are stochastic, the full annuitization does not hold. These stochastic survival probabilities become a gateway mechanism for various market frictions to matter.

Smetters concludes by saying that the simulation evidence in this work suggests that, even under conservative assumptions, it is indeed not optimal for most households to annuitize any wealth; many younger households should actually short annuities by buying life insurance. In the future, Smetters plans to examine how the results impact the optimal construction of tax and social insurance policies.

Panel Presentations and Discussion of Risk Parity and “Where Will It Take Us Next Year?”

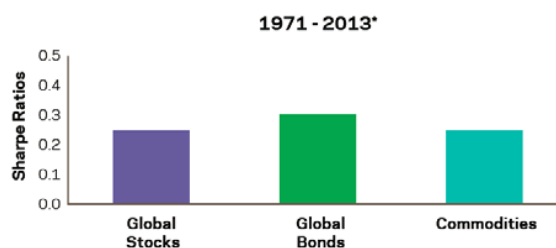
Many Q Group members had asked for a session on risk-parity and two practitioners were asked to make presentations. Presentations were followed by discussion between the two presenters. The first presenter was Clifford S. Asness, AQR Capital Management, who creates a theoretical justification for the risk-parity model and uses empirical data to support his work. The second presentation was made by Paul S. Kaplan, Morningstar, who questions some of the assumptions underlying risk-parity and its implementation in its purest form.

Clifford Asness
AQR Capital Management, LLC

Risk-Parity: An Application of Finance 101 (plus low beta investing)

In contrast to the CAPM setting, where investors hold the market portfolio and lever it according to their preference for risk, the risk parity model targets a specific level of risk and divides the risk more equally across all the portfolio assets. Its stated objective is to achieve richer portfolio diversification for an investor. This is the most basic stuff in finance, Asness says. It all starts with a version of the following chart.

were riskier and when adjusted for risk kept pace as shown in the chart that follows.



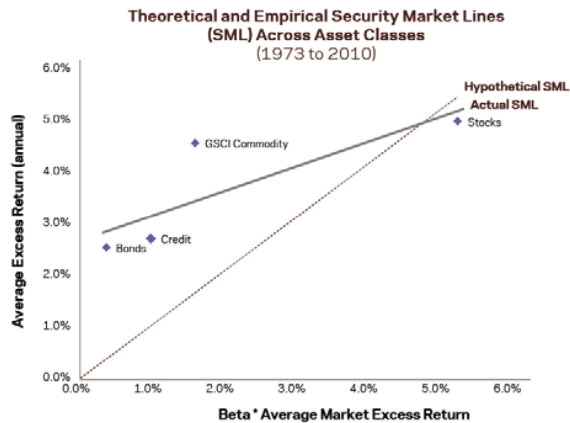
Traditional Portfolios are Concentrated in Equity Risk



The embedded belief in traditional portfolios, where equity risk dominates the portfolio, is the idea that equities have a sufficiently high ex-ante Sharpe Ratio to justify their prominent position relative in a portfolio of bonds and commodities. However, that is not reality. From 1971-2013, equities have outperformed bonds and commodities in terms of returns, they

Asness says that the goal of asset allocation and optimal portfolio construction is to maximize expected return for a given level of risk. Theoretically, this is done by combining the maximum Sharpe Ratio portfolio with risk-less borrowing or lending. If the goal is achieving high returns, leveraging a risk-diversified portfolio is superior to a portfolio containing only equities.

Asness goes on to talk about research by Black, Jensen and Scholes (1972) that showed that the security market line is too flat, relative to theory. Asness argues that low-beta assets are generally shunned, and conversely high-beta assets are in high demand. This results in a flat empirical market line like that shown below.



Not only does this result hold for U.S. stocks, but low beta countries outperform high beta countries on a risk-adjusted basis. Asness argues that this phenomenon is universal and occurs for U.S. and global stocks, across the

term structure of credit and government bonds, across the credit spread spectrum from distressed bonds relative to those that are AAA.. Asness says that risk parity is just taking advantage of the low beta anomaly applied to asset classes. If leverage aversion, or other theories like lottery preferences or investor focus on relative returns, predicts that higher-risk portfolios have lower risk-adjusted returns, then a portfolio that overweights low-risk assets and underweights high-risk assets can capture some of this premium. Risk parity then applies concepts from Finance 101 -- find the portfolio with the highest Sharpe Ratio (roughly an unlevered risk-parity portfolio) and use leverage to customize expected return and risk.

But this is not theory, it is all in the evidence, says Asness.

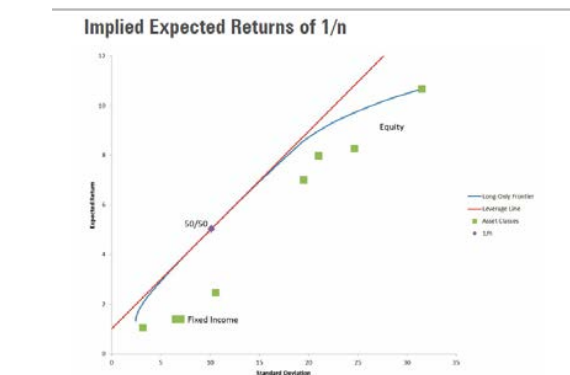
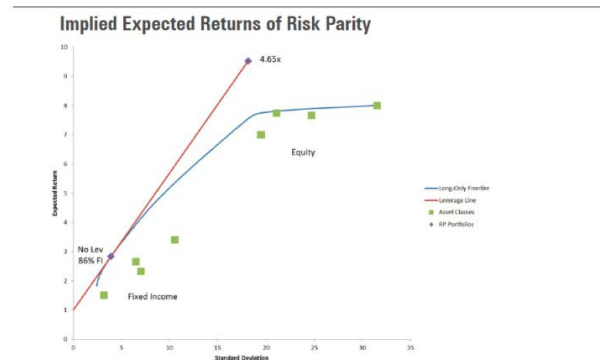
Paul D. Kaplan
Morningstar

Risk Parity, Expected Returns, & Leverage Aversion

Both risk and return are important in portfolio creation, at least theoretically. Before Markowitz, Kaplan says, no one had taken risk explicitly into account. Risk parity commits the opposite error: it is explicit about risk but totally ignores expected return. Kaplan lays out what risk parity (RP) is and what it is not. In general, he says, there is no closed-form solution for the weights in the risk-parity formula; it is marketed as an intuitive approach to asset allocation.

