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Editor's Letter

Financial Innovation: Old Wine in New Bottles?

The financial industry and the alternative investment industry, in particular, are known as innovative industries. Individual and institutional investors' needs change through time, and since the financial industry is highly competitive, there are no shortages of innovators who will step forward to meet these needs. In the last 50 years, we have seen the introduction of index funds, new hedge fund strategies, target-date funds, ETFs and ETNs, BDCs, CDOs, CLOs, CDSs, exotic options, risk budgeting and risk-parity, factor investing, smart betas, liquid alternatives, and crowd funding just to name a few.

However, some of these innovations have not met investors' expectations and, therefore, financial innovations have received their share of bad press. For example, CDSs and CDOs were blamed for the 2007-2008 financial crises. Some would go even further and argue that most financial innovations are nothing but new schemes by the investment industry to create new sources of revenue through higher fees at the expense of savers and investors. Paul Volcker shared his skepticism about financial innovations by stating "the ATM is the only useful financial innovation in the last 30 years."

Let's focus on two recent innovations in the financial industry. First, the concept of using a risk-parity approach to portfolio construction. The idea seems quite appealing. The weights of the portfolio must be selected so that each asset class makes the same contribution to the total risk of the portfolio. This sounds interesting, but there is no theoretical reason for this portfolio to outperform other allocations all, or even most, of the time. Once people looked at these portfolios more closely, they soon realized that risk-parity allocations were nothing but a bet on fixed income securities continuing their 20-year bull market. Proponents of the approach have suggested that because risk-parity portfolios require some leverage in order to generate reasonable returns going forward, risk-parity portfolios provide a return for leverage risk and since not everyone can employ leverage, the return from assuming leverage risk is high enough to make risk-parity a viable approach. This still seems to be a leveraged bet on fixed income. Next, we have the smart beta approach to asset allocation or, as some have pointed out: Smart Beta = Dumb Beta + Smart Marketing

In this approach, the hope for generating alpha is given up, and now investors are told that they must accept some (beta) risk to earn a premium. This is a good start. Finally, investors are told the truth that there are very few free lunches in the financial markets. However, smart beta goes one step further, and similar to the risk-parity approach, argues that return to these smart betas will dominate returns to more traditional betas most of the time. It seems that no thought is given to the fact that some asset classes (e.g., fixed income) or smart betas (e.g., value or momentum) may become too expensive at some point and, therefore, will underperform the overall market.

These two approaches have one thing in common: They propose asset allocation strategies that do not depend on price. In other words, the performance of these products is typically compared to the S&P 500 Index or MSCI World Index, which are cap-weighted indices, while risk-parity and smart beta approaches propose asset allocations that deviate from market cap approach.

In an insightful recent paper titled “The Surprising Alpha From Malkiel's Monkey and Upside-Down Strategies,” Robert Arnott, Jason Hsu, Vitali Kalesnik, and Phil Tindall show that asset allocation approaches such as minimum variance portfolios, fundamental index portfolios, equally weighted portfolios, and other smart-beta based portfolios outperform the cap-weighted benchmark. More surprisingly, they show that even the Monkey portfolio (i.e., a portfolio of randomly selected stocks) and a portfolio with allocations inversely related to smart betas outperform the cap-weighted benchmark. What is going on here?

Because these strategies deviate from market caps, they will have a strong tilt toward small-cap stocks and some tilt toward value stocks. Small-cap stocks are both riskier and less liquid, and therefore, should offer a higher return in the long run. Again, we see that there is no free lunch and beta exposure, whether it is smart or stupid, means risk exposure.

It is important for investors to ignore the marketing material, and first learn about the risk exposures of the investment strategy. Second, they need to find out if they have too little or too much exposure to those risks. Third, they need to decide whether the market provides adequate compensation for bearing those risks. Unfortunately, the answer to this last question is fairly difficult to obtain, and it is bound to be highly time-dependent. For example, is the compensation for the size factor adequate? While small-cap stocks tend to outperform large-cap stocks over long periods of time, there are fairly long periods of time over which small-cap stocks underperform large-cap stocks. Finally, investors have to decide on the most efficient method of obtaining the exposures provided by a product. For example, rather than using expensive and less transparent products such as smart-beta and risk-parity, investors can obtain exposure to small-cap or value stocks through less expensive and more transparent products such as index funds or ETFs. Sometimes, it might be wise to remember John Kenneth Galbraith's observation that “The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version.”

Hosseini Kazemi, Editor



Call for Articles

Article submissions for future issues of *Alternative Investment Analyst Review (AIAR)* are always welcome. Articles should cover a topic of interest to CAIA members and should be single-spaced. Additional information on submissions can be found at the end of this issue. Please email your submission or any questions to AIAR@CAIA.org.

Chosen pieces will be featured in future issues of *AIAR*, archived on CAIA.org, and promoted throughout the CAIA community.

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Why is the Shiller CAPE So High?. 15
By www.philosophicaleconomics.com

ABSTRACT: This blog post provides a detailed discussion of why the current levels of CAPE might be so high. One reason is that stock prices are currently high based on historical standards. However, as the post explains, there may also be other factors at work.

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ABSTRACT: In this article, the authors examine the potential effects of a Commodity Transaction Tax (CTT) on commodity and futures markets. They investigate the relationship between bid-ask spreads, trading activity, and intra-day volatility using futures data on five commodities (gold, copper, crude oil, cardamom, and refined soya oil) from 2006 to 2010. The empirical results suggest that while higher transaction costs may decrease trading activity, they may also increase price volatility. Therefore, policy makers should pay close attention to the possibility of distortions in market microstructure should a CTT be imposed in India.

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Jason Scharfman on Hedge Fund Operational Due Diligence 37

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AIAR STAFF

Hossein Kazemi
Keith Black

Editors

Barbara J. Mack
Content Director

Beth Rochon
Copy Editor

Angel Cruz
Creative and Design

U.S.

+1 413 253 7373

Hong Kong

+852 3655 0568

Singapore

+65 6536 4241

CAIA.org



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ABSTRACT: Crowdfunding is a disruptive technology of financial intermediation that may be applied in university research settings. The question addressed in this study is: Does crowdfunding represent a threat or an opportunity to more traditional research funding sources for the university sector? The article reviews recent research in the evolution of crowdfunding, assesses the legislation governing this new form of financing, and examines select university crowdfunding sites that have been used to generate funds for staff research and student projects. The study concludes that the Ivory Towers are alive and well, but crowdfunding has traction in the marketplace; further research on this phenomenon is encouraged.

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ABSTRACT: At GMO, we have a deep appreciation for alternative asset classes. We manage nearly \$10 billion in hedge funds and have an experienced team offering timberland and agriculture investments. Yet we are nervous about the increasingly uncritical embrace of all things alternative. Just as with traditional assets, investors must always ask the key question: Is the asset priced well? Rather than embracing alternative assets, we believe investors should embrace an alternative way of thinking about the investment equation.

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<i>By Michael Hunstad</i>	

ABSTRACT: Risk models play a key role in quantitative equity management. While they are generally good predictors of ex-post portfolio volatility, at times, these models are subject to significant misspecification. In this article, the authors demonstrate that for any given risk model misspecification, the width of a portfolio's confidence interval is a positive function of its active share. Monte Carlo simulation shows that these confidence intervals grow nonlinearly with active share. Thus, the higher a portfolio's active share, the less confidence we have in its risk measurements. Understanding these dynamics will help to generate new views on risk management practices.

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By Alexander Ineichen, CAIA

ABSTRACT: Risk is often defined as exposure to change. Spotting change, therefore, is important. There are essentially three approaches to change: 1. Displaying complete ignorance, 2. Having a wild guess as to what it means, or 3. Measuring it in a systematic fashion with an applicable methodology and adapting to it. The author recommends choice number three.

Momentum can be perceived as a philosophy. The author recommends the Momentum Monitor (MOM) as a risk management tool. If risk is defined as “exposure to change,” then one ought to spot the change.

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ABSTRACT: Unlisted real estate in Houston provided investors with an annualized return of 10.4% over the past 10 years, outperforming other major U.S. cities over the same period as well as other major asset classes. By Q4 2014, Houston's performance had slipped below the IPD U.S. Quarterly Index for unlisted property. This paralleled a slide in oil prices, a commodity closely tied to the city's economy. Houston property owners may be left to wonder, how secure is my investment here, especially my income stream? In this issue, we mine MSCI's IPD Rental Information Service (IRIS) to investigate.



CAPE Around The World: The Relationship Between Risk and Return

Joachim Klement

Chief Investment Officer/Partner, Wellershoff & Partners
Ltd.

Oliver Dettmann

Senior Investment Strategist, Wellershoff & Partners Ltd.

Despite differences in accounting standards, market transparency, and liquidity, the cyclically adjusted PE-ratio (CAPE) proves to be a reliable predictor of long-term equity market returns in both developed and in emerging markets (Klement [2012a, 2012b]). Granted, there are variations in reliability from country to country, but correlations between the CAPE and future 5- to 10-year equity market returns are consistently in excess of 0.7 in almost all of the markets we monitor. We previously introduced the concept of the “macroeconomically fair CAPE” that takes into account the current interest, inflation, and growth rates in our sample countries to yield a “fair” valuation level. As we have shown in Klement [2013], the prevailing very low interest rates at least partially explain today’s high valuations. However, at least in the U.S., the CAPE now significantly exceeds levels that can be justified by macroeconomic variables.

In this analysis, we take a fresh look at valuations around the world and calculate expected returns for each equity market over the next five years. As we will see, low interest rates may underpin the current high valuations, but investors should not make the mistake of expecting that future returns will be high as well. On the contrary, we show that high valuations like those currently recorded lead to lower expected future returns and increased risks of significant drawdowns, including possibly permanent loss of capital. To be clear, today’s high valuations are an alarm bell for the future that investors should take very seriously.

Developments Over the Past Year or So

We calculate the CAPE for 38 developed and emerging markets around the world at the end of January 2015 (sees Exhibits 1 and 2). Exhibit 1 shows the current valuation levels for developed markets, as well as our macroeconomically tuned fair CAPE for these countries, and the current difference between the two in percent. As a comparison, we also show the deviations of September 2013, presented in Klement [2013]. With the exception of Belgium, Germany, and Hong Kong, the deviations from fair CAPE have declined — sometimes significantly.

This is a reflection of two trends that have emerged over the past 15 months. First, the positive performance of equity markets has increased the CAPE for almost all countries. Particularly countries with a very low CAPE — for example,

Italy or Spain — have seen their valuations increase by about 20% due to the strong performance of these markets in the past 15 months. Since these countries had an unjustifiably low fair CAPE a year ago, the latest deviations have now narrowed.

Developed Market	CAPE	Fair CAPE	Deviation, in %	Deviation in September 2013
Australia	15.1	16.3	-7.4	4.1
Austria	8.3	4.2	97.6	48.6
Belgium	17.0	7.8	117	-18.1
Canada	19.2	21.4	-10.2	-27.5
Denmark	25.6	28.6	-10.4	13.2
Finland	15.8	12.0	31.6	107.8
France	13.0	13.2	-1.5	-38.9
Germany	15.8	19.3	-18.1	4.2
Hong Kong	15.9	16.5	-3.6	7.1
Ireland	20.6	14.8	39.2	50.0
Italy	9.8	10.5	-6.7	-47.4
Japan	21.8	29.5	-26.1	-30.7
Netherlands	14.6	15.5	-5.8	-16.7
New Zealand	18.5	17.9	3.4	7.1
Singapore	15.9	14.5	9.7	0.7
Spain	9.2	8.1	13.6	19.7
Sweden	18.0	18.2	-1.0	-17.5
Switzerland	18.0	28.4	-36.6	15.0
UK	12.5	15.5	-19.4	-3.8
US	24.4	17.5	39.4	68.4

Exhibit 1 CAPE and Fair CAPE for Developed Equity Markets, January 31, 2015

Source: Wellershoff & Partners

A second new trend has been the change in the fair CAPE itself. Interest rates have fallen since September 2013 in almost all developed markets while economic growth has accelerated. Both developments have led to an increase in the fair CAPE that has outpaced the increase in the CAPE. As a result, the difference between the two CAPEs has narrowed.

Nonetheless, these developments are no reason for complacency. Some markets still display a CAPE significantly above what can be justified by their current macroeconomic environments. Most notably, the U.S. equity market has a CAPE that is about a third higher than its current rates of interest, inflation, and GDP growth can justify. This is surely not a sign of long-term market stability, in our view.

Emerging Market	CAPE	Fair CAPE	Deviation in %	Deviation in September 2013
Brazil	8.0	9.1	-12.3	0.0
Greece	2.9	9.1	-68.1	-4.0
Hungary	7.1	6.4	10.9	1.1
India	21.3	15.3	39.2	20.1
Korea	12.4	12.9	-3.8	-1.4
Malaysia	18.2	19.2	-5.2	39.7
Mexico	17.2	17.9	-3.9	-2.5
Peru	16.1	21.7	-25.8	-39.4
Philippines	20.2	19.9	1.5	-17.2
Poland	12.3	12.3	0.0	0.7
Russia	5.7	7.3	-21.9	-23.2
South Africa	19.9	12.9	54.3	20.0
Thailand	14.0	13.2	19.6	72.9

Exhibit 2 CAPE and Fair CAPE for Emerging Equity Markets, January 31, 2015

Source: Wellershoff & Partners

Exhibit 2 shows the same data for emerging equity markets. The performance of emerging equity markets has been rather mixed since September 2013, as have their economic fortunes. Thus, no clear trend is evident in the change of the deviations between the CAPE and fair CAPE. The strong performance of the Indian stock market led to a significant increase in the CAPE since September 2013, but this was matched by an increase in the fair CAPE, so the deviation between the two actually narrowed. In Brazil, on the other hand, the CAPE declined a bit since September 2013 thanks to the weak performance of the Brazilian stock market. Yet the economic environment deteriorated so much more that the CAPE is now 12% above the fair CAPE.

The Russian equity market has also been in the headlines. In the wake of the conflict with the Ukraine, the Russian stock market sold off considerably, leading to even cheaper valuations today than in September 2013. On the other hand, high inflation and weak growth have hit the fair CAPE as well, driving it downward in lockstep with the CAPE.

A Crystal Ball for Expected Returns

So far, we have focused on the current situation and assessed whether current valuations can be justified by the macroeconomic environment. Far more important for investors, of course, is what current valuations say about future stock market returns. First, we caution readers not to think that a CAPE that is in agreement with the current

macroeconomic environment augurs high or even average future returns. Interest rates and inflation are exceptionally low in most developed markets, and thus largely justify today's high valuations. But we know from more than a century of experience that below-average stock market returns typically follow high valuations. In Exhibit 3 we show the updated return expectations for developed markets based on our panel regression methodology, which estimates future real returns in local currencies, while respecting both current valuation levels and the relationships (co-movement) of different markets. Exhibit 4 shows the results for emerging markets.

Developed market	CAPE	Cumulative 5-year real returns, in %	Annual expected real returns for the next 5 years, in %
Australia	15.1	41.4	7.2
Austria	8.3	83.4	12.9
Belgium	17.0	30.1	5.4
Canada	19.2	23.1	4.2
Denmark	25.6	38.0	6.7
Finland	15.8	26.1	4.7
France	13.0	68.6	11.0
Germany	15.8	34.8	6.2
Hong Kong	15.9	65.8	10.6
Ireland	20.6	-15.5	-3.3
Italy	9.8	55.3	9.2
Japan	21.8	35.7	6.3
Netherlands	14.6	35.7	6.3
New Zealand	18.5	16.6	3.1
Singapore	15.9	42.9	7.4
Spain	9.2	49.9	8.4
Sweden	18.0	60.8	10.0
Switzerland	18.0	35.8	6.3
UK	12.5	28	5.1
US	24.4	7.7	1.5
Developed Markets Value Weight	23.9	43.0	7.4
Developed Markets Equal Weight	20.2	38.4	6.7

Exhibit 3 Estimated Five-Year Real Returns for Developed Markets, January 31, 2015

Source: Wellershoff & Partners

Emerging markets	CAPE	Cumulative 5-year real returns, in %	Annual expected real returns for the next 5 years, in %
Brazil	8	22.8	4.2
Chile	15.2	60.2	9.9
China	15.8	89.1	13.6
Colombia	18.6	121.5	17.2
Greece	2.9	178.0	22.7
Hungary	7.1	41.6	7.2
India	21.3	56.7	9.4
Indonesia	21.7	53.9	9.0
Korea	12.4	30.4	5.5
Malaysia	18.2	50.6	8.5
Mexico	17.2	72.6	11.5
Peru	16.1	147.8	19.9
Philippines	20.2	-12.7	-2.7
Poland	12.3	67.7	10.9
Russia	5.7	40.1	7.0
South Africa	19.9	7.5	1.5
Thailand	15.8	9.6	1.9
Turkey	14	61.4	10.0
Emerging Markets Value Weight	15.1	37.1	6.5
Emerging Markets Equal Weight	14.6	59.8	9.8

Exhibit 4 Estimated Five-Year Real Returns for Emerging Markets

Source: Wellershoff & Partners

We triage the results into three categories — the good, the bad, and the ugly.

The Good:

- The gap in expected returns between developed and emerging markets is narrowing further. Because of the relative outperformance of developed versus emerging markets, the developed markets’ expected returns for the next five years have declined about 0.5% since September 2013, while the expected returns for emerging markets have increased by the same amount.
- Compared to long-term historical averages, the expected returns for developed markets should remain at or above average for the next five years. Excluding the U.S. and Ireland, investors can expect to earn mid to high single-digit returns in other stock markets, according to our model.