Using the RP idea, the unlevered portfolio is heavy with low-risk asset classes: leveraged risk parity models seek to achieve higher returns by leveraging the portfolio. Kaplan says beware: this model, like all risk-based models, is like one hand clapping” – risk but no explicit returns in contrast to all return and no risk of other models. Without expected returns, Kaplan asks, how do we know if the risk-parity model is the right one to leverage to maximize the Sharpe Ratio?

In the Markowitz model, the expected return and risk are known and the weights for each asset can be backed out. In the Black-Litterman model, implied expected returns can be backed out for any given covariance matrix and set of portfolio weights assuming those portfolio weights maximize the portfolio’s Sharpe Ratio. Kaplan then shows the differences in implied expected returns that result from using the risk-parity model (shown to the right, top) and an equal-weighted portfolio (shown to the right, below). They are quite different.



Kaplan goes on to discuss the results with equal correlation. In this case the risk parity condition is simpler: the constituent weights are inversely proportional to their standard deviations (equal to a low volatility weighting) and the implied expected returns are linear in standard deviation. Equally-weighted portfolios, in an equal-correlation environment, have Sharpe Ratios that are linear in standard deviation. The implied expected returns are quadratic in standard deviation.

Kaplan says there are a number of interesting questions that remain:

1. Are the implied expected returns of risk-parity models consistent with the expected returns predicted by leverage aversion? If not, he says, risk parity is a heuristic and there might be better ways to exploit leverage aversion.
2. Is the prediction of lower risk-adjusted returns for stocks relative to bonds strategic or tactical?
3. Is the dominance of stocks in traditional strategic asset allocation due to leverage aversion only, or to the idea that in the long run the stock market is the source of exposure to the real economy as well?

4. With bond yields subject to central bank manipulation, are stocks preferable to bonds for long term investors averse to leveraging a bond dominated portfolio?

To conclude Kaplan says that back tests of risk parity during periods when bond yields were falling are not good predictors when rates are rising. Thus leverage aversion may not be a risk parity portfolio but a tactical strategy to offer the best returns in the current environment. At this point in time the best returns would come from low volatility stocks, not bonds.

A discussion between Asness and Kaplan ensued. In the main, they agreed with each other. No fireworks, just interesting insight.

The Success Equation: Untangling Skill and Luck in Business, Sports, and Investing

Michael Mauboussin

Credit Suisse and Columbia University

Michael Mauboussin was the dinner speaker on Monday evening of the Fall 2013 Q Group Meetings. He spoke about the ideas in his most recent book, "The Success Equation: Untangling Skill and Luck in Business, Sports, and Investing." Central to the book, and his conversation with those at dinner, was the role that skill and luck play in success and failure. Some games, like roulette and the lottery, are pure luck, while others, like chess, exist at the other end of the luck-skill spectrum. Mauboussin says that many things in life, including sports, are a combination of skill that comes from training, practice, and luck. Extreme outliers (e.g. Joe Dimaggio's 56 game hitting streak) are always a combination of extreme skill and luck.

He gave two examples of luck or is it skill:

1. A humorous example of luck/skill was one winner of El Gordo - the Spanish Christmas, lottery, the oldest, continuously run, lottery in the world. The man who won had a number that ended with 48. Where did 48 come from, he was asked. He replied that for seven straight nights he had kept dreaming about the number seven. Since seven times seven equals 48 (so he thought) that was his lottery number.
2. Another is the strange path the Mona Lisa by Leonardo da Vinci. Originally, not in the list of the top da Vinci paintings, a well-publicized theft in 1911 created a media sensation. Rumored to have been stolen by modernist enemies of traditional art, even by Picasso, the painting was returned in 1913 after considerable public outcry. The news sensation turned

Mona Lisa into a huge attraction at the Louvre that continues today.

Mauboussin proposes that we think of outcomes as resulting from the mixture of two distributions, one associated with skill and the other with luck. He believes the skill distribution in sports has moved to the right and become more compact. He uses as an example the times between the #1 and #20 in the Olympics. In 1932 the difference was 39 minutes, or as he says, the runner coming in first had time to shower and change before #20 crossed the line. At 2012 Olympics the difference had dropped to 7 minutes. Another example in this baseball season, shows how important this change can be. In 1941 Ted Williams was hitting 0.406, 4-sigma event. Today, a 4-sigma event would result in batting average of 0.380. Moreover, Mauboussin says, the batting distribution is more compact for major league players today.

When we consider skill, Mauboussin says that skill increases when you are young and eventually begins to decline. He calls this pattern the arc of skill. Golfers, he says, peak around 35 and tennis Grand Slam winners around 24 (using data from 1968-2013). As to financial intelligence, Mauboussin cites work by David Laibson and colleagues, Harvard University that looks at financial intelligence as a combination of fluid intelligence, peaking in the early 20s, and crystallized intelligence that grows over time and is based on experience. Crystallized intelligence is used to deal with new and complicated problems. Laibson and his co-authors found that for those making financial decisions the peak comes in their mid-50s. Some of the decline comes from habit and the rest from comfort that comes with age: you are

less likely to question your own work.