- From a regional perspective, the Eurozone remains the most attractive area. Particularly the southern European markets of France, Italy, and Spain offer attractive return opportunities. Smaller European markets like Austria or Sweden may achieve even higher returns, but we caution investors not to rely on this outperformance too much, because it is precisely in these countries that the estimation error of our model is greater than it is in France, Germany, or the U.K., for example. Thus, it is entirely possible that these markets will not outperform their larger neighbors.
- Recent market turmoil has opened up significant investment opportunities in several emerging markets. Compared to September 2013, expected returns in Russia have increased from -0.5% per year to 7%, mostly due to factors related to the conflict in the Ukraine. Similarly, weak stock market performance in Poland has led to a significant increase in expected returns, now about 10% per year over the next five years.

The Bad:

- Expected returns for some emerging markets have slipped significantly, often due to a strong rally in stock market prices since September 2013. Expected real returns in India have declined from 15% a year to about 10%. In Hungary, expected returns have declined to just 7.2% per annum. The smaller emerging markets of Peru and Greece have also seen declines in their expected returns, but remain firmly ahead of their peers.

- The most developed emerging markets — South Korea and Thailand — continue to be among the most unattractive emerging markets, with below-average expected returns.

The Ugly:

- While Ireland has an even lower expected return, the U.S. remains among the most overvalued equity markets, with the second lowest expected returns globally. At a mere 1.4%, expected annual real returns for the U.S. are several percentage points below international markets, indicating that the U.S. stock market is significantly overvalued. For a U.S. investor, the benefits of international diversification have rarely been greater than they are today.

The Relationship Between Risk and Return

As interest rates have hit bottom and stayed there in recent years, valuation multiples expanded and helped equity markets achieve strong performances, particularly over the past two years. Some investors mistakenly assume that, given the persistent low interest rates, equities remain an attractive investment, particularly when compared to bonds. As Asness [2003] has pointed out, such assumptions, based on the so-called Fed Model and its relatives, are invalid. In fact, high valuations and low interest rates are typically followed by low equity market returns. This is because rising interest rates lead to higher discount rates for future corporate earnings and thus to lower earnings multiples, which translate into lower returns.

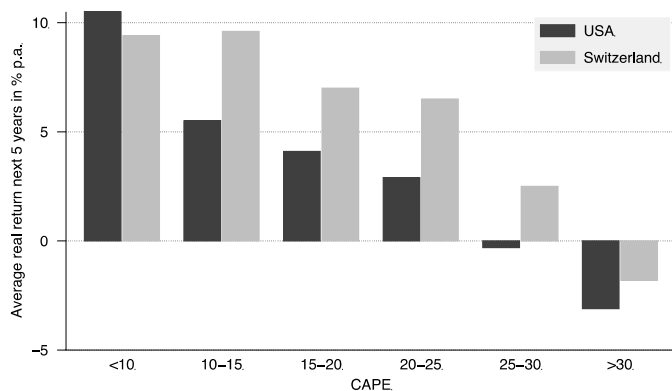


Exhibit 5 Relationship Between CAPE and Future Real Returns in the U.S. and Switzerland

Source: Wellershoff & Partners

Exhibit 5 shows this inverse relationship between the CAPE and future returns for the U.S. and Switzerland. For the U.S., it has long been understood that a high CAPE is an indication of low returns in the following years. After all, that consistent pattern is what popularized the use of this indicator in the first place. Exhibit 5 shows that this relationship is not only true for the U.S., but also for a small open economy with completely different economic characteristics and regulatory framework. In fact, we could have produced a similar chart for all of the 38 countries in our sample. All of them show that a higher CAPE is typically followed by lower returns over the subsequent five to ten years.

Another misconception some investors have is that (systematic) risk and return should be positively correlated. Modern portfolio theory and almost all asset-pricing models postulate that higher returns should be possible only by taking on higher systematic risk. For some, this theory means that the Swiss stock market should be riskier than the U.S. market. After all, the higher expected returns of the Swiss stock market should be the compensation for taking on greater risk.

For real investors, the problem with these theories is that they typically define risk as volatility or market beta relative to a market portfolio. For these investors, however, risk is not symmetrical. That is, they do not attempt to capture both the upside and the downside of an investment. For most investors, risk is asymmetrical. It is the risk of losing your money. A simple and practical measure of risk is the drawdown that an investment might incur in the future.

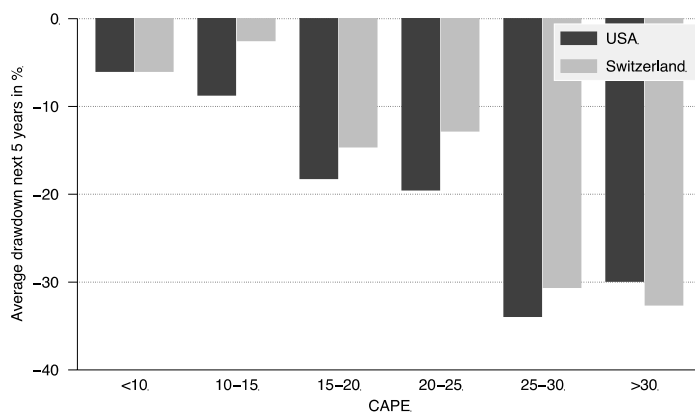


Exhibit 6 Relationship Between CAPE and Future Drawdowns in the U.S. and Switzerland

Source: Wellershoff & Partners

In Exhibit 6 we show the average drawdown of U.S. and Swiss stocks, depending on the CAPE. We have calculated these drawdowns by looking at the maximum loss each market experienced over the next five years compared to the starting level of the stock market. Thus, it could well have been that the stock markets rose for two years, then collapsed and then recovered again. If the stock market collapsed after three years to levels below the index level at the beginning of the five-year investment period, the drawdown would be negative. If it does not fall below the initial index level at any point during the following five years, the drawdown would be zero.

This would be the case even though it is also possible that stock markets could rise by 50% and then drop by 20% in the meantime. The average of these drawdowns is shown in Exhibit 6 for the U.S. and Switzerland.

We clearly see that the drawdown risk of stock markets increases as the CAPE increases. Thus, in direct contradiction to the received wisdom of modern portfolio theory, higher valuations clearly lead to lower returns and higher risks in the future.

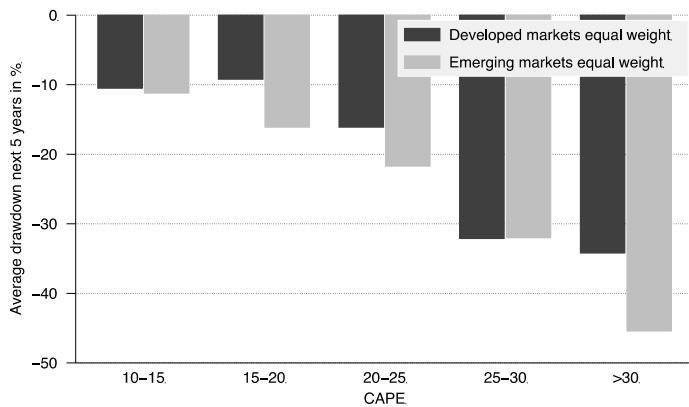


Exhibit 7 Relationship Between CAPE and Future Drawdowns in Developed and Emerging Markets

Source: Wellershoff & Partners

Again, we could have created similar charts for all the countries in our sample. In Exhibit 7, we show the average drawdowns for developed markets and emerging markets. In order not to rely on a few big countries in each category, we have used equally weighted averages of both developed and emerging markets. It is interesting to note that emerging markets show only slightly higher drawdowns for a given valuation level than do developed markets.

Looking at the current valuation levels in different markets, it is interesting to observe the trade-off between expected returns and possible drawdown risks. In Exhibit 8, we show the expected real returns together with the average drawdown. The expected returns are from our model in Exhibit 3, and the average drawdown reflects the experience of the past five years, following CAPE valuations similar to today's current CAPE of ±10%.

The relationship is clear. Investors in markets with the lowest expected returns face the highest drawdown risk. In other words, in markets like those in the U.S. or Ireland it is highly likely that a buy-and-hold investor will experience

severe losses from current index levels. Or, as John Hussman put it, the returns of the next five years are already on the table now.

In fact, in the U.S., when the CAPE has been at levels comparable to today's, the average drawdown over the next five years has been an eye-watering 26%. We note, however, that this is a historical average. The most extreme drawdown came after the 1929 stock market crash when the market fell by 80%. Since 1900, there have been only two occasions when CAPE levels like today's were not followed by a drawdown of 15% or more: 1995 and 2003. In both instances, the market continued climbing for five more years, reaching even more exaggerated valuation levels, before crashing. We would add here that the 2008 financial crisis has already wiped out any profits made since 2003 and more.

We would also hasten to note that all is not bleakness on the world's equity stage. There are attractive markets in France, Belgium, Hong Kong, or Japan that combine appealing return opportunities with low drawdown risks. These are the markets long-term investors should focus on at the moment, in our opinion.

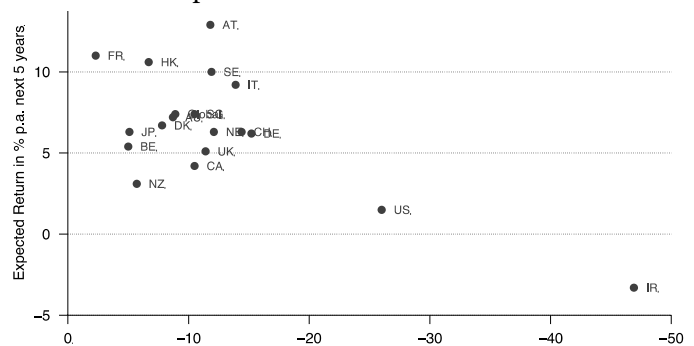


Exhibit 8 Risk and Return Outlooks for Developed Equity Markets, January 31, 2015

Source: Wellershoff & Partners

Note: AU = Australia, AT = Austria, BE = Belgium, CA = Canada, DK = Denmark, FR = France, DE = Germany, HK = Hong Kong, IR = Ireland, IT = Italy, JP = Japan, NE = Netherlands, NZ = New Zealand, SG = Singapore, SE = Sweden, CH = Switzerland, UK = United Kingdom, US = United States, Global = Developed markets globally.

In emerging markets, the relationship between expected returns and future drawdown risks are similar. We have restricted our sample in Exhibit 9 to countries where current valuations have been experienced at least in ten different months in the past. In this way, we attempt to create a meaningful average for the drawdown risks inherent in these markets.

Unfortunately, this approach eliminated such emerging markets heavyweights as Brazil, China, and Russia. But the remaining countries paint a diverse picture that is itself a cautionary reminder for investors to be selective.

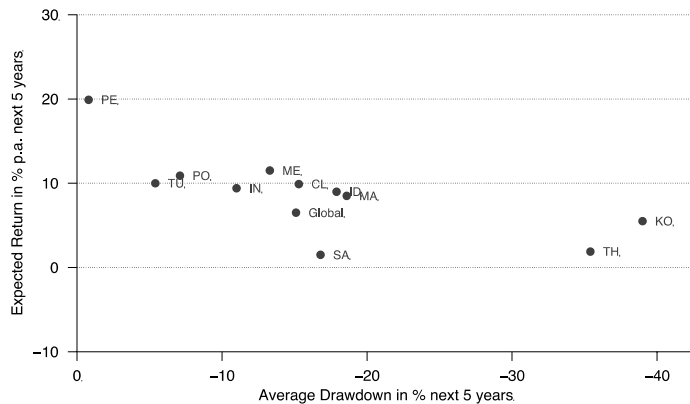


Exhibit 9 Risk and Return Outlooks for Emerging Markets, January 31, 2015

Source: Wellershoff & Partners

Note: CL = Chile, IN = India, ID = Indonesia, KO = Korea, MA = Malaysia, ME = Mexico, PE = Peru, PH = Philippines, PO = Poland, SA = South Africa, TH = Thailand, TU = Turkey, Global = Emerging markets global.

Turkey, Poland, and Peru each have attractive expected returns and show valuation levels that in the past led to no or only very small drawdowns, on average. The more developed emerging markets of Thailand and Korea, and also the Philippines, trade at valuation levels that in the past were followed by average drawdowns of 35% or more. The risks of substantial loss of capital in these markets are high.

Conclusions

We have updated our predictions for expected real returns in 38 equity markets around the world. Compared to our previous assessment in September 2013, expected returns in developed markets have declined somewhat, particularly in the U.S. and Ireland, while they have increased in emerging markets. Overall, however, the landscape of expected long-term returns remains largely unchanged.

That said, at current valuation levels the risk of significant capital loss in some markets is alarmingly high. Particularly in the U.S., current valuation levels have historically been followed by drawdowns of up to 80% in the subsequent five years. Going back to 1900, there has been only one instance when the valuation levels we see today were not followed by drawdowns of 15% or more over the subsequent five to six years. Thus, at least for the U.S. market, it seems fair to say that the risk of losing capital is substantial.

Other equity markets are more balanced in their outlook and particularly in Europe investors can still find attractive trade-offs between future expected returns and possible drawdowns. A similar situation persists in emerging markets, where very attractive investment opportunities are lumped together with highly risky investment propositions. We think investors will have to be even more selective over the next five years if they want to avoid losses of capital and, instead, realize satisfying returns.

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Authors' Bios



**Joachim Klement,
Chief Investment Officer**

Joachim Klement is a partner at Wellershoff & Partners., Ltd. He specializes in investment management, asset allocation advice, and the impact of personal values and investor psychology on investment decisions. He particularly emphasizes the impact of emotions on investor behavior and financial markets and helps wealth managers, asset managers, and family offices improve their investment processes and client services.

Before joining Wellershoff & Partners, Joachim Klement spent six years at UBS Wealth Management in Zurich, first as an investment consultant for institutional clients, and then as Head Asset Allocation Strategy and Head Equity Strategy.

Joachim Klement graduated from the Swiss Federal Institute of Technology (ETH Zürich) with a degree in mathematics and from the University of Hagen, Germany, with a degree in finance. Additionally, he is a CFA charter holder and a CFP® certificant.



**Oliver Dettmann,
Senior Investment Strategist**

Oliver Dettmann is project manager and senior investment strategist at Wellershoff & Partners Ltd. His expertise lies in business strategy for wealth management and asset management firms, multi-asset class product development and investment processes. He also specializes in strategic and tactical asset allocation of equity markets.

Prior to joining Wellershoff & Partners, Oliver Dettmann worked for UBS Wealth Management as an investment strategist analyzing European and emerging equity markets. In addition, he worked as a business consultant in the Group Strategy team of UBS and as an equity analyst for Deka Investment GmbH in Frankfurt. Oliver Dettmann studied finance and econometrics in Berlin and Copenhagen and graduated with a degree in economics from the Freie Universität Berlin. He is a CFA charterholder.



Why is the Shiller CAPE So High?

www.philosophicaleconomics.com

The issue of the usefulness of CAPE as a timing signal and whether its historical values can be used in the current economic and financial environment has received significant attention in academic and industry papers. The paper that follows was published on the blog <http://www.philosophicaleconomics.com> and is published here with the permission of the author. The blog contains several other posts on this topic.

This blog post provides a rather comprehensive discussion of why the current levels of CAPE might be so high. Of course, one obvious reason is that stock prices are too high by historical standards. However, as this post explains, there might be other reasons at work.

Hossein Kazemi, Editor

Introduction

Why is the Shiller CAPE so high? In the last several weeks, a number of prominent academics and financial market commentators have attempted to answer this question, including the inventor of the valuation measure himself, Nobel Laureate Robert Shiller. In this piece, I'm going to attempt to give a clear answer.

The piece has five parts:

1. In the first part, I'm going to explain why valuations in general are higher than they have been historically. It's not just the CAPE that's historically elevated; the simple TTM P/E ratio is also historically elevated, by a reasonably large amount.
2. In the second part, I'm going to highlight the main reason that the Shiller CAPE has risen relative to the simple TTM P/E over the last two decades: high real EPS growth. I'm going to introduce a schematic that intuitively illustrates why high real EPS growth produces a high Shiller CAPE.
3. In the third part, I'm going to explain how reductions in the dividend payout ratio have contributed to high real EPS growth. In discussing the dividend payout ratio, I'm going to present a different, potentially more accurate formulation of

the Shiller CAPE, a formulation that conducts the calculation based on total return instead of price. On this formulation, the Shiller CAPE falls by around 10%, from 26.0 to 23.5.

4. In the fourth part, I'm going to explain how a secular uptrend in profit margins has contributed to high real EPS growth over the last two decades. This effect is the most powerful of all, and is the reason why the Shiller CAPE and the TTM P/E have diverged in their valuation signals.
5. In the fifth part, I'm going to outline a set of possible future return scenarios that investors at current valuations can reasonably expect. Then, I'm going to identify the future return scenario that I find most credible.

Higher P/E Valuations Generally

It's important to note at the outset that the Shiller CAPE isn't the only price-to-earnings (P/E) metric that is currently elevated. The good-old-fashioned trailing twelve month (TTM) P/E ratio is also elevated. With the index at 2000 and 2Q TTM reported earnings per share (EPS) at 103.5, the current TTM P/E is 19.3 (the number doesn't change much if we use TTM operating earnings, since the economy is in expansion, and write-downs are no longer a big impact). The historical average for the TTM P/E is 14.6. So, on a simple TTM P/E basis, the market is already 33% above its historical average.

Note that I did not say that the market is 33% "overvalued" — to call the market "overvalued" would be to suggest that it *shouldn't* be at the valuation that it's at. This is too strong. Not only is it possible that the market *should* be at its current valuation, it's also possible that the market *should* be at a still *higher* valuation, and that it's headed to such a valuation.

Now, to the crucial point that market moralists consistently miss. The market's valuation does arise out of the application of any external standard for what "should" be the case.

Rather, the market's valuation arises as an inadvertent *byproduct* of the equilibration of supply and demand: the process through which the quantity of equity being supplied by sellers achieves an equilibrium with the quantity of equity being demanded by buyers. In a liquid market, the demand for equity must equal the supply on offer. "Price" is the factor that changes so as to cause the two to equal. In a normal, well-anchored market, higher prices lead to reduced demand and increased supply on offer, and lower prices lead to increased demand and reduced supply on offer. If, at a given market price, the demand for equity exceeds the supply on offer, the market price will rise, which will lower the demand and increase the supply on offer, pulling the two back into equilibrium. Similarly, if, at a given market price, the demand for equity falls short of the supply on offer, the market price will fall, which will increase the demand and reduce the supply on offer, again pulling the two back into equilibrium.