Luck, Mauboussin warns, is hard to understand. Given an event, whether it is a success or failure and true or not, we rapidly create a narrative about what has happened. One part of the brain, he calls “The Interpreter,” takes the facts and creates a story even when luck is the act of randomness. “The storytelling mind is allergic to uncertainty, randomness, and coincidence and is addicted to meaning. If the storytelling mind cannot find meaningful patterns in the

world it will try to impose them. . . . it is a factory that churns out true stories when it can, but will manufacture lies when it can’t.”¹

Mauboussin concludes by saying that most outcomes involve a combination of luck and skill that is hard to untangle. While deliberate practice is very important to improving performance, highly skilled people, like those at the Q-Group dinner, should remember that as skill increases, luck becomes more important.

¹ Jonathan Gottschall, *The Storytelling Animal*

The Shiller CAPE Ratio: A New Look

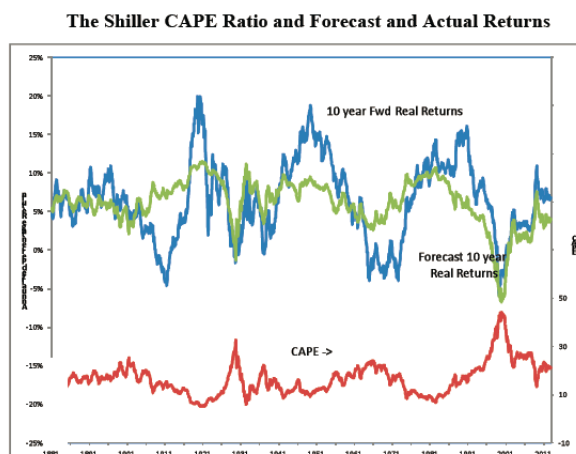
Jeremy J. Siegel

The Wharton School, University of Pennsylvania

In 1998, Robert Shiller and John Campbell published a path breaking article, “Valuation Ratios and the Long-Run Stock Market Outlook.” In that article they showed that long-run stock market returns were not a random walk but could be forecast by their Cyclically Adjusted Price-Earnings ratio (CAPE ratio). This ratio is created by dividing an index of stock market prices by the average of the prior ten years of aggregate real earnings. Siegel says that Shiller’s CAPE ratio “...is the single best forecaster of long-term future stock returns.” Still, Siegel is troubled by the fact that the ratio tends to be over pessimistic. He explores why it is overly pessimistic and focuses on the data behind the CAPE ratio’s forecasts.

The CAPE ratio gained attention in December 1996 when Shiller presented it to the Board of Governors of the Federal Reserve. At that time the ratio warned that 1990s stock prices were running well ahead of earnings. One week later Chairman Greenspan delivered his “Irrational Exuberance” speech in an attempt to temper the market.

At the top of the bull market in 2000 the CAPE ratio hit an all-time high of 43, more than twice its historical average, correctly forecasting the poor equity returns over the next decade (as is shown in the following chart).



In January 2013, the CAPE ratio reached 20.68, about 30% above its long-term average, and predicted a 10-year annual real stock return of 4.16% (2.5 percentage points below its long run average). This created concern among many stock market forecasters, and led many to consider the current stock market rally unsustainable. This concern continues into October 2013. Wisely, Siegel asks whether the CAPE ratio is now overly bearish? Is it time for patience or are we on the brink of another serious decline as the ratio forecasts? Siegel seeks to answer at least part of this question.

As background, Siegel notes there have only been nine months since 1991 when the CAPE ratio has been below its long-term mean. Further, in 380 of the 384 months from 1981 through 2012, the actual 10-year real returns in the market have exceeded the CAPE ratio’s forecasts. Siegel speculates about whether there is a problem with the CAPE ratio and whether its effectiveness as a predictor of long-term returns changed over time.

Siegel argues that the CAPE methodology is not robust to changes in:

1. Required ROE caused by changes in:
 - a. Transaction costs.
 - b. Real growth rates.
 - c. Aging of the population.
2. Growth of earnings per share for a given return on equity, such as those caused by changes in dividend policy.
3. Methodology used to compute reported earnings.

Siegel concludes that the problem lies in the accounting treatment of capital losses that has substantially distorted firms’ reported earnings. To demonstrate the potential problem in reported earnings, he compares three different measures of after-tax earnings per share:

1. Reported earnings as published by S&P.
2. Operating earnings published by S&P since 1989 that allow firms to exclude unusual items.
3. National Income and Product Account (NIPA) earnings adjusted for changes in the number of shares outstanding.

The following table shows the different earnings measures during the post-1929 recessions. Note that the cyclical nature of S&P reported earnings has changed dramatically in the last 3 business cycles (from June 1990 to June 2009 and highlighted in dark grey in the following chart).

Cyclical Behavior of Reported, Operating, and NIPA Profits

Recession		Change in After Tax Real Earnings		
Peak	Trough	NIPA	S&P Reported	S&P Operating
Aug29	Mar33	-126.3%	-66.6%	
May37	Jun38	-41.3%	-47.4%	
Feb45	Oct45	-24.1%	-21.8%	
Nov48	Oct49	-22.9%	-2.8%	
July53	May54	-25.0%	-1.6%	
Aug57	Apr58	-32.5%	-27.7%	
Apr60	Feb61	-22.3%	-13.6%	
Dec69	Nov70	-28.7%	-20.6%	
Nov73	Mar74	-24.8%	-21.1%	
Jan80	Jul80	-28.7%	-16.0%	
July81	Nov82	-33.9%	-23.7%	
Jul90	Mar91	-4.0%	-42.8%	-32.1%
Mar01	Nov01	-24.3%	-55.3%	-33.3%
Dec07	Jun09	-53.0%	-92.1%	-58.2%
Average 1871-1989		-37.3%	-23.9%	
Average 1989-2002		-27.1%	-63.4%	-41.2%

Perhaps most striking, Siegel points out, is that NIPA earnings fell 53.0% during the recent global financial crisis whereas those reported by S&P500 dropped 92.1%. Particularly puzzling is "...that the decline in S&P 500 reported earnings in the 2008-9 recession, where the maximum decline in GDP was just over 5%, was much greater than the 63.4% decline in S&P's recorded earnings in the Great Depression, which was over 5 times as deep [in terms of GDP decline]." Siegel attributes this difference to FASB Rules 142 and 144 issued in 2001 that forced non-financial firms to mark-to-market any impairments to PPE and intangibles and to FASB Rule 115 issued in 1993 that required financial firms to mark-to-market securities held for trading or "available for sale." Since FASB does not allow non-financial firms to write-up assets, Siegel argues that these rules had the effect of greatly increasing the number and size of the earnings write-downs without any offsetting increases when assets recovered in value and uses .

He provides an example to show the magnitude of the problem using Time-Warner's purchase of AOL in January 2000. The capital gain to AOL shareholders was excluded from reported earnings data, although when Time Warner subsequently was forced to write-down its investment by \$99 billion following the internet bubble, this write-down could not impact earnings.

Siegel points out that there are serious issues with how the S&P computes reported earnings for its index, what he calls the "aggregation bias." Given its S&P's construction methodology, it effectively assumes that the holder of the S&P500 index has one option on the aggregated earnings all 500 of the firms in the index rather than having a portfolio of 500 options on the earnings of each of the firms. This "aggregation bias" was particularly acute during the global financial crisis, Siegel says. In the fourth quarter of 2008, for example, the S&P 500 index recorded an unprecedented \$23.25 loss in reported earnings. This was primarily caused by the huge write-downs of three financial firms: AIG, Bank of America, and Citigroup. AIG itself recorded a \$61 billion loss that quarter that more than wiped out the total profits of the 30 most profitable firms in the S&P 500, despite its weight of less than 0.2% in the S&P 500 index. At the same time the 30 most profitable firms had an aggregate market value comprising almost half the index. Siegel wants us to know that there is one more problem that can bias the data: the post WWII change in dividend policy that impacts the predictive relationship between CAPE and future stock returns.

Siegel looks at the CAPE ratio on September 30, 2013; 23.31, 46.3% above the 140 year median CAPE ratio of 15.93. This, he says, pointed to a grossly overvalued stock market and to meager returns over the next ten years (2.94% per annum). This forecast, Siegel points out, is dependent on the use of S&P's reported earnings. Changing from S&P to NIPA profits reduces the overvaluation as well from 46.3% to 8.9%. When further adjusted for changes in dividend policy the overvaluation declines further.

Siegel concludes by saying his observations do not reduce the CAPE ratio as a powerful predictor of long-term real stocks returns. However, substitution of NIPA profits into the CAPE model

and correcting for the shift in the trend rate of growth of real per share earnings improves its predictability and eliminates most, if not all, of the overvaluation of the stock market in recent years.

Changing Times, Changing Values: A Historical Analysis of Sectors Within the U.S. StockMarket 1872-2013

Robert J. Shiller
Yale University¹

Robert J. Shiller - Interview

Telephone interview with Robert J. Shiller recorded immediately following the announcement of the 2013 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, 14 October 2013. The interviewer is Nobelprize.org's Adam Smith.

[RS] Hello?

[AS] Hello, may I speak to Robert Shiller please?

[RS] Speaking.

[AS] Hello, my name's Adam Smith. I'm calling from Nobelprize.org, the official website of the Nobel Prize in Stockholm.

[RS] Oh okay.

[AS] We have a tradition of recording very short interviews with new Laureates – could we just speak for a few minutes?

[RS] Yeah.

[AS] Thank you very much indeed. Well first of all, many congratulations on the Prize.

[RS] Thank you.

[AS] How did you hear the news?

[RS] I was getting ready to leave on a trip to Phoenix, Arizona, getting dressed, and I got called.

[AS] (laughs) And, what was your first reaction?

[RS] Disbelief.

[AS] Do you think the trip to Phoenix is going to go ahead?

[RS] Well, it's at least postponed and it may be cancelled.....

[AS] But, I just wanted to ask you how, just one question, because this is going to expose your field of research to a very wide audience, who won't previously have been aware of it. It's all to do with the predictability of asset pricing. How good a handle do you think we have on that? Do you think it's very much a work-in-progress or have we got things pretty well worked out?

[RS] It's very much a work-in-progress, yeah. Well I could briefly say that it's ... we've learned a lot about asset pricing, but there's a basic human element in it that is irreducible. So, predicting what asset prices will do is partly similar to trying to predict what one person will do, and so could there ever be a science in predicting what you, Adam, will be doing? No, because there's an irreducible human element. And that's part of the reason why the field of finance will never completely understand asset pricing movements.

¹ Joint research with Oliver Bunn

Robert Shiller kept his commitment to present his paper to the Q Group Fall 2013 meeting in Scottsdale, though he did so via video link.

Shiller presents work that extends the Cyclically-Adjusted Price Earnings (CAPE) ratio research of Campbell and Shiller (1988, 1998 and 2001), and Shiller (2005) into forecasting long-term market returns. He constructs price, dividend, and earnings series for the Industrials, Utilities, and Railroads sectors from the 1870s until 2013 from primary sources and investigates the forecasting power of the Cyclically Adjusted Price-Earnings (CAPE) ratios for each sector individually.