Right now, the price necessary to bring the demand for equity into equilibrium with the supply on offer happens to be higher, relative to earnings, than the price that successfully achieved the same equilibrium in the past. In a prior piece, I laid out a number of possible reasons for this shift. The most important reason has to do with expectations about future interest rates. Right now, the market's expectation is that future interest rates will be low — less than 2%, on average — for the next several decades, and maybe for the rest of time.

The interesting thing about markets is that investors in aggregate have to hold *every* asset in existence, including what is undesirable — in this case, low — return cash and fixed income. Obviously, investors are not going to want to hold low-return cash and fixed income in lieu of equities *unless* they expect that: (1) equities at current prices will *also* offer low future returns on the relevant long-term horizons, or (2) catalysts will emerge that will lead other investors to focus on the short-term and sell, leaving behind painful mark-to-market losses that those who are stuck in the market will have to endure, and, conversely, affording exciting "buying opportunities" that those who are out of the market will get to capitalize on.

We are at a point in the economic cycle where the fear of (2) on the part of those invested, and the hope for (2) on the part of those on the sidelines, is fading. As the economy strengthens in the presence of highly supportive Fed policy — policy that *everyone* knows will remain supportive for as far as the eye can see — those that are invested in the market are becoming less and less afraid of corrections, and those on the sidelines are growing more and more frustrated waiting in vain for them to happen. Crucially, those on the sidelines sense the growing confidence levels of their fellow investors, and are increasingly resigning themselves to the fact that the kinds of catalysts that might break that confidence, and produce meaningfully lower prices, are unlikely to emerge in the near term. Consequently, the market is slowly and painfully being pushed upward into the first condition, a condition where equity valuations rise until investors become sufficiently disenchanted with them that they willingly settle for holding low return cash and fixed income instead — not briefly, in anticipation of a correction that is about to happen, but for the *long haul*.

Some would say that market prices have gone too far, and that equities are now offering excess return relative to cash and fixed income — or even worse, a negative excess return. But those that reach this conclusion are estimating long-term equity returns using a method that makes aggressive assumptions about the trajectory of future profit margins, assumptions that will probably prove to be incorrect, if recent experience is any indication of what's coming.

Real EPS Growth: Impact on the Shiller CAPE

Returning to the Shiller CAPE, its current value is 26.0. Its long-term historical average (geometric) is 15.3. On a Shiller CAPE basis, the market is 70% above its long-term historical average. It follows that almost all of the Shiller CAPE's current elevation, 33% out of the overall 70%, can be attributed to the elevation of the simple TTM P/E measure.

QUARTER END	OPERATING EARNINGS PER SHR (ests are bottom up)	AS REPORTED EARNINGS PER SHR (ests are bottom up)	OPERATING EARNINGS PER SHR (ests are bottom up)	OPERATING EARNINGS P/E (ests are bottom up)	AS REPORTED EARNINGS P/E (ests are bottom up)	OPERATING EARNINGS P/E (ests are bottom up)	-12 MONTH EARNINGS PER SHARE-			
							OPERATING EARNINGS (ests are bottom up)	AS REPORTED EARNINGS (ests are bottom up)	OPERATING EARNINGS (ests are bottom up)	
ESTIMATES										
12/31/2015	\$36.43	\$33.40	\$36.24	14.68	15.09	14.70	\$136.04	\$132.30	\$135.83	
9/30/2015	\$34.27	\$33.80	\$35.01	15.14	15.65	15.27	\$131.90	\$127.60	\$130.73	
6/30/2015	\$33.60	\$32.80	\$33.21	15.63	16.22	15.83	\$127.75	\$123.10	\$126.16	
3/31/2015	\$31.74	\$32.30	\$31.38	16.16	16.98	16.31	\$123.59	\$117.56	\$122.39	
12/31/2014	\$32.59	\$28.70	\$31.14	16.76	18.13	16.87	\$119.17	\$110.13	\$118.33	
09/30/2014	\$30.12	\$29.30	\$30.43	17.34	18.50	17.30	\$115.13	\$107.91	\$115.44	

Exhibit 1 Operating Earnings Estimates and as Reported Earnings per Share and P/E multiples from September 2014 to December 2015

Source: Author's calculations

This fact usually gets missed in discussions about the CAPE because market participants tend to analyze the market's valuation in terms of forward earnings estimates. On the most recent estimates for year-end 2015, the market's P/E is 15.1, a number almost perfectly in-line with the historical average. But this number is pure fantasy.

For the number to actually be achieved, the S&P will need to generate \$132.30 in reported earnings for 2015 — a growth of almost 30% over the next 16 months, off of earnings and profit margins that are already starting at extreme highs. How exactly will this super growth be achieved? Will S&P 500 revenues — and the overall U.S. GDP which they track — see 30% nominal growth over the next year and a half? Are profit margins going to rise by 30%, from 10% to 13%? Macroeconomically, the estimate makes no sense.

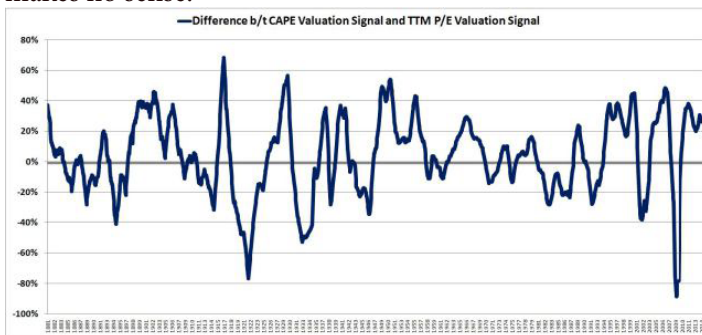


Exhibit 2 Difference Between Cape Valuation Signal and TTM P/E Valuation Signal

Source: Author's calculations

Now, let's compare the valuation signal of the Shiller CAPE to the valuation signal of the simple TTM P/E across history.

Exhibit 2 shows the percent difference between the CAPE valuation signal (the ratio of the CAPE to its historical average) and the TTM P/E valuation signal (the ratio of the TTM P/E to its historical average) from 1881 to 2014:

When the blue line is positive, the CAPE is calling the market more expensive than the TTM P/E. When the blue line is negative, the CAPE is calling the market cheaper than the TTM P/E. Right now, the CAPE is calling the market more expensive than the TTM P/E, but not by an extreme amount — the difference between the two metrics is in-line with the difference seen during other periods of history.

With the exception of the large write-down-driven gyrations of the last two recessions, you can see that over the last two decades, the CAPE has consistently called the market more expensive than the TTM P/E. But that hasn't always been the case. For much of the 1980s and early 1990s, the tables were turned; the CAPE depicted the market as being cheaper than the TTM P/E.

Now, why does the CAPE sometimes depict the market as more expensive than the TTM P/E, and sometimes cheaper? The main reason has to do with the rate of real EPS growth over the trailing ten-year period. Recall that the Shiller CAPE is calculated by dividing the current real price of the index by the average of each month's TTM EPS going back 10 years (or 120 months). When the real TTM EPS has grown significantly over the trailing ten-year period, this average tends to deviate by a larger amount from the most recent value — the value that is used to calculate the TTM P/E.



Exhibit 3 Comparison of High Real Growth to Low Real Growth in Terms of TTM P/E and Associated CAPE

Source: Author's calculations

The point can be confusing, so I've attempted to concretely illustrate it with Exhibit 3.

Consider the high real growth scenario on the left. Real EPS grows from \$100 to \$200 over a ten-year period. The average of real EPS comes out to \$150, relative to the most recent real TTM EPS number of \$200. The difference between the two, which drives the difference between the valuation signals of the CAPE and the TTM P/E, is high, around 33%.

Now, consider the low real growth scenario on the right. Real EPS grows from \$100 to \$110 over a ten-year period. The average of real EPS comes out to \$105, relative to the most recent real TTM EPS number of \$110. The difference between the two, which drives the difference between the valuation signals of the CAPE and the TTM P/E, is low, around 5%.

As you can see, on a Shiller CAPE basis, the market ends up looking much cheaper in the low real growth scenario than in the high real growth scenario, even though the valuation is the same on a TTM basis. This result is not in itself a mistake — the purpose of the CAPE is to discount abnormal EPS growth that is at risk of being unwound going forward.

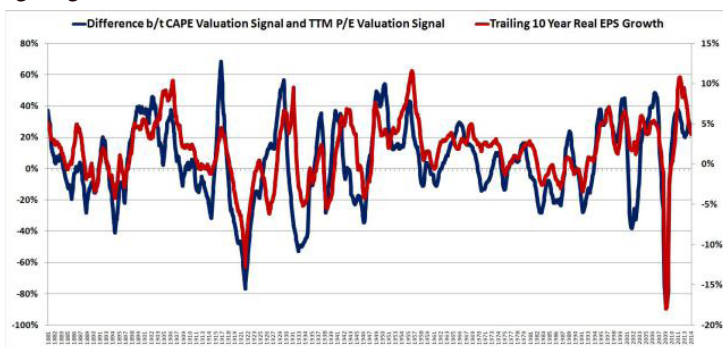


Exhibit 4 Valuation Signals of the CAPE and TTM P/E Compared to Trailing Ten-Year Real EPS Growth Rate

Source: Author's calculations

To further confirm the relationship, consider Exhibit 4, which shows the percent difference between the valuation signals of the CAPE and TTM P/E (blue) alongside the real EPS growth rate of the prior 10 years (red).

As expected, the two lines track very well. In periods of high real EPS growth, the market ends up looking more expensive on the CAPE than on the TTM P/E. In periods of negative real EPS growth, the market ends up looking less expensive on the CAPE than on the TTM P/E.

Over the last two decades, the S&P 500 has seen very high real EPS growth — 6% annualized from 1992 until today. For perspective, the average annual real EPS growth over the prior century, from 1871 to 1992, was only 1%. This rapid growth, along with changes to goodwill accounting standards that severely depressed reported earnings during and after the last two recessions (the latter of which is now out of the trailing ten-year average, and no longer affecting the CAPE), explains why the CAPE has been high relative to the TTM P/E.

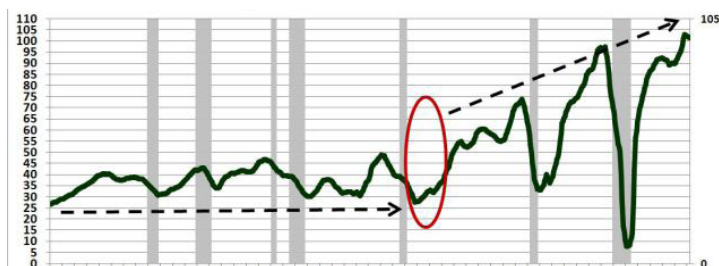


Exhibit 5 Real TTM Reported EPS for the S&P 500 from 1962 to Present, Noting Periods of Recession

Source: Author's calculations

But why has real EPS growth been so high over the last two decades? Before we explore the reasons, let's appraise the situation with an exhibit (5) of real TTM reported EPS for the S&P 500 from 1962 to present, with the period circa 1992 circled in red.

Surprisingly, from 1962 to 1992, real TTM EPS growth was zero. For literally 30 years, the S&P produced no *real* fundamental return, outside of the dividends that it paid out. But since then, real EPS growth has boomed. From 1992 until 2014, S&P earnings have quadrupled in real terms. Why has real EPS growth picked up so much in the last two decades? There are two main reasons, which we will now address.

Changes in the Dividend Payout Ratio

The first reason, which is less impactful, has to do with changes in the dividend payout ratio. In a prior piece it was discussed that dividends and growth are fungible. If the corporate sector lowers its dividend payout ratio to fund increased internal reinvestment (capex, M&A, buybacks), real EPS growth will rise. If it lowers its internal reinvestment (capex, M&A, buybacks) to fund an increase in dividends, real EPS growth will fall. Assuming that the market is priced at fair value, and that the return on equity stays constant over time, the effects of the change will cancel, so that shareholders end up with the same return.

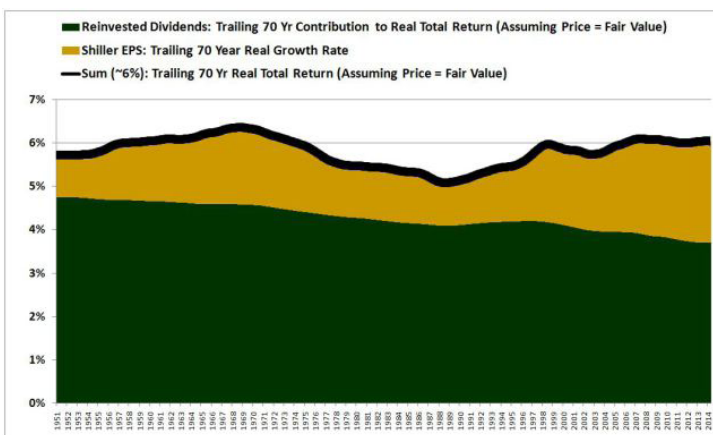


Exhibit 6 Real Return Contribution from Reinvested Dividends Compared to Return Contribution from Real EPS Growth Rate Noting the Real Total Return Over Time
Source: Author’s calculations

Exhibit 6 illustrates the phenomenon. Over the long-term, the real return contribution from dividends (green) can rise or fall, but it doesn’t matter — the return contribution from real EPS growth (gold) shifts to offset the change, and keep the overall shareholder return constant (historically around 6%, assuming prices start out at fair value).

Now, we know that the dividend payout ratio for U.S. equities has fallen steadily since the late 19th century, and therefore we should expect real EPS growth now to be higher than in the past. Exhibit 7 shows the trailing ten-year average dividend payout ratio for the S&P 500, from 1881 to 2014.

But how much of a difference does the change in the dividend payout ratio make, as far as real EPS growth and the Shiller CAPE are concerned?

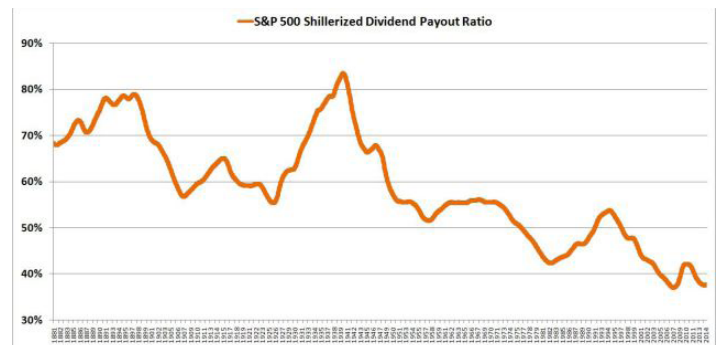


Exhibit 7 S&P 500 Shillerized Dividend Payout Ratio Over Time
Source: Author’s calculations

The question is hard to answer. One thing we can do to get an idea of the size of the difference is to build a CAPE using a total return index instead of a price index. Using a total return index instead of a price index puts all dividend payout ratios on the same footing.

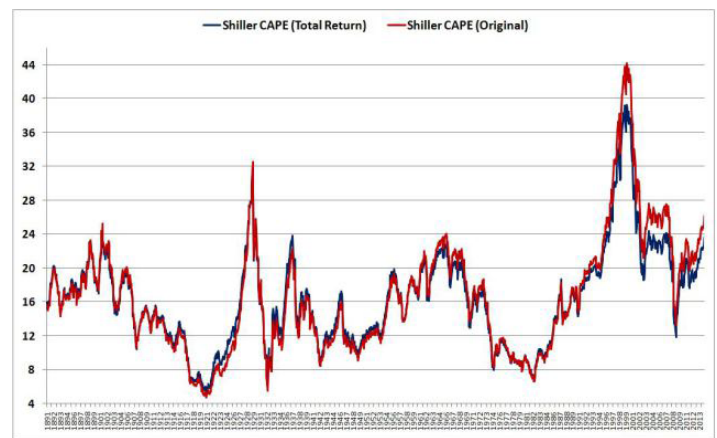


Exhibit 8 Shiller CAPE as a Total Return Index Compared to a Price Index from 1891 to 2014
Source: Author’s calculations

Exhibit 8 shows the Shiller CAPE constructed using a total return index (blue) instead of a price index (red), from 1891 to 2014.

[Details: The Total Return Shiller CAPE is constructed as follows. Start with one share of the S&P 500 at the beginning of the data set. Reinvest the dividends earned by that share, and each subsequent share, as they are paid out. The result will be an index of share count that grows over time. To calculate the Total Return Shiller CAPE, take the current real price times the current number of shares, and divide that product by the average of the real price times the number of shares that were owned in each month, going back ten years or 120 months. Then normalize the result for apples-to-apples numeric comparison with the original Shiller CAPE.

Note: The flaw in this measure is that it quietly rewards markets that are overvalued and quietly punishes markets that are undervalued. The dividend reinvestment in overvalued markets gets conducted at less accretive prices than the dividend reinvestment in undervalued markets, causing the metric to shift slightly in the lower direction for overvalued markets, and slightly in the upward direction for undervalued markets. To address this problem, we could hypothetically conduct the dividend reinvestments at “fair value” instead of at the prevailing market price — but we don’t yet have an agreed-upon way of measuring fair value! We’re trying to *build* such a measure — a measure that appropriately reflects the impact of dividend payout ratio changes.]

With the S&P at its current level of 2000, the Total Return Shiller CAPE comes in at around 23.5 — 10% below the original Shiller CAPE, which is currently at 26.0. A 10% difference isn’t huge, but it still matters.

Changes in the Profit Margin

The bigger factor underlying the strong growth in real EPS over the last two decades, and the associated upward shift in the Shiller CAPE relative to the TTM P/E, has been the trend of increasing profit margins — a trend that began in 1992, and that continues intact to this day. To understand the powerful effect that changes in profit margins can have on real EPS growth, let’s take a moment to consider the drivers of aggregate corporate EPS growth in general.

There are three ways that the corporate sector can grow its EPS in aggregate:

- **Inflation:** The corporate sector can continue to make and sell the same quantity of things, but sell them at higher prices. If profit margins remain constant, then the growth will translate *entirely* into inflation. There will not be any income growth of any kind — no real EPS growth, no real sales growth, no real wage growth — because the price index will have shifted by the same nominal amount as each type of income.
- **Real Sales Growth:** The corporate sector can make and sell a larger quantity of things at the same price. If

profit margins remain constant, the result will be growth in each type of income: real EPS growth, real sales growth, and real wage growth. Each type of income will rise proportionately amid a constant price index, allowing the lot of every sector of the economy to improve in a real, sustainable manner.

- **Profit Margin Shift:** The corporate sector can make and sell the same quantity of things at the same price, but then claim a larger share of the income earned from the sale. The shift will show up entirely as real EPS growth, but with no real sales growth, and negative real wage growth — “zero-sum” growth for the larger economy.

[Note: the corporate sector can also grow its nominal EPS by shrinking its outstanding share count through M&A and share buybacks. But this “float shrink” needs to be funded. If it is funded with money that would otherwise have gone to dividends, then we’re back to the fungibility point discussed earlier — on net, shareholders will not benefit. If it is funded from money that would otherwise go to capex, then the effects of the reduction in share count will be offset by lower real earnings growth, and shareholders again will be left no better off. If it is funded with an increased accumulation of debt — a “levering up” of corporate balance sheets — the assumption is that there will be a commensurate payback when the credit cycle turns, a payback in which dilutions, unfavorable financing agreements, and defaults undo the accretive effects of the prior share count reduction. This story is precisely the one that unfolded from 2004 to 2008, and then from 2008 to 2010 — a levered M&A and buyback boom significantly reduced the S&P share count, and then the dilutions of the ensuing recession brought the share count back to roughly where it began.]

In reality, aggregate corporate EPS tends to evolve based on a combination of all three processes occurring at the same time. Some inflation, some real sales (output) growth, and some shift in the profit margin (cyclical *or* secular — either can occur, since profit margins are not a reliably mean-reverting series).

The important point to recognize, however, is this: real sales growth for the aggregate corporate sector (real increases in the actual quantity of wanted stuff that corporations make and sell, as opposed to inflationary growth driven by price increases) is hard to produce in large amounts, particularly on a per share, after-dilution basis. For this reason, absent a profit margin change, it's difficult for real EPS to grow rapidly over time. Wherever rapid real EPS growth does occur, a profit margin increase is almost always the cause.

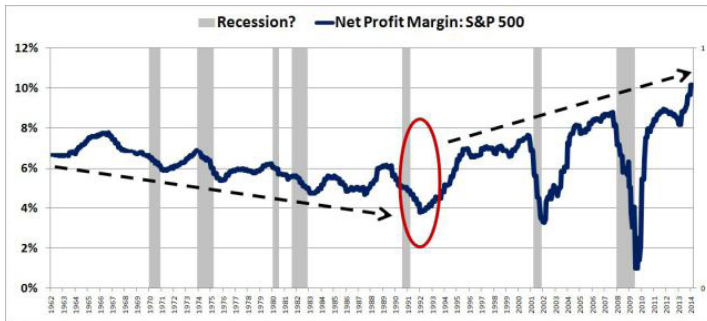


Exhibit 9 Net Profit Margin of the S&P 500 on GAAP Reported Earnings from 1962 to 2014

Source: Author's calculations

Not surprisingly, the real EPS *quadrupling* that began in 1992, and that has caused the Shiller CAPE to substantially increase in value relative to the TTM P/E, has primarily been driven by the profit margin upshift that started in that year and that continues to this day. In much the same way, the real EPS growth that investors suffered from 1962 to 1992, and that caused the market of the 1980s and early 1990s to look cheaper on a Shiller CAPE basis than on a TTM P/E basis, was driven primarily by the profit margin downshift that took place during the period.

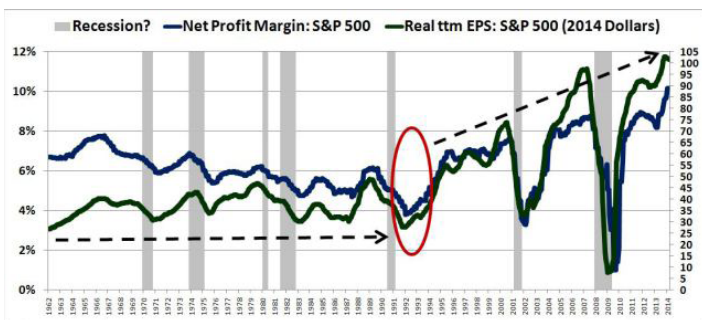


Exhibit 10 Net Profit Margin of the S&P 500 Compared to Real TTM EPS from 1962 to 2014

Source: Author's calculations

Exhibit 9 shows the net profit margin of the S&P 500 on GAAP reported earnings from 1962 to 2014, with the period circa 1992 circled in red.

Exhibit 10 superimposes real EPS (green) onto the profit margin (blue).

As you can see, profit margins began the period in 1962 at almost 7%, and bottomed in 1992 at less than 4%, leaving investors with real EPS growth over a period of roughly thirty years. From 1992 until today, profit margins rose from 4% to 10%, leaving investors with annualized real EPS growth of 6%, more than three times the long-term historical average (1871-2014), 1.8%.

Valuation bears have been warning about “peak profit margins” for four years now (and warned about them in the last cycle as well). But profit margins *keep* rising. In this most recent quarter, they reached a new record high, on top of the record high of the previous quarter, on top of the record high of the quarter before that. What's going on? When is this going to stop, and why?

Nobody knows the answer for sure — *certainly* not the valuation bears who have continually gotten the call wrong. But even the valuation bulls will have to acknowledge that the profit margin uptrend seen over the last two decades can't go on forever. It will have to eventually peter out — probably sooner rather than later. If and when that happens, real EPS growth will be limited to the contributions of real sales growth from reinvestment and float shrink from M&A and share buybacks. Neither phenomenon is capable of producing the kind of rapid real EPS growth that the S&P has seen over the last two decades (*especially* not the M&A and buybacks, which are occurring at lofty prices), and therefore the rate of real EPS growth should moderate, and the divergence between the Shiller CAPE and the TTM P/E should narrow.

Valuation: A Contingent Approach

In another piece, I argued that profit margins are the epicenter of the valuation debate. All of the non-cyclical valuation metrics that purport to show that the market

is egregiously overvalued right now rely on aggressive assumptions about the future trajectory of profit margins — assumptions that probably aren't going to come true. You can add the Shiller CAPE to that list, since its abnormal elevation relative to the TTM P/E is tied to the increase in profit margins that has occurred since the early-to-mid 1990s.

When investors discuss valuation, they often approach the question as if there were an objective, determinate answer. But there isn't. At best, valuation is a contingent judgement — a matter of probabilities and conditionalities: “if A, then B, then C, then the market is attractively valued,” “if X, then Y, then Z, then the market is unattractively valued.”

There are credible scenarios where the current market could end up producing low returns (and therefore be deemed “expensive” in hindsight), and credible scenarios where it could end up producing normal returns (and therefore be deemed “cheap” in hindsight, particularly relative to the alternatives). It all depends on how the concrete facts of the future play out, particularly with respect to earnings growth and the market multiple. That's why it's often best for investors to just go with the flow, and not fight trends based on tenuous fundamental analysis that will just as often prove to be wrong as prove to be right.

With respect to the market's current valuation and likely future return, let's dispassionately examine some of the possibilities:

Possibility #1: Moderately Bullish Scenario

The increase in profit margins that we've seen from the mid-1990s until now is retained going forward. The increase doesn't continue, but it also doesn't reverse. On this scenario, the market's return will be determined by the fate of the P/E multiple.

At 19.3 times reported TTM earnings, and 17.9 times operating TTM earnings, the market's P/E multiple is clearly elevated on a historical basis. But it doesn't *immediately* follow that the market will produce poor returns going forward, because the multiple might *stay* elevated.

The most likely scenario in which profit margins hold up is one where the corporate sector continues to recycle its capital into M&A, share buybacks, and dividends, while shunning expansive investment. Generally, expansive investment brings about increased inter-firm competition and increased strain on the labor supply, both of which exert downward pressure on profit margins. In contrast, capital recycling that successfully displaces expansive investment tends to bring about reduced inter-firm competition and reduced strain on the labor supply, both of which exert upward pressure on profit margins. The latter point is *especially* true of M&A, which has the exact *opposite* effect on competition as expansive investment.

In a low-growth, low-investment, high-profit-margin world, where incoming capital is preferentially recycled into competition-killing M&A and float-shrinking share repurchases rather than deployed into the real economy, interest rates will probably stay low. The frustrated “reach for yield” will remain intact, keeping the market's P/E elevated (or even causing it to increase *further*). If the market's P/E stays elevated, there is no reason why the market can't produce something close to a normal real return from current levels — a return on par with the 6% real (8% to 10% nominal) that the market has produced, on average, across its history. Relative to the opportunities on offer in the cash and fixed income spaces, such a return would be extremely attractive.

Now, even if the current market — at a TTM P/E of 19.3 times reported earnings and 17.9 times operating earnings — is set to experience multiple contraction and lower-than-normal future returns, it doesn't follow that the market's current valuation is wrong. The market should be priced to offer historically low returns, given the historically low returns that cash and fixed income assets are set to offer over the next several decades. Indeed, if the market were *not* currently priced for historically low returns, *then* something would be wrong. Investors would *not* be acting rationally, given what they (should) know about the future trajectory of monetary policy.

Possibility #2: Moderately Bearish Scenario

The increase in profit margins is not going to *fully* hold. Some, but not all, of the profit margin gain will be given back. On this assumption, it becomes harder to defend the market's current valuation.

Importantly, sustained reductions in the profit margin — as opposed to a temporary drop associated with recession — tend to occur alongside rising sales growth. In terms of the effect on EPS, rising sales growth will help to make up for some of the profit that will be lost. However, almost half of all sales growth ends up being inflation — the result of price increases rather than real output increases. With inflation comes lower returns in terms (the only terms that matter), and also, crucially, a tighter Fed. If the Fed gets tighter, a TTM P/E of 19.3 will be much harder to sustain. The market will therefore have to fight two headwinds at the same time — slow EPS growth due to profit margin contraction *and* a return drag driven by multiple contraction. Returns on such a scenario will likely be weak, at least in real terms.

But they need not be disastrously weak. In another piece, I argued that returns might end up being 5% or 6% nominal, or 3% or 4% real. Of course, that piece assumed a starting price for the S&P 500 of 1775. Nine months later, the index is already at 2000. The estimated returns have downshifted to 3% or 4% nominal, and 1% or 2% real. Such returns offer almost no premium over the returns on offer in the much — safer fixed income world, and therefore, if any kind of profit margin contraction is coming, then the current market is probably pushing the boundaries of defensible valuation.

Possibility #3: Aggressively Bearish Scenario

Profit margins are going to fully revert to the pre-1990s average. On this assumption, the market is *obscenely, outrageously* expensive. If, at a profit margin of 9% to 10%, EPS comes in at \$103.5, and if profit margins are headed to the pre-1990s average of 5% or 6%, then the implication is that EPS is headed to around \$55 (a number that will be adjusted upward in the presence of sales growth and inflation — but only as time passes). Instead of a historically elevated TTM P/E of 19, the market would be sitting at a true, normalized TTM P/E of around 36.

Obviously, if margins and earnings were to suddenly come apart, such that the S&P at 2000 shifts from being valued at 19 times earnings to being valued at 36 times earnings, as opposed to the “15 times forward” that investors think they are buying into, prices would suffer a huge adjustment. If the shift were to happen quickly, over a short number of months or quarters, the market would almost certainly crash.

But even if the shift were to happen very slowly, such that EPS simply stagnates in place without falling precipitously, real returns over the next decade, and maybe even the next two or three decades, would still end up being very low — zero or even negative. The profit margin contraction would eat away at real EPS growth, as it did from the 1960s until the 1990s. Even nominal returns over various relevant horizons might end up being zero or negative.

Possibility #4: Aggressively Bullish Scenario

Profit margins are going to continue to increase. Now, before you viscerally object, ask yourself: Why can't that happen? Why can't profit margins rise to 12% or 14% or even higher from here? The thought might sound crazy, but how crazy would it have sounded if someone were to have predicted, in 1992, with profit margins at less than 4%, that twenty years later profit margins would be holding steady north of 10%, more than 200 basis points above the previous record high?

If profit margins are set to continue their upward increase, then the market might actually be cheap up here, and produce above average returns going forward. The same is true if P/E multiples are set to continue their rise — a possibility that should not be immediately dismissed. As always, the price of equity will be decided by the dynamics of supply and demand. So long as we continue to live in a slow growth world aggressively backstopped by ultra-dovish Fed policy, a world where investors *want* and *need* a decent return, but can only get one in equities, there's no reason why the market's P/E multiple can't get pushed higher, to numbers above 20 or even 25. It certainly wouldn't be the first time.

Going forward, all that is necessary for such an outcome to be achieved is for investors to experience a re-anchoring of their perceptions of what is “appropriate” — to become more tolerant and less viscerally afraid of those kinds of valuation levels. If the present environment holds safely for a long enough period of time, such a re-anchoring will occur naturally, on its own. Indeed, it’s occurring *right now*, as we speak. Three years ago, nobody would have been comfortable with the market at 2000, 19 times trailing earnings. People were acclimatized to 12, 13, or 14, as “reasonable” multiples, and were even seriously debating whether multiples below 10 were going to become the post-crisis “new normal.” The psychology has obviously shifted since then, and could easily continue to shift.

As for me, I tend to lean towards option #2: a moderately bearish outcome. I’m expecting weak long-term returns, with *some* profit margin contraction as labor supply tightens, and *some* multiple contraction as Fed policy gets more normal — but not a return to the historical averages. Importantly, I don’t foresee a realization of the moderately bearish outcome any time soon. It’s a ways away.

I expect the market to eventually get slammed, and pay back its valuation excesses, as happens in every business cycle. If this occurs, it will occur in the next recession, which is when valuation excesses generally get paid back — not during expansionary periods, but during contractions. The next recession is at least a few years away, maybe longer, and therefore it’s too early to get bearish. Before sizeable recession becomes a significant risk, the current expansion will need to progress further, so that more economic imbalances are built up (more misallocations in the deployment of the economy’s labor and capital resources), excesses that provoke rising inflation, and that get pressured by the monetary policy tightening that occurs in response to it.

In the meantime, I expect the market to continue its frustrating and painful grind higher, albeit at a slower pace, offering only small pullbacks in response to temporary scares. Those who are holding out for something “bigger” are unlikely to be rewarded any time soon.

Given the headwinds, I think the long-term total return — through the end of the current business cycle — will be around 1% to 2% real, 3% to 4% nominal. Poor, but still better than the other options on the investment menu. An investor’s best bet, in my view, would be to underweight U.S. equity markets in favor of more attractively priced alternatives in Europe, Japan, and the Emerging Markets.

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On the Possible Impact of a Commodity Transaction Tax on India's Commodity Derivatives: An Empirical Study

Sanjay Sehgal

Professor, Department of Financial Studies at the University of Delhi

Wasim Ahmad

Ph.D. candidate, University of Delhi and National Institute of Public Finance and Policy (NIPFP)

Introduction

One of the primary objectives of the development of futures markets is to promote fair price discovery of traded assets and to provide better hedging opportunities to investors. In the literature, there are two main issues that have been explored deeply in the case of commodity markets: the analysis of the price discovery process and the examination of volatility spillovers. Price discovery in the futures market implies the lead-lag relationship between futures and spot prices (see Tse, 1999; Zhong et al., 2004). Volatility spillover helps in investigating the flow of the information transmission process. More specifically, volatility spillover helps the regulators and investors to understand the process through which volatility in one market spills over to another market. In the context of commodity markets, the role of futures market is important because it helps the buyers as well as the sellers to manage their risk efficiently; the futures market provides an abundant scope of better risk management practices through proper production planning, marketing, rationalization of transaction costs, and risk diversification (see Hardaker, 2006; Liu and An, 2011). In the context of emerging markets, the introduction of the futures contracts in commodity markets is a new phenomenon. In recent years, owing to strong upheavals in commodity markets, the role of futures prices in the information transmission process has been one of the main topics of debate and discussion among academia, researchers, and regulators (see Mahalik et al, 2010). Consequently, the examination of the role of the commodity futures markets has become one of the fertile research terrains.

India, being a major producer of almost all of the globally traded commodities, has undertaken various measures to develop an efficient and competitive commodity trading platform.¹ Commodity futures trading in India started in 2003. Since then, there has been a considerable increase in the volume of agricultural commodities trading (see Srinivasan, 2008). Due to strong policy support, India's commodity platforms have started to play an important

role in the information transmission process of various commodities such as bullion, metals, and energy products on international platforms. In its current market setting, the commodity market is regulated by Forward Market Commission, a statutory body that falls under the purview of the Ministry of Consumer Affairs. Commodity markets in India are classified under two categories. First, there are national level exchanges, including the National Commodity and Derivatives Exchange (NCDEX), Multi-Commodity Exchange (MCX), and National Multi-Commodity Exchange (NMCE). NCDEX is a dominant exchange in agriculture commodities and MCX leads in bullion, metals, and energy products. Second, are the Regional Exchanges, including the National Board of Trade (NBOB) and 20 other regional exchanges. At present, there are 22 exchanges operating in India that facilitate trading activities in approximately 110 commodity items.