Originally Shiller used a CAPE ratio based on the current real price divided by a ten-year average of real after-tax earnings. This measure is potentially affected by differences in corporate payout policy. He discusses a procedure for scaling real earnings based on the ratio of an asset's total return (including dividends) to its price return (excluding dividends) and uses this to construct a more robust CAPE ratio.

As another modification to his earlier work, Shiller introduces the Relative CAPE - the current CAPE divided by its own twenty-year average. Shiller argues that this adjustment removes long-term trends and intermediate cycles, and also controls for different industries having different growth trajectories.

Before presenting his findings, he discusses how the data was created beginning in the early 1870s and ending in 2012. He melded data from the 1939 Cowles Commission for Research in Economics at Yale, and various editions of Standard and Poor's Security Price Index Record and Analysts' Handbook to construct historical prices, dividends, and earnings for the three sectors. Shiller presents a series of charts and graphs showing nominal and real price indices, real total returns, 12-month trailing earnings, the CAPE ratios and Relative CAPE indicators, each plotted against long-term returns, and ten-year average returns for the CAPE and Relative CAPE indicators. The following table summarizes the correlations between subsequent 10-year real returns, and the CAPE and Relative CAPE ratios for the three sectors and for three different time periods.

Correlation with Subsequent 10-Year Return	Start in Q3 of 1902		Start in Q4 of 1935		Start in Q4 of 1962	
	CAPE	Relative CAPE	CAPE	Relative CAPE	CAPE	Relative CAPE
All Stocks	-56.56% (0.0213)	-39.01% (0.0689)	-64.64% (0.0262)	-45.68% (0.0915)	-51.43% (0.1581)	-36.06% (0.3194)
Industrials	-53.95% (0.0378)	-48.10% (0.0281)	-61.31% (0.0514)	-47.56% (0.0841)	-58.06% (0.2237)	-36.13% (0.3315)
Utilities	-62.91% (0.0672)	-39.44% (0.0671)	-64.92% (0.0281)	-35.01% (0.1827)	-81.32% (0.6084)	-46.30% (0.2212)
Railroads	-34.46% (0.2283)	-20.43% (0.2656)	-21.92% (0.5543)	-49.03% (0.0740)	-18.16% (0.7453)	-50.96% (0.1797)

Shiller says that the correlations reported in the table are negative, similar in size across sample periods and across sectors, and largely statistically significant. This reinforces Shiller's earlier work linking the CAPE ratio's ability to forecast long-term aggregate market returns by showing that they have forecasting ability for individual sectors as well.

Shiller next explores whether relative differences in CAPE ratios between pairs of sectors can help explain inter-sector differences in long-dated subsequent returns. The table presented below summarizes much of the information contained in these charts and graphs.

Correlation between Differences in Relative CAPE Indicator and Differences in Long-Term Return	Start in Q3 of 1902	Start in Q4 of 1935	Start in Q4 of 1962
Industrials and Utilities	-39.56% (0.0698)	-43.02% (0.1163)	-75.12% (0.0188)
Industrials and Railroads	-10.30% (0.4185)	-45.66% (0.0989)	-73.16% (0.0263)
Railroads and Utilities	-3.91% (0.5174)	-31.20% (0.2279)	-70.11% (0.0392)

The correlations all suggest that sectors with the lowest Relative CAPE ratios tend, over a long-period, to be the sectors with highest relative returns.

As a further robustness check, Shiller looks at whether the CAPE or Relative CAPE indicator actually predicts changes in future prices or changes in future 10-year earnings averages. He concludes that they are most helpful in predicting future returns and changes in prices.

Shiller then explores a hypothetical trading strategy based on the Relative CAPE indicators by quarterly allocating long-only positions across the three

sectors, based on it and momentum. He finds that \$1 invested in his simple rotation strategy in Q4/1902 would have grown to approximately \$1,756 by 1/2013. An investment in the S&P500 would have grown to \$569; an equally-weighted portfolio of the three sectors would have grown to \$856 over the same period. The rotation strategy holds promise and he is implementing it. Shiller says that the contribution of this work is threefold.

1. A long time-series of prices, dividends, and earnings from the 1870s through the present was developed from primary sources for three sectors.

2. Using this data enables the investigation of the valuation of the US stock market for almost 130 years on the more granular level of sectors, and allowed for the consideration of the relative valuation of these sectors.
3. On methodological grounds, the definition of the Cyclically Adjusted Price-Earnings ratio (CAPE) is extended to account for inflationary effects that occur because of the consideration of a long-term earnings history, and to correct for effects from changes in corporate payout policy.

And from the Q Group members present, Congratulations on becoming a Nobel Laureate, Bob Shiller.

Is Economic Growth Good for Investors?

Jay R. Ritter

University of Florida¹

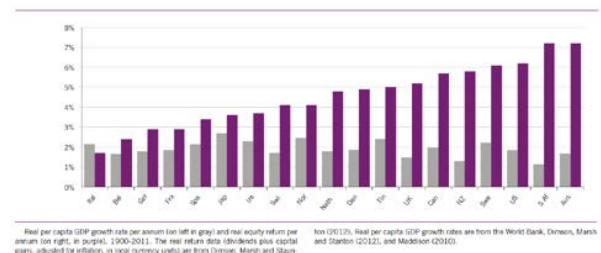
Economic growth is widely believed to be good for stock returns, making forecasts of growth a staple of international asset allocation decisions. But, Ritter asks, does economic growth always, or even generally, benefit stockholders? His answer, and the subject of this paper, is no on both theoretical and empirical grounds.