During 2008 and 2009, in a significant policy step, the government of India proposed a commodity transaction tax (CTT) amounting to 0.017% of trading value in its budget. This has been regarded as detrimental for commodity market development, as it may increase the transaction costs by more than 950%.² However, after deliberations, the government restrained itself from imposing the CTT owing to its potentially adverse consequences. Imposition of the CTT may negatively affect trading volumes and increase price volatility, as investors look for higher pre-tax returns. In addition, there are concerns that CTT imposition could thwart full price discovery in commodity markets and might make risk hedging more expensive. Nevertheless, the high fiscal deficit in the past few years is forcing the Indian government to look for new sources of tax revenues like the proposed CTT. Recently, there has been considerable debate among academics and researchers about the possible imposition of the CTT in order to augment tax revenues despite the potentially distorting effects on market microstructure. The government may further argue that the CTT could help to curb noise traders' activities in commodity markets. However, the argument of curbing excess volatility seems vague because empirical

evidence suggests that there is no such outcome and that the imposition of a transaction tax would impact the value traders even more than the noise traders in the market (see Roll, 1989; Grundfest and Shoven, 1991; Kupiec, 1996). Even the high-powered Abhijit Sen Committee (2008) has not supported the speculative nature of futures trading in commodity market very strongly. Further, the increase in tax revenue is subject to the realization of trade after the imposition of CTT. It could lead to deterioration of the market due to flight of investment to other international exchanges in the pursuit of better profit with lower CTT. Hence, due to dwindling volume, tax collections would be much lower than anticipated (see Edwards, 1993; Umlauf, 1993; Habermeier and Kirilenko, 2003).

Taking the above discussion as a starting point, the present study attempts to examine the possible impact of the proposed commodity transaction tax on trading volume and volatility. In doing so, we will answer the two fundamental questions. First, is it an appropriate time to impose the CTT in India's commodity derivatives markets? Second, if the CTT is imposed, what will the impact be on the development of the commodity derivatives market? The outcomes of this study are expected to provide important guidance for policy makers and researchers in undertaking market development-oriented policy measures.

Related Literature on CTT Imposition: Global Experience

A limited number of studies has examined the impact of a transaction tax on stock as well as commodity exchanges across the globe and have provided valuable inputs for market development. The proponents of transaction tax are of the view that the imposition of a transaction tax adds value to the government's exchequer that has wider welfare implications, particularly in an emerging markets context (see Kiefer, 1990). It may also help the regulators to curb speculative activities by discouraging the noise traders owing to the increased cost of trading and decreased excess volatility (see Summers and Summers, 1989; Stiglitz, 1989). However, opponents of the tax argue that the welfare

dimensions of a transaction tax may be outweighed by its potential costs, as it will increase the cost of capital and may have a detrimental impact on trading volume, resulting in a significant reduction in market liquidity, while failing to reduce market volatility (see Grundfest and Shoven, 1991; Ericsson and Lindgren, 1992; Amihud and Mendelson, 1993; Kupiec, 1996; Saporta and Kan, 1997; Wang, Yau and Baptiste, 1997; Hu, 1998; Wang and Yau, 2000; Lo et al, 2004; Baltagi et al, 2006; Sahoo and Kumar, 2008 and 2011).

Some studies have empirically tested the impact of a transaction tax (security transaction tax, STT) on equity markets (see Umlauf, 1993; Saporta and Kan, 1997; Hu, 1998). With respect to the Taiwanese stock exchange, Chou and Lee (2002) provide positive evidence of a reduction of tax on the market efficiency and liquidity of the Taiwanese Futures Exchange (TAIFEX). In a similar vein, Hsieh (2004) points out similar empirical evidence in the case of TAIFEX. These studies broadly conclude that transaction taxes have strong implications for the price discovery process, volatility, and liquidity.³ Using futures data, Aliber et al. (2003) find a positive relationship between transaction costs and volatility, and a negative relationship between trading volume and transaction costs in the foreign exchange futures market for the British Pound/USD, Japanese Yen/USD, and Swiss Franc/USD. Chou and Wang (2009) find an inverse relationship between a transaction tax and trading volume and a positive relationship between a transaction tax and bid-ask spreads. In the Indian context, a study by Sahoo and Kumar (2008 and 2011) provides an important insight about the possible role of commodity futures markets in price discovery and hedging opportunities. Using various models, their study investigates the possible impact of imposition of CTT on liquidity and volatility. They broadly conclude that there would be a negative impact on market liquidity and a positive impact on market volatility. Their results imply that the imposition of a CTT will lead to higher volatility and lower trading activity, which would affect market efficiency and liquidity considerably. Some studies have examined the impact of a transaction tax on governments' tax revenue. For

example, Edwards (1993) concludes that a tax on futures markets would not generate substantial tax revenues, but it would increase bid-ask spreads and might shift trading volume to overseas markets, weakening the international competitiveness of the U.S. commodity futures markets. In the case of Sweden, Umlauf (1993) finds that a transaction tax would have a negative impact on capital gains revenues.

It is apparent from the literature that there is mixed evidence on the exact implications of a transaction tax with regard to liquidity and volatility. There is very limited literature on this subject and hence it requires immediate attention to keep the discussion active in light of the increasing role of equity and commodity markets. Particularly, with respect to futures markets, very few studies have examined the role of a transaction tax on futures trading activities in an emerging markets context. Hence, the present study makes a novel attempt to examine the possible impact of a transaction tax on liquidity and volatility in an emerging market such as the Indian commodity futures market.

Empirical Methodology

We have broadly followed the methodology adopted by Aliber et al (2003), Wang and Yau (2000), and Sahoo and Kumar (2011). We have basically analyzed the impact of CTT on trading volume and volatility by utilizing the Vector Auto Regression-based Impulse Response Function (VAR-IRF). Following the above-mentioned studies, we consider Bid-Ask Spread (BAS) as a proxy for an increase in the transaction costs. Using intra-day data, we calculate the BAS as (ask-bid)/ (bid+ask). Under a multivariate framework, the VAR model helps in analyzing the inter-relationship among study variables by way of analyzing the changes in its own lags and changes in the lags of other variables. It is particularly useful when we are not sure about whether variables included in the model are endogenous or exogenous. Under an unrestricted VAR framework, we treat each variable symmetrically and do not impose any a priori restrictions on structural relationships.⁴

Sahoo and Kumar (2011) use the IRF to analyze the response of one particular variable to innovations in another variable. In a VAR model, IRF is used as a way to visually represent the behavior of one variable in response to the various shocks. In other words, it traces out the effects of a one-time shock to one of the innovations on current and future values of the other endogenous variables. We write our VAR specification as follows:

$$Z_t = A_1 Z_{t-1} + \dots + A_p Z_{t-p} + \varepsilon_t \quad (1)$$

Where Z_t is a vector of endogenous variables viz., [BAS, OI, TV and IV], A_p is a coefficient matrix with P lag. ε_t is a white-noise term. Before computing the IRF, we first confirm the co-movement behavior among study variables. In order to compute the IRF, we compute the orthogonalized residuals of VAR system through Cholesky decomposition.⁵ As mentioned above, the order of endogenous variables included in the model are BAS, OI, TV and IV. OI is the open interest, TV is the trading volume, and IV is the intraday volatility. Following Anderson et al. (2001), we calculate the intra-day volatility as:

$$\hat{\sigma} = \sqrt{\sum_{t=1}^n (r_t)^2} \times 100 \quad (2)$$

Where n is the number of trading day five minutes returns. $r_t = (\ln(M_t) - \ln(M_{t-1}))$, is the five-minute intra-day return. M is the midpoint bid and ask of the t^{th} trade at the end of the five-minute interval. This measure of volatility is used to capture the strong variability in the bid and the ask. BAS is expected to have a negative impact on trading volume because it represents a major component of the transaction cost. A higher transaction cost will discourage the market participants from trading in the market and, therefore, it can be considered a market-distorting factor (see Aliber et al, 2003; Chou and Wang, 2009). As discussed earlier, an increased transaction cost leads to an increase in volatility and a reduction in liquidity (see Sahoo and Kumar (2008).

	ADF					PP			
	TV	IV	BAS	OI		TV	IV	BAS	OI
Cardamom	-5.28**	-6.56**	-18.94**	-3.89*		-12.25**	-33.25**	-36.95**	-3.16*
Copper	-5.78**	-32.90**	-27.12**	-8.40**		-45.63**	-44.80**	-30.00**	-16.45**
Crude oil	-3.55**	-31.92**	-29.95**	-2.56		-26.67**	-36.38**	-36.47**	-11.44**
Gold	-6.51**	-36.04**	-35.98**	-10.16**		-41.20**	-36.04**	-35.98**	-19.61**
Refined Soya oil	-8.14**	-13.39**	-11.24**	-6.60**		-18.54**	-31.03**	-35.57**	-5.96**

Note: * and ** indicate the level of significance at 1% and 5% respectively.

Exhibit 1 Unit Root Results

Source: Author's calculations

Data

In this study, we have used intra-day futures price data and daily trading activity data (OI and TV) of MCX.

As mentioned previously, we calculate the BAS and IV from the intra-day (five-minute interval data). We have considered five commodities from four categories in our study: gold from precious metals, copper from basic metals, crude oil from energy products, cardamom, and refined soya oil from agricultural commodities.

All five commodities have a large share in the total trade at MCX. The sample period of each commodity is as follows: Cardamom (February 24, 2006 to December 31, 2010; 1,426 observations); Copper (January 4, 2006 to December 31, 2010; 1,486 observations); Crude oil (January 4, 2006 to December 31, 2010; 1,515 observations); Gold (January 4, 2006 to December 31, 2010; 1,478 observations); Refined Soya Oil (January 4, 2006 to December 31, 2010; 1,279 observations).

Empirical Results

Before the estimation of the VAR model, we check for the stationarity properties of each variable under consideration. Exhibit 1 shows the unit root results of the Augmented Dickey Fuller (ADF) and Phillips and Perron (PP) tests.

The results of the ADF test confirm that all variables are stationary at level except for the OI of crude oil, which is further confirmed by the PP test as being stationary. Since all sample series are I(0), we estimated the VAR model. Before estimating IRFs, we calculated the correlations among the residuals of the VAR equations. The correlation results confirm a negative relationship between BAS and TV and a positive relationship between BAS and IV (see Exhibit 2).

	BAS	OI	TV	IV
<i>Cardamom</i>				
BAS	1.00	-	-	-
OI	0.01	1.00	-	-
TV	-0.01	0.40	1.00	-
IV	-0.06	0.05	0.21	1.00
<i>Copper</i>				
BAS	1.00	-	-	-
OI	0.05	1.00	-	-
TV	0.00	0.17	1.00	-
IV	-0.06	-0.04	-0.02	1.00
<i>Crude oil</i>				
BAS	1.00	-	-	-
OI	-0.04	1.00	-	-
TV	-0.05	0.51	1.00	-
IV	-0.04	0.02	0.03	1.00
<i>Gold</i>				
BAS	1.00	-	-	-
OI	0.02	1.00	-	-
TV	-0.02	0.11	1.00	-
IV	-0.10	0.02	0.02	1.00
<i>Ref. Soya Oil</i>				
BAS	1.00	-	-	-
OI	-0.12	1.00	-	-
TV	-0.17	0.49	1.00	-
IV	0.19	-0.14	0.01	1.00

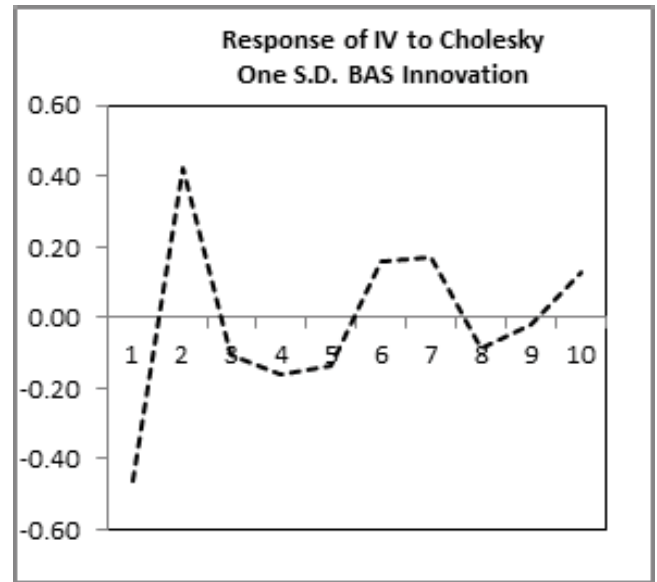
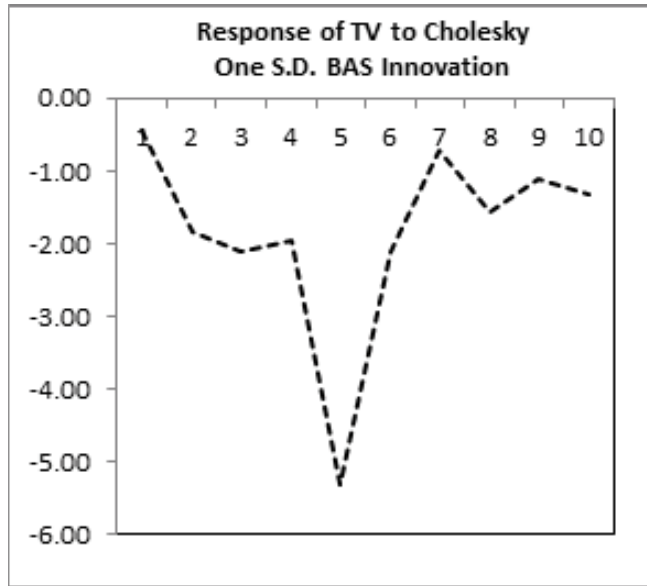
Exhibit 2 Correlation Matrix of VAR Residuals

Source: Author's calculations

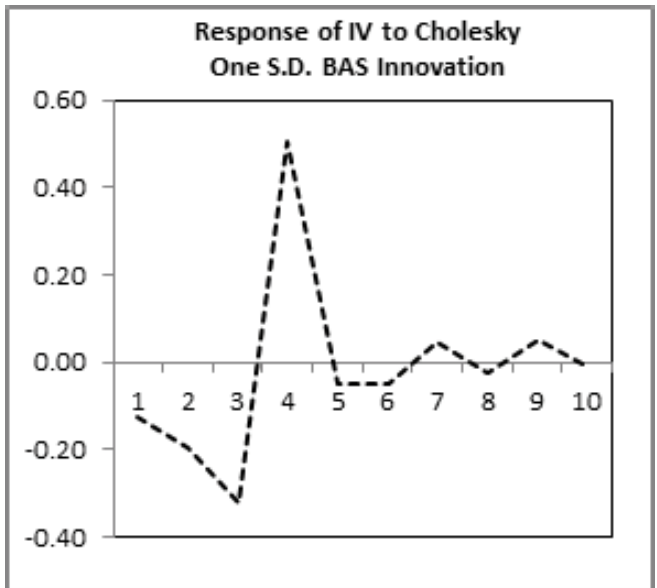
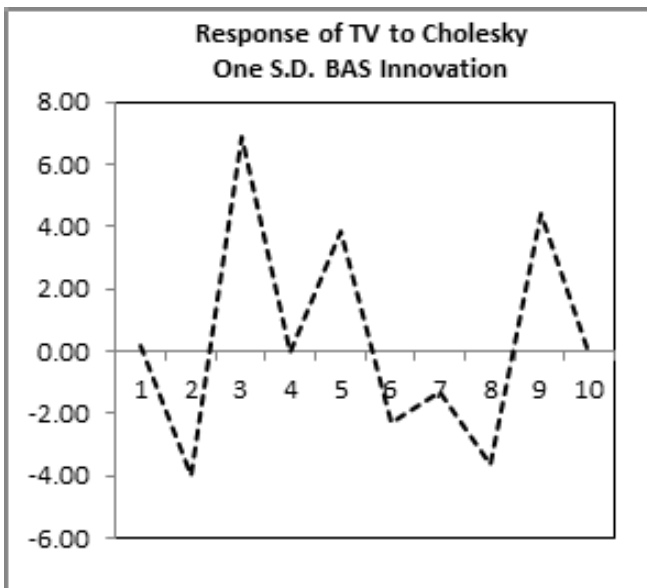
We further calculated the IRFs from the VAR estimation. The results of Cholesky decomposition based IRF up to 10 (days) periods for five commodities are shown in Exhibit 3. Since the objective of this study is to find out the impact of a tax increase on trading volume and volatility, the impulse responses of a one-standard deviation shock of BAS to TV and IV are presented. It can be observed that a one-standard deviation shock to BAS increases volatility and decreases volume for all of the commodities considered in this study. Analyzing

the commodities individually, we find that in the case of cardamom, a one-standard deviation shock of BAS in the first two periods leads to a decrease in trading volume for all ten periods, with the sharpest decline being observed between the fourth and seventh periods. These results imply that the exogenous shock in BAS leads to a considerable decrease in the volume of trading. It may be noted that with the exception of copper and gold, which exhibit fluctuating patterns in their trading volumes, a one-standard deviation shock leads to a decline in trading volume throughout the periods analyzed.

This implies that a one-standard deviation shock to BAS leads to a persistent decline in the trading volume of international as well as agricultural commodities. This finding lies in contrast to the findings of Sahoo and Kumar (2011). In terms of intraday volatility, the IRF graphs indicate more or less fluctuating behavior with frequent ups and downs, but all of the graphs are tilted towards positive volatility, with the exception of refined soya oil. The results suggest that a one-standard deviation shock to BAS induces intraday volatility for the first two periods and then depicts a cyclical trend of ups and downs.