Ritter's argument is not that economic growth is bad - people who live in countries with higher growth tend to have higher incomes, higher standards of living, and longer life spans. The problem is that owners of capital do not necessarily benefit from that growth. The reason is that countries can grow rapidly, and for long periods of time, by applying more labor and capital, and introducing technological improvements, even though the return on capital is not high.

Using data from 19 countries with continuously operating stock markets from 1900 - 2011, Ritter finds that the cross-sectional correlation between real per capita GDP growth and real stock returns is negative in both local currency, -39%, and in USD, -32%. These findings are similar to those in Jeremy Siegel's *Stocks for the Long Run 2nd Ed.*, and are similar to those from a slightly larger subset of developed countries using more recent data, 1970-2001. The negative correlation between real stock returns and real per capita GDP is also present in a sample from 15 emerging markets countries using data from 1988-2011: -0.41 in local currencies and -0.47 in USD.

The lack of positive relationship between real per capita GDP growth (light grey) and real

stock market returns (dark grey) can be seen in the chart that follows



Ritter posits three possible explanations of the negative correlation between real stock returns and real per capita GDP growth:

1. High future growth is reflected in high price-earnings ratios at the start of the periods,
2. Many of the largest publicly traded companies in each market are multinationals, and their earnings are only weakly related to domestic GDP growth.
3. Stocks returns are determined not by the growth in economy-wide earnings, but by firm-specific performance.

Ritter dismisses the first two explanations. For the first, he says that starting valuation differentials do not make a tremendous return difference over a 112-year period. For the second, he says that the multinational explanation, originally proffered by Jeremy Siegel, could explain a lack of correlation, but not a negative correlation.

The third explanation is Ritter's favorite. He

¹ This Paper was Supported by a Grant from the Q-Group

says the results reflect the amount of equity capital raised over time to generate the growth as well as the efficiency with which the capital was used. He cites as support of this explanation the case of the United States where corporate payout policy is important. He argues that the large distributions of capital to shareholders, either through dividends or stock buy-backs, have been an important contributing factor to the high returns earned by U.S. stockholders. This puts the reinvestment decision back in the hands of investors and avoids the waste that would have occurred from reinvesting in declining businesses or entering an unfamiliar one.

Higher payout policies also discipline management's tendency to be overly optimistic and to overinvest. This argument, Ritter believes, is supported by the higher correlation between real dividend growth per share and high stock returns. As an example of the relationship he says that Japan had a relatively poor overall stock market performance (+3.60%) over the 112-year period, but the lowest real dividend growth per share (-2.36%), the highest real GDP growth (+2.69%).

Ritter next discusses sources of economic

growth. He notes that economic growth largely comes from increases in three main inputs: labor, capital and technology. Increases in labor are attributable to increases in the size of the population, the percentage of the population that is part of the labor force, and the human capital of the workforce. In support Ritter cites the work of Paul Krugman and Alywyn Young who examined the high growth rates in the Soviet Union from 1930-1970 and in many East Asian countries from 1960-1993. They explained the tremendous growth in those countries as a result of combining huge supplies of underutilized labor (e.g. moving people out of subsistence agriculture), a demographic dividend that came from lower birth rates, with capital from high savings rates and imported technology. As Ritter explains, this combination need not translate into higher per share profits for shareholders: consumers and workers may end up being the primary beneficiaries.

Ritter did not have time to address his remaining topic, predicting future returns. For this, he deferred to the research of an earlier presenter, Jeremy Siegel.

Time-Varying Fund Manager Skill

Marcin Kacperczyk

Imperial College London¹

Kacperczyk says that much has been written about whether investment managers add value for their clients. Kacperczyk posits that managers have limited attention and resources and must make an optimal decision about how to allocate time and resources. He believes that business cycle variation causes the optimal allocation to change (theory) and looks for evidence of that in his empirical work. To understand this better, and consider its source, he decomposes investment performance into stock picking and market timing and finds evidence, conditioning on the state of the economy, that skilled managers can successfully pick stocks in times when the economy is expanding and are able to market time in during recessions. To measure this he proposes a new measure of fund-manager skill that gives more weight to a fund's market timing in recessions and its stock picking during expansions.

For his study, Kacperczyk uses data on 3,477 actively managed open-ended U.S. equity mutual funds from the CRSP survivorship bias-free mutual fund database (1/1980-12/2005), and merges it with holdings data from Thomson Reuters and fundamental data from the CRSP / Compustat stock-level database. Kacperczyk follows the approach used by previous researchers to decompose investment performance:

1. Stock picking skill is measured as the product of a fund's portfolio weights in deviation from market weights multiplied by the firm-specific component of returns for each stock in the portfolio.
2. Market timing skill is measured as the product of a fund's portfolio weights in deviation from market weights multiplied by the systematic component of stock returns.

The major novelty in his work is the use of dummy variables to look at both stock-picking and market-timing measures of skill in each of two different periods -- expansion and recession. He holds constant a number of control variables related to such things as fund size, manager age, expenses, turnover, loads, and style.

The results suggest that managers do a better job of stock picking in periods of expansion and a better job of market timing during recessions. Specifically, managers' market timing ability is a monthly 14 bp higher in recessionary periods and their stock picking ability is 14.4bp lower in periods of recession. He uses NBER's method of dating recessions, though similar results hold when recession are determined ex-ante. The results also hold at both the fund and at the manager levels.

Kacperczyk wonders whether the same managers have timing and stock picking ability. In the table that follows he shows the ability of the 25% of the funds that have the highest stock picking ability.

	Timing		Picking	
	Expansion	Recession	Expansion	Recession
Skill Picking	-0.001	0.037	0.059	-0.054
	-0.004	-0.013	-0.005	-0.017
Constant	0.018	0.055	-0.022	-0.159
	-0.001	-0.005	-0.002	-0.006
Controls	y	y	y	y
Observations	204,311	18,354	204,311	18,354

The same managers that exhibit stock-picking ability also exhibit market-timing skill, and at the right times.

¹ Joint work with Stijn van Nieuwerburgh and Laura Veldkamp NYU Stern School of Business, NBER

When looking at the performance of the median, 75th and 95th percentile, funds during recessions, he finds the positive timing effect for the most successful managers is almost four times that for the median manager. Interestingly, the negative effect of a recession on the stock-picking of the most successful managers is almost twice the size of that for the median manager. In fact, these managers also show market timing ability during recessions.

	P 5 0	P 7 5	P 9 5	P 5 0	P 7 5	P95
Recession	0.039 (0.023)	0.114 (0.041)	0.251 (0.082)	-0.084 (0.021)	-0.091 (0.022)	-0.173 (0.067)
Constant	0.000 (0.004)	0.108 (0.020)	0.765 (0.061)	-0.015 (0.005)	0.126 (0.013)	0.722 (0.053)
Controls	Y	Y	Y	Y	Y	Y
Observations	221,306	221,306	221,306	221,306	221,306	221,306

These managers can time the market, but how do they do it successfully? They have, on average, more cash in recessions (40 bp more actual cash and 300 bp more implied cash), lower betas during recessions (1.00 versus 1.11 in expansion periods), and tend to engage in successful sector rotation by allocating more to defensive sectors during recessions and more cyclical industries in expansions.

As to the success, the top funds tend to be smaller and trade more actively than their less successful counterparts. In addition, the fees charged are higher (26 bp per year), the inflows of new assets higher, and the number of stocks fewer. In addition, these funds have greater industry concentration, their betas deviate more from their peers.

Central Bank Policy Impacts on the Distribution of Future Interest Rates

Douglas T. Breeden
Duke University¹

Breeden explores information about future short-term interest rates implicit in the state prices and risk-neutral densities obtained from the interest rate cap and floor market. He uses research from his paper with Litzenberger (1978) that showed the state prices can be estimated from portfolios of option butterfly spreads. This research is particularly timely given the non-normal nature of the low short-term interest rates that have existed since the Great Recession.

Breeden reviews what others have found and cites several current practical uses of option implied risk-neutral probabilities. In particular he notes the risk-neutral density and tail risk estimates for many assets published by the Kocherlakota group at the Federal Reserve Bank of Minneapolis²

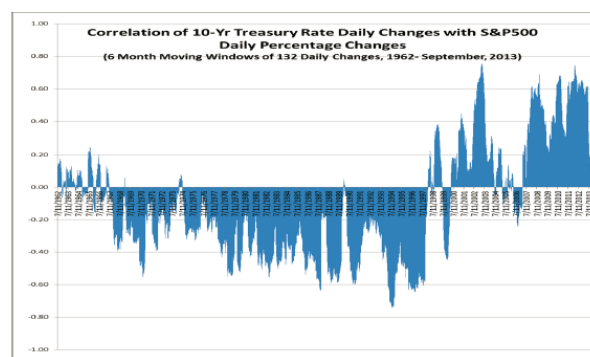
Breeden then says that the approach he takes is different from others in two ways:

1. It is wholly arbitrage based, non-parametric, and uses market prices from well-traded markets.
2. It focuses on long-dated, 3-5-year, market forecasts.

Breeden then shows how a portfolio of butterfly spreads plus left and right tail spreads produces a pay-off that is identical to a zero coupon bond. He uses this to estimate risk-neutral probabilities. The difference between risk-neutral and true probabilities, Breeden says, is that risk neutral probability is higher than the true probability of the state and the marginal utility.

Given the strong positive correlation between consumption and stock market wealth, Breeden says that risk-neutral probabilities of down-side S&P 500

moves will exceed their true probabilities. Understanding the relationship between risk-neutral and true probabilities for nominal interest rates is more complicated -- as correlations between interest rates and the stock market are time-varying. He provides the following chart to demonstrate this.



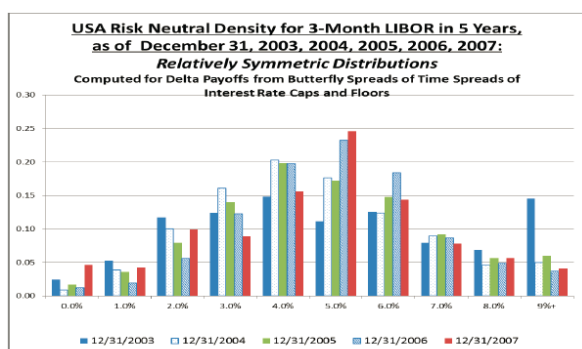
Breeden says that the ratio of risk-neutral to true probabilities should also be time-varying. For example, during the recessions of 1974-1975 and 1981-1982, higher nominal rates were brought about by supply shocks and associated with lower growth. Since the global financial crisis, higher nominal rates have been associated with higher stock prices and higher growth. Low interest rates (e.g. 1% or 2%) are associated with predictions of low real growth and high conditional marginal utilities of consumption. Risk-neutral probabilities for low rate states should exceed true probabilities and the reverse should be true for states with high interest rates.