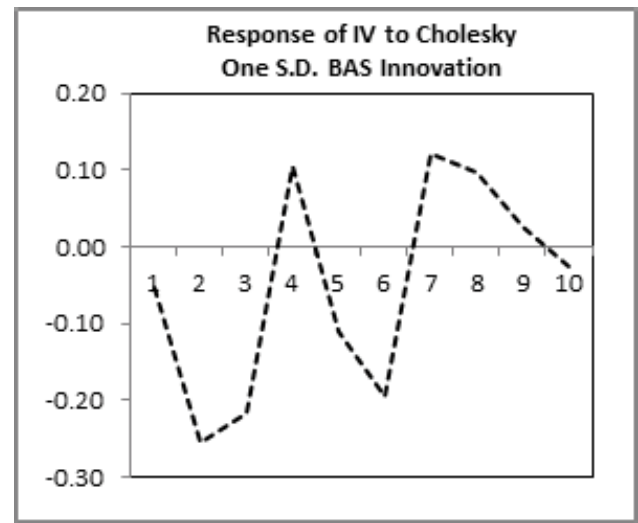
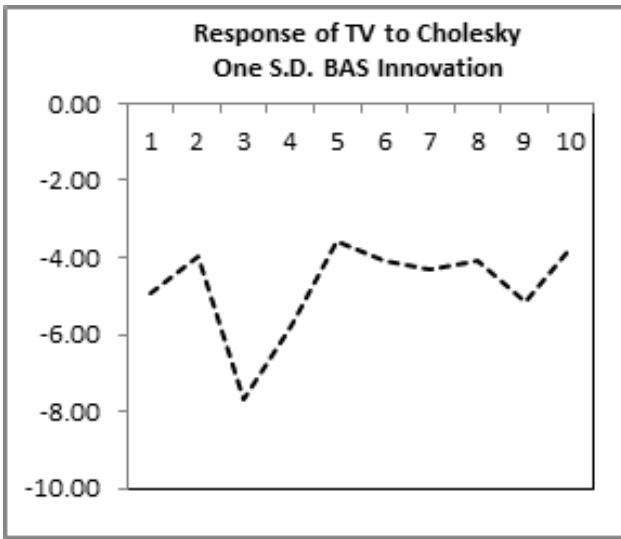
A. Cardamom



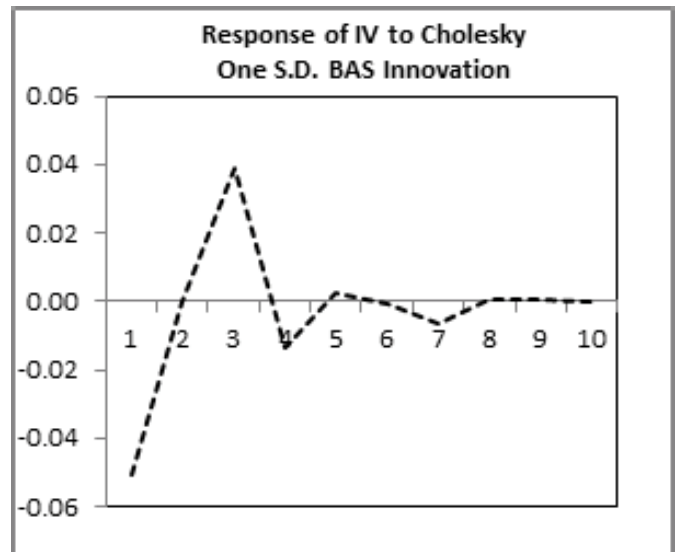
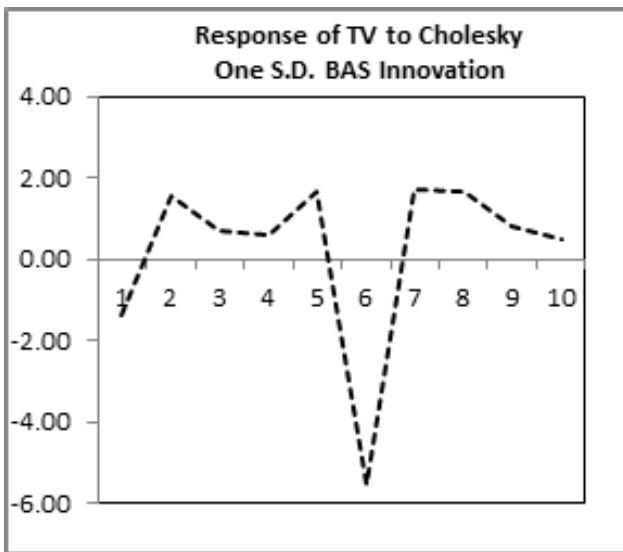
B. Copper

Exhibit 3 Impulse Response Results

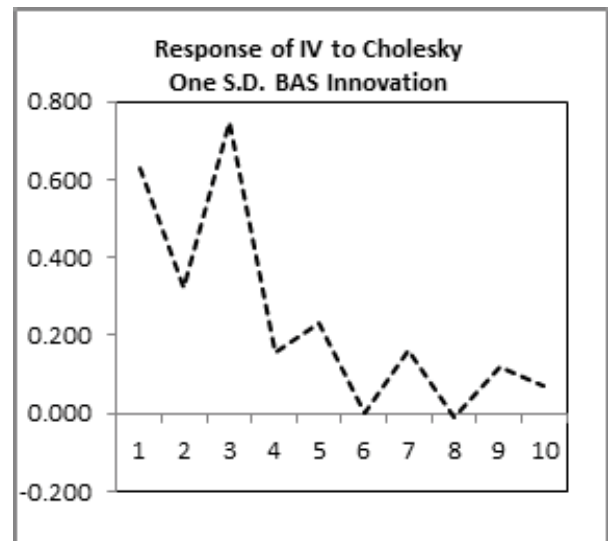
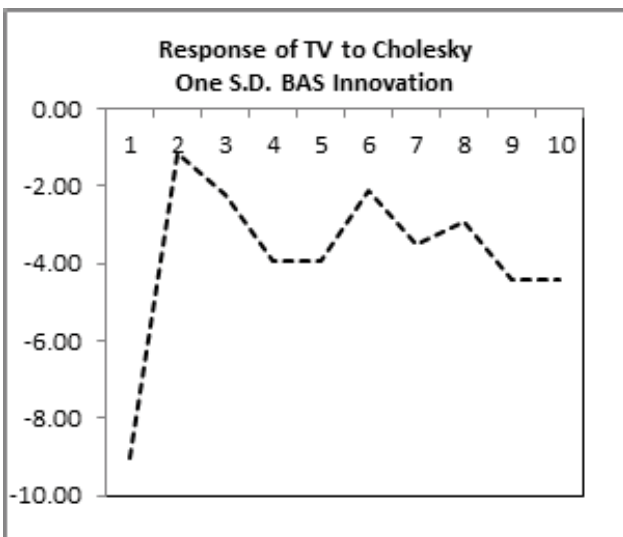
Source: Author's calculations



C. Crude Oil



D. Gold



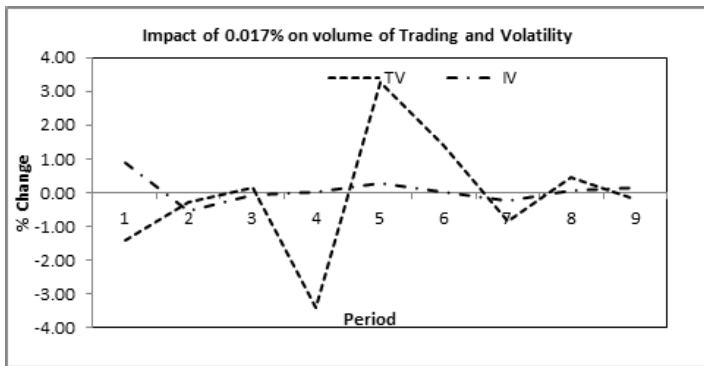
E. Ref. Soya Oil

Exhibit 3 (Continued) Impulse Response Results

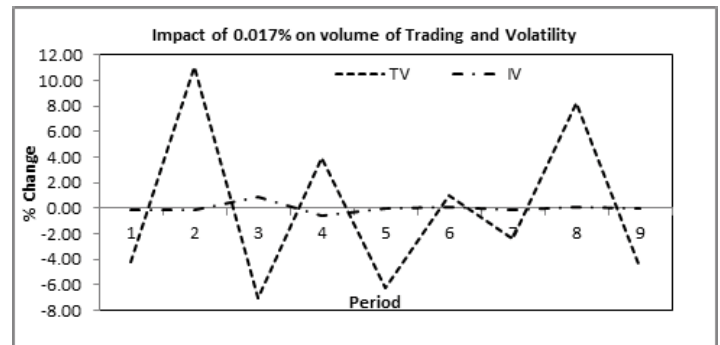
Source: Author's calculations

We now turn to analyze the impact of a probable CTT imposition of 0.017% on trading volume and intraday volatility. The results presented in Exhibit 4 indicate that the increase or decrease in either trading volume or intraday volatility is measured along the x-axis. It is observed that an increase in transaction tax would result in a considerable decrease in market depth and an increase in volatility. Broadly speaking, it can be inferred that the increase in transaction costs will certainly make the market less liquid and relatively more volatile. In the case of Cardamom, for example, an increase in the transaction tax would cause daily trading volume to decline by around 2 to 3% between the first and fourth periods. The highest decline is observed in the case of copper at about 4% in the first period and the highest decline throughout the examined period is observed in the case of gold at about 8%.

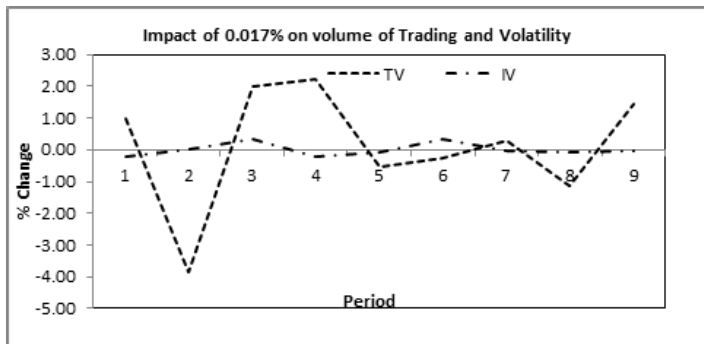
At the same time, these commodities have shown fluctuations in their trading volume, which sometimes increases between 3-8% in some periods. We conclude that the impact of a CTT is much more significant with regard to trading volume than to volatility for sample commodities. The impact of a tax increase appears to be stronger for internationally traded commodities and for agricultural commodities. Hence, any imposition of a transaction tax would result in a considerable decrease in market liquidity and an increase in volatility. The findings of this study are in agreement with the studies by Aliber, Chowdhry, and Yan (2003), and Chou and Wang (2006).



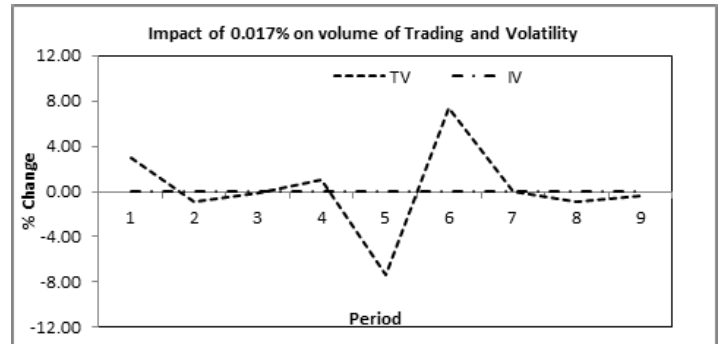
A. Cardamom



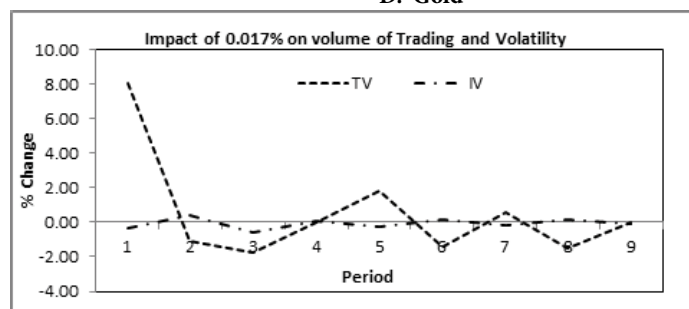
B. Copper



C. Crude oil



D. Gold



E. Refined Soya Oil

Exhibit 4 Impact of Tax Increase on Various Commodities

Source: Author's calculations

Conclusion and Discussion

In this paper, we have analyzed the relationship between bid-ask spreads, futures market trading activity, and intra-day futures price volatility for five commodities. Analyzing multivariate VAR based IRFs, we find a negative relationship between bid-ask spreads and trading volume and a positive relationship between bid-ask spreads and intraday volatility. We re-examined these relationships under the possible scenario of an imposition of a CTT set at 0.017%. The CTT will increase the transaction costs and therefore we factor it into the bid-ask spreads. We find that any such tax imposition will have an adverse impact on trading volumes by making them fluctuate to a great extent, although it may not significantly change the price volatility in those commodities. Our findings are in conformity with most international studies. We recommend that the government abstain from imposing CTT under the current scenario, when most global markets are removing and reducing taxes to make their trading platforms more competitive. In the era of low economic growth, any flight of capital from market platforms should be avoided. Further, owing to its adverse impact on market liquidity, the CTT will reduce the pricing efficiency of the Indian commodity market. The CTT could also make the price risk management exercise more expensive and, by impacting futures price volatility, might also create inflationary pressures due to the linkage between futures and spot price volatility. Price discovery and risk management are the primary functions of trading platforms and not merely vehicles for fiscal collections. Fiscal collections should be a byproduct of increased activity and a source of income and employment generation through these trading platforms. Therefore, it is advised that the government make an active effort in the development of commodity trading platforms in India by providing them with infrastructure and fiscal incentives and making these markets more price competitive. Being an emerging market, as well as a major producer and consumer of most commodities, India should realize the importance of taking a lead in an era of global markets.

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Endnotes

1. Sahoo and Kumar (2011) provide an excellent overview on the history of the Indian commodity market development and its status in the global marketplace.
2. The proposed tax is expected to increase the total transaction tax from Rs. 20 per million to Rs. 190.25 per million.
3. For further reference on this subject, review articles of Habermeier and Kirilenko (2003) and Norden (2009).
4. We have decided the optimal lag length based on the Akaike Information Criterion (AIC).
5. For further details, Enders (2004) could be a good reference in order to understand the VAR system.

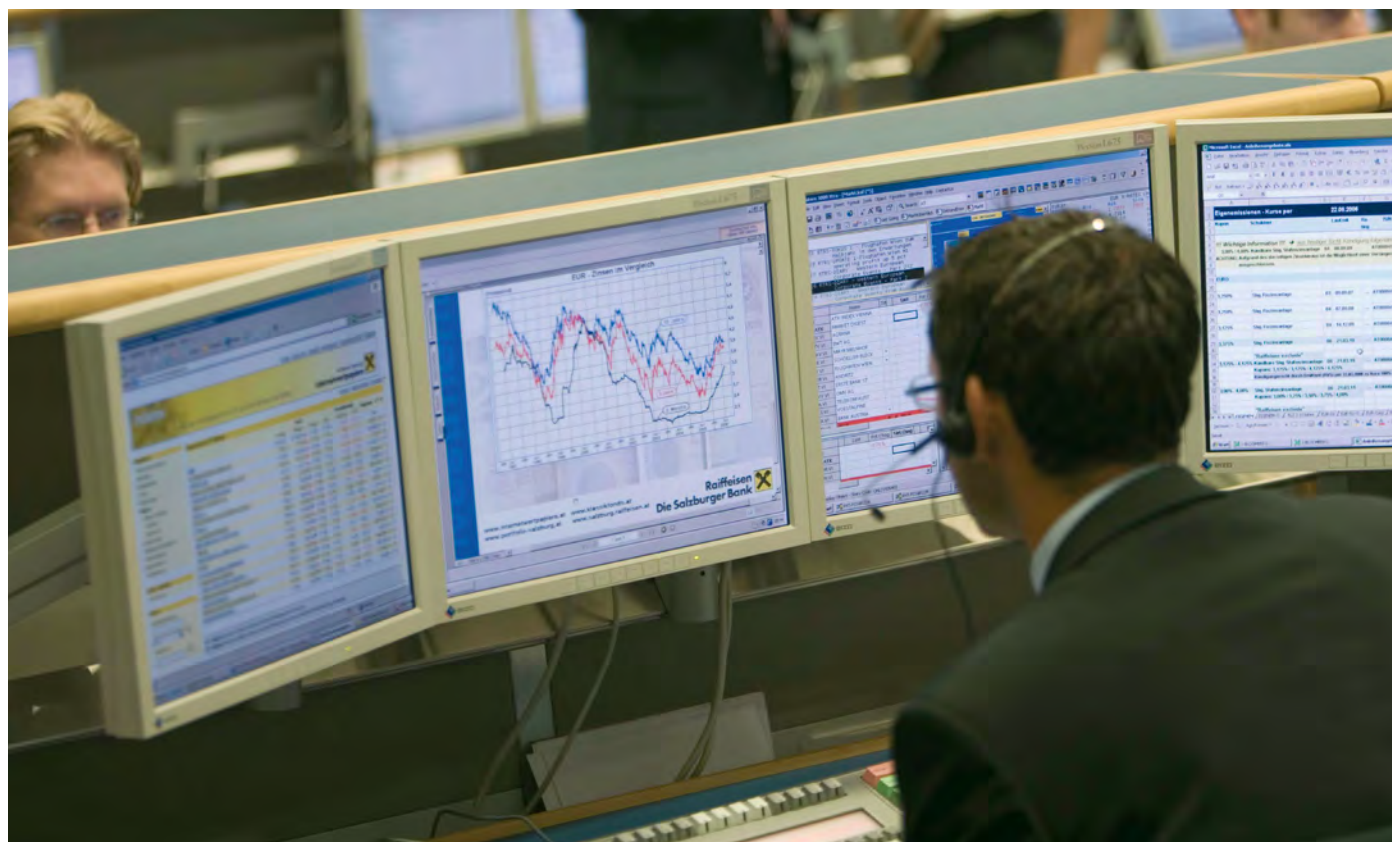
Authors' Bios

**Sanjay Sehgal**

Dr. Sanjay Sehgal is a Professor in the Department of Financial Studies and formerly Dean, Faculty of Business and Commerce, University of Delhi. He has a PhD in Finance from Delhi University and is a Postdoctoral Fellow at the London School of Economics, UK. His teaching and research areas are Security Valuation, Portfolio Management, and Corporate Finance. He has completed four major research projects, written one book, and authored more than 70 research papers which are published in refereed journals. He is a former member of the SEBI committee on investors' protection and education fund and is currently a member of the capital market committee, Institute of Company Secretaries, India. Prof. Sehgal is on the scientific committee of a leading European Business School and has delivered academic seminars at REIMS Management School and ESC PAU, France; Vancouver University, Canada; London School of Economics, UK; Latrobe University, Australia and Mount Batten Foundation, U.S. He was awarded the Commonwealth Fellowship, UK in 2001, the Indo-French Social Science Award in 2007, and the SRCC Illustrious Alumni Award in 2008.