The market's risk-neutral expectations about future

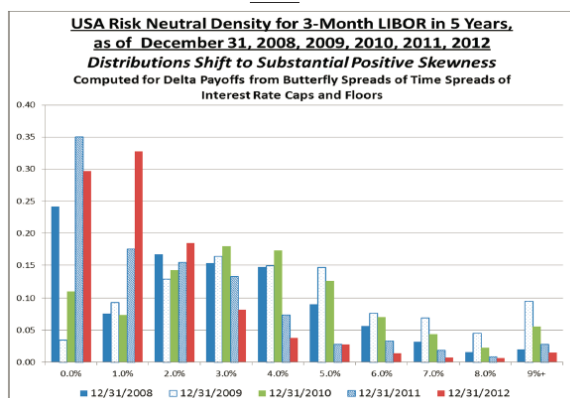
¹ Coauthored with Rober H. Litzenberger, The Wharton School of Pennsylvania

² The estimates are available at <http://www.minneapolisfed.org/economy/>

levels of nominal rates have changed over the last decade, Breeden says. In the following figure, he shows the relative symmetric risk-neutral expectations of 3-month Libor rates (5 years forward) that existed prior to the global financial crisis.



Post the crisis, the risk-neutral distribution of future rates has become much more positively skewed as shown in the following chart.



Breeden then goes on to examine how the risk-neutral densities of future 3-month Libor rates have been affected by series of policy actions by U.S. Federal Reserve Bank (e.g. the May 22, 2013 tapering announcement that came as a result of the economy's strength).

To conclude Breeden says that policy actions taken by the Federal Reserve and the European Central Bank can and do affect the entire probability distribution for future interest rates, not just the means and variances. The tools he uses are wholly arbitrage based and nonparametric, and do not rely upon assumptions about statistical estimates for the volatility process, nor on the pricing function for actual market option prices. For policy makers, Breeden says that these tools should be helpful in measuring the impact of potential policy.

Which News Moves Stock Price? A Textual Analysis

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Shimon Kogan asks, what moves stock prices? In his Presidential Address to the American Finance Association, Richard Roll (1988) found little relation between stock prices moves and news - a finding that has been confirmed in many other studies. To challenge this Kogan's research extends previous textual analysis methodology and utilizes an information extraction platform, "Stock Sonar". This system uses a dictionary-based sentiment measure to count positive and negative words in a news article, and analyzes phrase-level patterns to decide whether the article contains relevant news. As an example of what "Stock Sonar" can do, Kogan says from 2000-09, the Dow Jones Newswire produced over 1.9 million stories about S&P500 companies and estimated that roughly 50% of those stories had relevant news. Kogan classifies articles from 2000-09 into possible company events, and classifies each into it into unrelated news (Unid) or news related (Iden) to an identifiable event. Of the 1,229,359 total news days, 57% had no news, 30% were unidentified and 13% were identified news days (as shown in the table that follows).

Table 1: Summary Statistics
Panel A

	# Obs.	# Obs. with event count	# Tickers	# Articles	# Words	# Relv. Words
		=1	=2	=3	(daily)	(per art.)
Total	1,229,359	124,158	26,600	7,422	791	3.6
No News	696,985	NA	NA	NA	790	NA
Unid News	374,194	NA	NA	NA	791	2.6
Iden News	158,180	124,158	26,600	7,422	790	6.1
Acquisition	22,270	11,811	7,068	3,391	724	8.6
Analyst Rec	12,411	6,665	3,920	1,826	680	8.5
Deals	30,101	17,001	8,790	4,310	718	6.8
Employment	21,489	14,024	5,269	2,196	741	6.3
Financial	69,205	48,873	14,989	5,343	783	7.6
Legal	10,764	6,244	2,881	1,639	581	8.6
Partnerships	10,047	4,765	3,347	1,935	587	7.3
Product	25,181	14,775	6,936	3,470	652	7.1
						366
						108

Kogan then turns to the question of whether this refined measure of news can be used to consider Roll's empirical no-news-moves-stock-prices finding.

Based on the variance ratios (reported in the table below) Kogan concludes that the answer is "yes": the median stock exhibits return variance on identified news day that is 2.2 times the variance of no news days. These results appear robust: over 90 percent of stock variance ratios exceed 1.0 on identified news days.

Kogan goes on to report direct evidence that overturns Roll's anomalous result. He uses one- and four-factor pricing models finding the R^2 s are similar no news and unidentified news days, consistent with Roll's results. However, on identified news days it is much lower as shown in the following table.

	Firm Level			Industry Level		
	Mean R^2	Med R^2	N	Mean R^2	Med R^2	N
1 Factor						
All	28.6%	27.8%	791	28.5%	27.6%	60
No News	32.1%	33.3%	774	32.3%	34.1%	60
Unid News	30.8%	30.3%	721	30.9%	30.1%	58
Iden News	18.5%	15.9%	597	17.3%	16.2%	55
$\frac{NoNews}{IdenNews}$	1.73	2.10		1.87	2.10	
4 Factors						
All	33.6%	32.7%	791	31.8%	31.0%	60
No News	38.0%	38.6%	774	36.3%	36.9%	60
Unid News	35.8%	35.9%	721	34.0%	33.6%	58
Iden News	22.3%	19.6%	597	19.2%	17.1%	55
$\frac{NoNews}{IdenNews}$	1.71	1.96		1.89	2.16	

Kogan concludes that this research stands in sharp contrast to the last 25 years of literature on the relationship between stock prices and news. Whereas past research failed to find a strong link, he finds that when information is more properly identified, a much stronger link can be found.

Most, maybe all of us, believe that news impacts investor sentiment and can change investor action. Kogan gives us a new way to look at news using

¹ Joint research with Jacob Boudoukh, IDC; Ronen Feldman, The Hebrew University; and Matthew Richardson, New York University.

computer-based information-extraction technology to test our beliefs. He identifies a link between news and stock price changes although he cannot yet answer the question of whether investors can profitably trade on news releases. The remaining, and perhaps more difficult,

questions are whether news releases can be forecast and/or can increases in the speed of information incorporation into investor action make a difference. Kogan intends more research to answer questions like these.