**Wasim Ahmad**

Wasim Ahmad is a PhD candidate at the University of Delhi and National Institute of Public Finance and Policy (NIPFP), New Delhi, India. Prior to joining the PhD program, he worked as an economist in a hedge fund in India. He has also worked with ICRISAT and has actively participated in various research activities financed by prominent financial institutions and ministries in India. Currently, he is associated with the Department of Financial Studies, University of Delhi, New Delhi, India. He has conducted research in the fields of macroeconomics, international finance, and energy economics, with research papers published in several refereed journals including *Economic Modelling*, *Empirica*, *Journal of Economic Studies*, *International Journal of Emerging Markets*, *Studies in Economics and Finance*, and *OPEC Energy Review*.



Jason Scharfman on Hedge Fund Operational Due Diligence

Jason Scharfman is the Managing Partner of Corgentum Consulting, LLC. He is recognized as one of the leading experts in the field of operational due diligence and is the author of *Hedge Fund Governance: Evaluating Oversight, Independence, and Conflicts* (Academic Press, 2014), *Private Equity Operational Due Diligence: Tools to Evaluate Liquidity, Valuation and Documentation* (John Wiley & Sons, 2012), and *Hedge Fund Operational Due Diligence: Understanding the Risks* (John Wiley & Sons, 2008). Prior to founding Corgentum, Jason oversaw the operational due diligence function for the \$6 billion alternative investment allocation group Graystone Research at Morgan Stanley. He was also a senior member of a team that managed Morgan Stanley's hedge fund operational due diligence efforts, allocating in excess of \$13 billion to a firm-wide platform of over 300 hedge fund managers across multiple investment strategies. Prior to joining Morgan Stanley, he held positions at Lazard Asset Management, SPARX Investments and Research, and Thomson Financial.

Jason received a B.S. in Finance with an additional major in Japanese from Carnegie Mellon University, an M.B.A. in finance from Baruch College's Zicklin School of Business, and a J.D. from St. John's School of Law. He is admitted to the practice of law in New York and New Jersey. He has consulted with the U.S. House Judiciary Committee on hedge fund regulation, has provided training to financial regulators, and serves as an adjunct professor at New York University. Jason is a member of several industry organizations including the Information Systems Audit and Control Association (ISACA), the American Bar Association, the New York State Bar Association, and the New Jersey State Bar Association.

AIAR Content Director, Barbara J. Mack, had an opportunity to speak with Jason last winter.

BJM: In addition to managing Corgentum, you have done a lot of writing on the alternative investments industry; how did you take on this dual role as author and consultant?

JS: The area that I have focused on for the bulk of my career and the practice I run now is operational due diligence, and it is a very practical subject, but not one that has historically gotten a lot of academic attention. This pushed me to publish some studies and that led to my first book on hedge fund operational due diligence. From there (after 2008), the area was starting to receive more attention in the industry because investors were losing money and the Madoff scandal happened, along with a whole series of other failures in alternative investments, so these events all strengthened the need to focus on this subject.

BJM: You probably also think about compliance, which has an incredible trend in the job market right now...

JS: Compliance is a very interesting area — many people think it is a rote exercise in the sense that, for a U.S. fund you could ask, “What does the SEC say that I am supposed to do? OK, I'll check the boxes and move on.” Yet, within the confluence of operational due diligence and compliance, there is a lot more that can be done when you try to move beyond minimum regulatory standards and towards best practices. That is where the better compliance people are and where the better jobs are.

BJM: If you consider high profile case studies, you could look at the Flash Crash or Knight Capital and see, in the midst of all the rumors that get started, what actually happened once there is time for reflection and analysis of the event itself.

JS: Sure, with something like that, you could have the best tech team in the world, but the situation is two fold — it's not just that the technology can have flaws; it's that the governance, policies, procedures may not be adequate for overseeing the technology. If I have a great system and it's flashing red flags, but only one person is monitoring that and chooses to ignore or excuse them, then it doesn't matter. You have to build in appropriate redundancies and oversights.

In high frequency trading, for example, where we do a lot of due diligence on algorithmic trading funds, latency is a huge issue that will affect results.

They can have the best algorithms in the world, but if they have poor operations, which are fueled by a lack of policies as well as a lack of robust and redundant technology, then that can cause major problems.

BJM: Looking at your career path, you have a BS in Finance, but you also have a degree in Japanese at CMU; what is your view on Japan or Asia now?

JS: I started my career in M&A at Thomson Financial, and I worked extensively in Asia and Japan. Then I moved into the Japanese hedge fund industry. It's very interesting, coming back to due diligence — there is still this culture of insider trading in Japan. There have been reforms, but the problem is, a lot of these reforms are going against the channels of historical business practices, when you look at structures like the keiretsu, the large Japanese conglomerates that grew out of the post-WWII environment. Even though the culture is changing and there is some effort towards more transparency, the large players still turn to what we would call material non-public information that's acted upon and so there is a broad gray area in practice.

Even so, I commend the Japanese government for their work in this area, but it's a very long, slow process. They have started to investigate a few cases where allegations were made, but the fines are often not enough to cause anyone to change their behavior. They have not developed a structure of systematic reforms that would be the equivalent of Dodd-Frank in the U.S. There is a great opportunity, and we see people who are doing hedge fund allocations in Asia, but certainly that is a big risk. It's sort of par for the course; if you are going to invest there, you have to understand how to deal with that risk appropriately.

BJM: There is also the question of having a good team on the ground to really be immersed in the day-to-day environment.

JS: Yes, we hear that a lot — “I want to invest in mainland China or Singapore.” And this is a marketing pitch that many Asian managers will use, “Well, we have boots on the ground.” We also hear from U.S. managers, “We just want to invest in a U.S. fund of funds, we don't want to invest in Asia — it's too far away.”

That being said, it depends on what you are talking about — from the operational due diligence perspective, you go on site with a manager and depending on how frequently you stay in touch with them, much of the follow up can be done remotely through documentation. On the one hand, the boots on the ground is valuable from a research perspective, but on the other hand, it can also be more costly than is necessary.

BJM: In terms of people who have the CAIA designation or are working towards it, would you have any advice or observations looking out over the markets and where alternatives are right now?

JS: The way we gauge it in our business, when people allocate, they are doing due diligence; it could be related to new allocations, or they may be turning existing capital over from one manager to another. We have seen a lot of growth in domestic real estate funds from international pension funds, for example. So that is an indication that they're bullish on the U.S. real estate market. On the private equity side, we tend to see allocations to venture capital and infrastructure. On the hedge fund side, people are revisiting their allocations in many areas. Part of this is a function of demand; we'll see people continuing to allocate to a bigger name and there is also a trend of allocating towards spinoffs, agnostic of strategy. But what we see in some of these cases from an operational perspective is that unless the fund really hits the ground running, the top people might not stick around. We also see some of them stretched a little too thin, because they are focused on fundraising as well as managing the funds — it can be a real distraction. So there are always risks in what we are assessing.

For CAIA Members, it's good to see that there is demand for more well rounded analysts now. When I first started working in the industry, you would hear, “I'm a credit person,” or “I'm a venture person.” Now it's important to understand the whole business; you have to have a basic grasp of compliance, and also what happens after a hedge fund executes a trade. And that is where the CAIA designation is useful, because it introduces people to a wider gamut of things than they may encounter in their immediate job.

BJM: Well, to wrap up, do you have any hobbies, or have you been on any exotic adventures lately?

JS: Yes, absolutely. I like languages and I love to experience new cultures — when I'm on a business trip, I always try to spend an extra day or two to explore. We do a great deal of work in Europe, Switzerland, Asia, and many other places — there are fund managers all over the world, so I'm on the road quite often.



Corgentum Consulting is a specialist consulting firm which performs operational due diligence reviews and background investigations of fund managers.

The firm works to support the operational due diligence work of institutional and high-net-worth investors, including fund of funds, pensions, endowments, banks and family offices to conduct the industry's most comprehensive operational due diligence reviews. The firm's work covers all strategies globally, including hedge funds, private equity, real estate funds, and traditional funds. Corgentum's sole focus on operational due diligence provides clients with comprehensive industry-leading deep-dive reviews.

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Crowdfunding: A Threat or Opportunity for University Research Funding?

Rachel F. Baskerville
Professor of Accounting, Victoria University of Wellington

Carolyn J. Cordery
Associate Professor of Accounting/Postgraduate
Programme Director, Victoria University of Wellington

Introduction

Universities, like many other organizations, have an insatiable need for funding. It appears that student fees, government funding, alumni support, and endowments are insufficient to fund the expectations that universities will undertake myriad research projects, knowledge dissemination, and staff and student development. Rather than depending on multi-millionaire donors or company commissions, universities may seek to package research into discrete parcels to market to enthusiastic supporters. Thus, they will require a funding platform that draws on a multitude of smaller investors/donors. Klaes (2012, p.5) notes that crowdfunding, a vehicle through which this can be achieved is a “disruptive technology of financial intermediation.” However, it is unclear whether the development of a crowdfunding market will complement, supplement, or crowd-out other funding. In addition, the marketability of certain projects may crowd-out less popular projects and further reduce the viability of necessary research.

The research question addressed in this study is: does crowdfunding represent a threat or an opportunity to the continuation of more traditional research funding sources for the university sector. This paper reviews recent research in the evolution of crowdfunding, legislation governing crowdfunding, and then examines in detail the university crowdfunding sites that are used to generate funds for staff research. Crowdfunding was first launched in 2001; Gerber and Hui wrote in 2013 that there were 452 crowdfunding platforms in the U.S., channelling \$1.47 billion USD. Globally, €2.2 billion was estimated to be raised by crowdfunding platforms in 2012, up 80% from €1.2 billion in 2011 and €400 million in 2009 (Massolution 2012; market interviews and research from De Buysere, Gajda, Kleverlaan, and Marom, 2012). With such rapid growth, it is not surprising that there has been a variable uptake by universities, who may have been slow to notice this phenomenon. An analysis of the Wikipedia list of 31 University and College Crowdfunding platforms showed that there were:

- Five sites in the U.S. (and one outside) that seek funding for both student-related research projects and Alumni appeals: Pitzer, Pace, Rollins, Vassar, UWE, and Research and Public Service (MIT)
- Eleven sites in the U.S. that appear to be restricted to student-related research projects and prize-funding: Arizona, Haas School of Business, Pepperdine, Texas, Maryland, CMU, Cornell, Furman, LeHigh, Middlebury, and Vermont
- Three sites outside of the U.S. that appear to be restricted to student-related research projects: Oxford Brookes, York, and Trinity College Dublin
- Twelve sites that seek funding for both staff and student-related research projects: in the U.S.: Boulder Colorado, UCLA, Boston, MIT, UCSE, UCSE, Georgia Tech, and Virginia, as well as Deakin, Alberta and Carleton (Canada), and Groningen.

The analysis in this paper describes some successful University projects that have raised research funds for staff on such sites, and then reviews the advantages and disadvantages of this funding method. This study is part of a response to the call for research from the EU, that academics could:

- Collaborate with platform providers to obtain data and benchmarking, with care and transparency,
- Collect and conduct research on data available to investors, the cost of data provision, and the value of data,
- Keep platforms honest: to offer data which is transparent and legitimate, and
- Educate our students as to the characteristics and benefits of this mode of funding (de Buysere, Gajda, Kleverlaan and Marom 2012).

Background

What is crowdfunding?

Crowdfunding is a mixture of online philanthropy and online consumer purchasing, as well as online peer production and peer-to-peer lending. A number of independent fundraising platforms have been established to facilitate the advertisement of crowdfunding opportunities and to match donors/investors with these opportunities.

Some platforms only release the funds to the proposer if the target is met (Kickstarter); others permit partial funding to proceed. Few platforms have any conflict resolution service if a supporter is disappointed (Gerber and Hui 2013, p. 23). Many sites publicize their successes; for example, some outcomes from the Indiegogo site include:

- Assistance to Lakota Sioux to buy back part of their sacred land,
- \$410,000 USD raised to rebuild a mosque in Joplin after it was burned down,
- \$703,000 USD raised for a 68-year old bus monitor who had been verbally harassed, to be used for a holiday-of-a-lifetime, and
- Assistance to New Zealand Film Director Taika Waititi to pay for the distribution in the U.S. of his film 'Boy.'

Some observers maintain that crowdfunding, as an evolution of capital allocation, follows a similar historical development to other disruptive business models, such as PayPal, Amazon, and iTunes. Certainly its evolution is global. In response, some countries have moved to legislate the issuance and management of crowdfunding. However, the responses differ, as will be further described in this paper; for example, when the SEC introduced new rules in the U.S., there was a unique aspect to the legislation: testing the net worth of the investor before they could invest in crowdfunding equity (Aronson, 2013). Outside of the U.S., crowdfunding has been considered by other governments, from Australia (Karagiannis and Pole, 2013) to the United Kingdom, and is expanding rapidly.

In Europe, where crowdfunding is allowed although only partially regulated by securities authorities, its impact on the SME marketplace is becoming evident, according to Colgren (2014).

“As a phenomenon, it prompts us to revise our understanding of approaches to small and medium scale fundraising across most economic activity.” (Klaes 2012 p. 5).

Crowdfunding may well have started on its phenomenal growth path through its popularity in the film industry. Initially fed by funding needs for films as well as computer games, books, and other creative endeavours, it was picked up by ‘cause-based’ campaigns. It avoids boot strapping¹ for start-ups and connects people and organizations to sources of capital that were previously out of reach. It is seen to enhance potential customer acceptance and increase awareness of new products; it also can attract a voluntary task force of supporters who may provide more insights into product development (Mitra, 2012). From the UK Crowdfunding Centre, run by The Social Foundation, we find that:

- More than £1,700 per hour is being raised through crowdfunding in the UK,
- Since the beginning of 2014, more than 2,600 equity and rewards projects have been launched, and
- More than 45 projects are being launched per day.

“Having masses of very small stakeholders may not be for the faint hearted though, as had already been seen in non-equity crowdfunding arenas such as Kickstarter” (Shera, 2013)

How does crowdfunding differ from IPOs and when would you use it?

In two countries with crowdfunding legislation (U.S. and New Zealand), the legislation is premised on a range of assumptions that differentiate crowdfunding only slightly from traditional means of raising funds, such as IPOs.

Non-profits Causes/charities	e.g. An Indie Movie	...if product is successful	Micro-finance	may be peer-to-peer platforms	only outside North America e.g. SellaBand
Donations	Reward/Public Acknowledgment	Prepayments or pre-purchase	Interest free loans	Kickstart Loans	Equity

Exhibit 1 Crowdfunding Covers a Continuum of Investment Opportunities

Source: UK FCA Oct 2013 p. 10

However, crowdfunding differs from IPOs, as it is Internet-enabled and the fees are likely to be significantly less than an IPO, with competition between sites keeping pressure on to reduce or stabilize the fees charged by the crowdfunding sites to the entity that is raising money. In comparison to IPOs, Gelfond and Foit (2012) suggest that crowdfunding challenges the constraints of distance and traditional sources of funding originating in networks among elite business conurbations.

Crowdfunding emphasizes the digital divide (socio-economic and/or age-based) and social network endorsements may 'go viral', as crowdfunding attracts a certain type of entrepreneur: youthful, Twitter-literate, and Facebook-networked (Gelfond and Foti, 2012).

From a regulatory viewpoint, crowdfunding differs from IPOs, as its global character may easily side-step regulatory constraints (as with tax-avoidance), and therefore accreditation by platforms and proposers becomes largely voluntary. This is a serious concern, as crowdfunding is highly attractive to criminals and fraudsters. As noted by Verschoor (2012, p.15):

“Investing in newer and smaller companies involves more opportunity for fraud as well as greater inherent risk, which makes you think they should be the focus of greater regulatory oversight, not less. The JOBS Act flies in the face of this doctrine.”

Particular concerns are the risk of fraud inherent in the online selling of equity shares (Mashburn, 2013). He notes that “The North American Securities Administrators Association has already identified about 200 crowdfunding website names that appear suspicious and state regulators are taking or considering taking enforcement action against “a handful of companies for allegedly exploiting online fundraising to commit fraud.” (see also Eaglesham, 2013).

And yet, the U.S. legislation did not require, as did the New Zealand legislation, that platforms have a responsibility to undertake what amounts to a negative assurance of the character of the proposer.

Further, Mashburn (2013) noted that the likelihood of material misstatements in financial statements and projections was higher in startups using crowdfunding, as the entrepreneurial psychological predisposition of people using these sites making them more likely to take risks, with overly optimistic assumptions. It may depend on where in the life cycle the crowdfunding is used. Exhibit 2 shows a framework that has crowdfunding being used at the early stage of an entity’s startup with more traditional sources such as venture capital, private equity, and IPOs later in the entity’s life cycle.

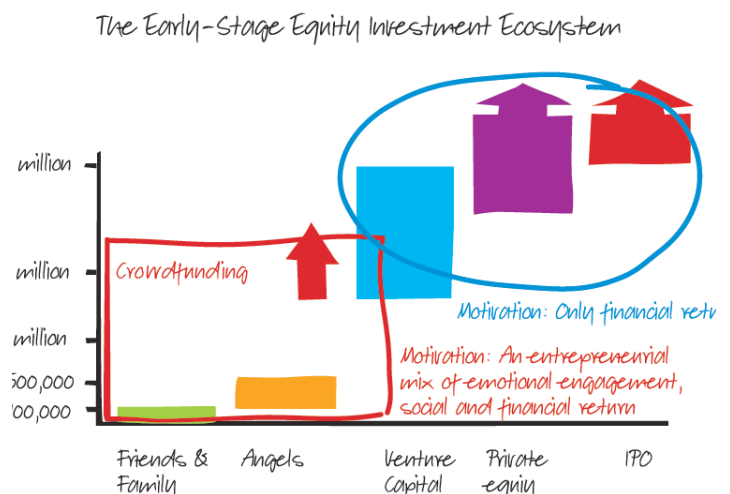


Exhibit 2 Different Funding Frameworks Depending on an Entity’s Life-Cycle Stage

Source: Framework for European Crowdfunding, Kristoff De Buysere, Oliver Gajda, Ronald Kleverlaan, Dan Marom, 2012

Building on Exhibit 2, we argue that the market for crowdfunding is different from that for an IPO. Hollas (2013) noted that at least half of the firms using crowdfunding for equity purposes are in the consumer and product/service companies — which would be less than 10% of venture capital and angel investing by sector. Further, Hollas (2013) found that on the one hand, crowdfunding is not the preferred channel for high-tech start-ups and on the other hand, crowdfunders' wealth is enormous compared to the venture capital industry.

These unique factors may crowd out venture capital firms, or at least drive down their fees. A further challenge to venture capital firms is the reduction of costs in the secondary market. As noted by one expert, "Algorithms and soft/hardware technology related to 'high-frequency trading' have exploded over the last 20 years, and the primary beneficiary has been the market for existing shares and other financial instruments (the secondary market). Consequently, transaction costs on the secondary market have come down more than 90% over the last 20 years." (Peter Almborg, director and CEO of Sweden-based GXG Global Exchange Group AB and owner of Danish authorized GXG Markets A/S, cited in Colgren 2014 p. 56).

Benefits and Drawbacks of Crowdfunding

Gerber and Hui (2013) provide some insights into the benefits of crowdfunding. In particular, with respect to raising funds, they note that crowdfunding allows creators (those requesting resources) to appeal directly to potential supporters. Indeed, the success of crowdfunding is not solely about the exchange of money — it is that participants who exchange resources with the goal of wanting to learn from and connect with others (Gerber & Hui, 2013). By seeking support through a crowdfunding site, Gerber and Hui (2013) argue that creators can more easily keep control of their creation, and therefore receive greater confidence (and funding) in the uncertain environment of creative work. Further, creators and developers benefit from long-term interaction with supporters, by expanding awareness of their work, through social media and sending emails.

These interactions last beyond the financial transactions themselves (Gerber and Hui, 2013). Further, Gerber and Hui (2013) note that creators will gain new fundraising skills.

With respect to donors, Gerber and Hui (2013) found that their motivations included collecting rewards, helping others, being part of a community, and supporting a 'cause.' (These motivations are atypical for those involved in IPOs.) Nevertheless, there are also deterrents to supporters: including concerns that if the target is not raised, the proposer will retain the funds and might not use them efficiently.

Gerber and Hui (2013) also documented deterrents to committing to a crowdfunding proposal. Creators must make a commitment in terms of time and resources; they risk failing to attract supporters resulting in a publicly-exposed failure, and they may hesitate to debut a product still under development, among other project-specific deterrents (Gerber and Hui, 2013). Indeed, Mashburn (2013) reported that startups using crowdfunding were more likely to fail than existing operations. This is because startups face problems meeting development schedules; one study showed that 84% of the 50 most-funded projects on Kickstarter missed their target delivery dates (Study by CNN Money) and another showed that 75% delivered products other than expected, with 33% not delivering at all (E. Mollick referred to by Mashburn, 2013 p. 159).

With that in mind, an angel investor or a venture capitalist with a very specialized business focus may be preferred. In addition, angel investors are often prepared to fund the process of creation, rather than the product itself (Gerber and Hui, 2013).

Further deterrents to using crowdfunding include the many areas of intellectual property law, including trademarks, patents and copyright, that could be affected by a launch on a crowd-funding platform. As noted by Wells (2013, p. 28); "disclosure on a crowdfunding website may make copyright infringement more likely by exposing the work to a large audience while undermining the strength of the unwary copyright owner's legal remedies."

Ownership of ideas submitted though public domain is also uncertain. This is of particular relevance to the issues surrounding crowdfunding's use by universities to fund staff research.

There may also be an assumption of naiveté on the part of the founders: "Crowdfunded offerings present a new environment in which innocent but inexperienced entrepreneurs face increased risk of making a misstatement or misleading omission" (Mashburn, 2013). After the U.S. Government finished its rulemaking (the JOBS Act), equity crowdfunding allowed startups and eligible small businesses to raise up to \$1 million USD over a twelve-month period by issuing equity shares to mom-and-pop retail investors through online "funding portals."

Nevertheless, Mashburn (2013) sounds a note of caution as Section 4A(c) of the JOBS Act significantly broadens the scope of communications that may trigger civil liability for issuers. Crowdfunded offerings involve "a unique blend of customer marketing and investor pitching, which is likely to open issuers to additional liability if promotional statements fall within Section 4A(c) (in the U.S.). Even if promotional statements do not fall within Section 4A(c), this environment creates a risk of triggering Rule 10b-5 liability for issuers and funding portals. As one observer notes, "It is easy to imagine the type of promotional statements that inexperienced funding portals might make that would form the basis for a 10b-5 suit" (Mashburn 2013, p. 163). The new liability provision in the JOBS Act broadens the language of Section 12(a) (2) of the Securities Act of 1933, imposes liability on the issuer and its officers and directors for false or misleading statements or omissions in any written or oral communication. "A plaintiff need only prove that an untrue statement or misleading omission occurred and that the defendant did not exercise reasonable care, even if loss causation, reliance, and scienter are not shown" (Mashburn 2013).

Research

A study outside of the research and commentary on legislation was undertaken by Cumming and Johan (2013), who analysed 144 Canadian survey responses on education, investor protection, limitations on amounts, and so forth. Their underlying question was: Is the competitive crowdfunding model one that gives rise to a race to the top or a race to the bottom? Overall, there was more support from the respondents indicating that investor demands will give rise to a 'race to the top' in crowdfunding markets. There were regional differences in this Canadian data: some evidence was also consistent with the 'race to the bottom' view "insofar as startups want fewer limits on the amount of capital that they are able to raise each year, and portals want less onerous continuous disclosure requirements and freely tradeable shares without time restrictions" (Cumming and Johan, 2013, p. 376).

The research "largely omits discussion of the problems with the new civil liability provision included in the Crowdfund Act — an express private action provision that will raise the transaction costs of crowdfunding and ensnare unwary issuers in its liability trap" (Mashburn, 2013). Truesdal and Polk (2012) also alert readers to the litigation risks for banks. They describe the regulatory pendulum as swinging towards more legislation in the last five years, but now reversing away from this trend "under the false premise this is going to create a bunch of jobs."

The objective of Mashburn's 2013 review is to identify hidden transaction costs in the Crowdfund Act, particularly the severe liability cost this provision imposes on issuers. He proposed that "the best solution to both issues is to impose scienter² as an element of the civil liability provision, while also awarding attorneys' fees to plaintiffs' attorneys successful on the merits at trial. This solution will decrease the up-front and hidden transaction costs for issuers and will incentivize plaintiffs' attorneys to pursue issuers that are committing fraud. Finally, this solution supports the SEC's goal of balancing securities regulations to protect investors and the integrity of the market, while keeping transaction costs low enough to maintain the utility of the market as this revolutionary experiment in startup financing takes root" (Mashburn 2013, p. 128).

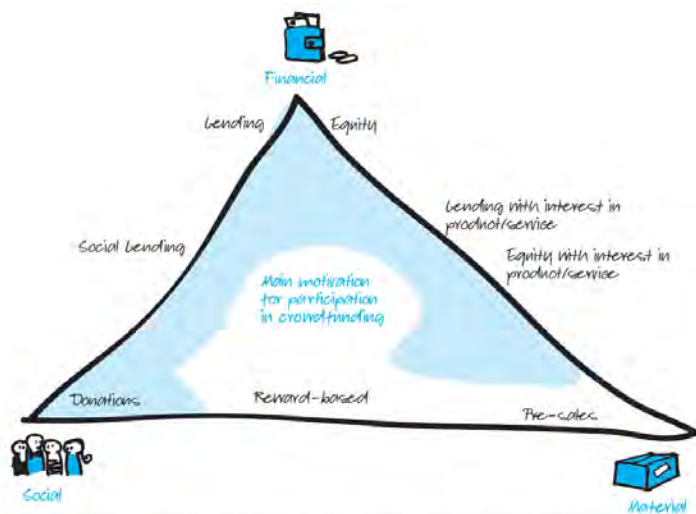


Exhibit 3 The Lending Triangle

Source: Framework for European Crowdfunding, Kristoff De Buysere, Oliver Gajda, Ronald Kleverlaan, Dan Marom, 2012

The objective of the study by Gerber and Hui (Crowdfunding: Motivations and Deterrents for Participation) is to answer the question: What motivates and deters participation? In answering this question, they provide three emergent design principles for crowdfunding platforms to inform the design of effective platforms and support tools. They do this by offering a grounded theory of motivation, based on 83 semi-structured interviews (cross-referencing to studies by Belleflamme *et al* 2010, Ward and Ramachandran 2010, Kraut and Resnick 2012, Schwienbacher and Larralde, *forthcoming*). Also noted are Lambert and Schwienbacher (2010), who analyzed questionnaire results from 21 respondents, although only three of them had used an online platform for fundraising.

A rare case of using an intranet platform for in-house funding allocation was documented when IBM gave 511 employees funds to invest in crowdfunding within IBM (i.e., to spend on employee-initiated projects), so that IBM could better understand the phenomenon, with positive outcomes for the firm such as increased interdepartmental collaboration and alignment to their own strategies and goals (Mueller *et al*, 2013).

McGrail (2013) observed that crowdfunding may offer a new funding route out of chapter 11 bankruptcy if its patrons consider the applicant to be a business worth saving.

It can lay the groundwork for a “soft landing” — if a small business is not under immediate pressure from its lenders, it may be able to gauge whether it can reach its targeted fund raising goal via crowd funding before filing for chapter 11.

Current Regulation

The UK 2013 Discussion Paper foreshadows the UK Government’s intention to draw on the JOBS Act framework in formulating its own UK regulations. But it is only in the U.S. and New Zealand that legislation has been passed and is now being assessed by academics and the market. The JOBS Act in the U.S. is novel in that it permits equity investment and encourages equal treatment of all investors, unlike previous SEC philosophies that made a distinction between sophisticated (qualified) and unsophisticated investors (Salzsieder and Cornell, 2013, p. 23).

What is the Status of EU Regulation?

The participants of the Agora 2011+ Conference, an international summit in Bielsko-Biala, co-authored a paper now known as *Bielsko Biala Declaration — Maximising the Opportunities offered by Crowdfunding*:

“The declaration consists of six small paragraphs addressing the EU administration, Member States, and Regional Authorities. The declaration argues that the underlying aim of crowdfunding is to provide entrepreneurial and innovative projects the financial means to execute. Public authorities should have an interest in supporting the development of crowdfunding in order to remove barriers to entrepreneurship and to facilitate a favourable legal framework, while maintaining the minimum of professionalism and regulation. The declaration continues that crowdfunding needs to be better understood, and to this end, relevant data collection should be encouraged and data should be benchmarked. To help smooth the fragmented European market, crowdfunding should be welcomed and promoted at a European, national, and regional level” (*A framework for European crowdfunding*, De Buysere, Gajda, Kleverlaan, and Marom, 2012).

	USA (from Stemler 2013)	NZ
New Legislation	Jumpstart Our Business Startups (JOBS) Act	Financial Markets Conduct Bill
	2012	April 2014
Old regulation	Equity was classified as securities under the Securities Act of 1993	Equity was classified as securities under the Securities Act of 1978
	JOBS Act	Financial Markets Conduct Bill
Exemptions to solicitation	Regulation D now permits solicitation of a broad range of investors; also permits selling equity to an unlimited number of investors	
Exemption to registration	Can raise up to \$1 million USD in 12 month period without registration	Companies can raise up to \$2 million NZD per annum without issuing a prospectus
Who invests?	JOBS Act focuses on net worth of investor - those with an annual income or net worth under \$100,000 can invest <\$2000 or 5%	No focus on net worth of investor, but creates an obligation for the platform to operate in a fair, orderly, and transparent manner
Wealthy Investors?	Investor with an annual income or net worth over \$100,000 can invest <10%	Irrelevant
Crowdfunding promoters (not the platform)	Required to make some disclosures, plus annual updates to the SEC	Obtain a Market Service License to run a 'Discretionary Investment Management Service'
Crowdfunding	Imposes civil liability for material misstatements or omissions	Crowd funder platform owners have to check - as far as one can - that the directors and managers of each promotion are of good character
Liability?	Expressly permits rescission claims by investors ³	Enforcement regime deals with failures of platforms to adhere to Rules
Onus on platform provider	To prevent fraud and abuse, ensure investors understand risks	Put a prominent warning on the home page Link to Disclosure Statement
	Cannot offer investment advice or activity push investments	Platform cannot provide financial advice
	Cannot reward employees with commissions	
Do foreign investors fall under this regulation	Uncertain – to be clarified	

Exhibit 4 Comparison of Legislation in New Zealand and the U.S. (in summary)

Source: Stemler, 2013

EU/U.S. comparison

Crowdfunding platforms active across Europe at the beginning of 2012 can be estimated at around 200, representing all types of platforms, slightly less than in North America. Their number is expected to rise another 50% by the end of 2012 (De Buysere, Gajda, Kleverlaan, and Marom, 2012). With the U.S. JOBS act and its potentially liberating effects on the crowdfunding market in the U.S., one can expect a significant increase in crowdfunding platforms in the U.S. and a spill over effect to Europe (*ibid*).

“Comparative data is difficult to collect because of the regional nature and variation in crowdfunding business models” (De Buysere, Gajda, Kleverlaan, and Marom, 2012).

A number of large American crowdfunding platforms have already started their first ventures in Europe, hoping to establish a market presence against European platforms. In 2011, considering all types of crowdfunding, Europe raised more than €300 million, one third of the world market, through hundreds of thousands of crowdfunding campaigns. For 2012, the estimate is that €2.2 billion will be raised globally by crowdfunding platforms, up 80% from €1.2 billion in 2011 and €400 million in 2009. Again, this number reflects efforts by the various types of crowdfunding platforms. (De Buysere, Gajda, Kleverlaan, and Marom, 2012)

In Europe, the split between the different crowdfunding types shows nearly half of all activity from reward-based approaches, with fewer than one quarter for platforms from donation-based approaches, as well as equity-based approaches. Lending or debt-based approaches make up for the remainder.

In comparison, in the U.S., donation-based approaches used to dominate, while equity-based approaches reach only a symbolic percentage due to legal constraints, i.e., prior to the SEC and JOBS Act rules (De Buysere, Gajda, Kleverlaan, and Marom, 2012). The number of crowdfunding campaigns in the EU is driven by donation-based approaches, as the funding targets involved are generally much smaller than, for example, equity-based funding targets (*ibid*).

Data and Findings

We conducted a variety of Internet searches to find universities who were using crowd funding. The list we generated is by no means conclusive. However, examining twenty sites provided a useful snapshot of the manner in which universities were using it.

Summary:

- Not very much activity, and generally for small amounts
- Very few universities are using crowdfunding as a component of mainstream core research funding

Small Amounts

In a lot of university cases, the amounts are very small (In Carlton, Canada \$100, \$4,000, \$5,000 CAD) and in the UK, examples were targeting £100, £138, and £300, for example. The projects examined had a number of interesting characteristics:

1. Social issues on campus: e.g. funding a Gay Pride week, a new trailer for a rowing club, brass band instruments, a student ball, and animal therapy to assist students in exam stress.
2. Environmental issues: planting projects, recycling led by student labor/interests.
3. Projects undertaken in the wider community: children's needs in the local community, civic engagement in high schools, customized book creation, raising IT awareness, underwear for the homeless.

4. For local business: supporting small local businesses or student-run businesses, e.g. in North Carolina, one project involved fundraising for regionally unique yeast strains for home brewers and local breweries.
5. Outreach overseas: charitable causes, e.g., child health in Africa, post natal or HIV care, a biodigester at a Kenyan orphanage.

However, there are some exceptions to the small donation paradigm. For example, crowdfunding approaches have been used very successfully to engage traditional alumni donations, when they appear on websites in the guise of the "Annual XYZ appeal." Examples include \$485,000 CAD raised in "Our Giving Moment" and \$33,000 CAD raised on "Giving Tuesday," both by Carleton University in Canada; see <http://carleton.ca/giving>.

Another example is seen in "Artificial Intelligence with Imagination" targeting €15,000 at Trinity College Dublin although it is not clear if this is a company run by two students or two alumni.

A Few Universities are Using This as a Component of Mainstream Core Research Funding

A very small number of proposals were for mainstream university staff research projects, but some which were mainstream were very well supported, e.g. 248% support for cancer research at UC San Francisco, where the fundraising was basically for a cause, rather than a specific project: "You may well help yourself or someone you love." Another example was observed at UC San Francisco for "Multiple Myeloma therapies" with a personal touch: "You or a loved one may have been touched by this disease and know first-hand the challenges patients face in fighting it." The proposals at UC San Francisco were for ongoing projects, not start-ups.

In the EU, the University of Groningen in the Netherlands stands out as showing extensive and successful use for major ongoing staff projects, mostly in medical research, but also for environmental issues: €40,000 was sought to support research of the Arctic Tern (€500 to fit a single bird with a geolocator) at the University of Groningen.

Discussion

This paper has described a few successful university projects that have raised research funds for staff on such sites, and has reviewed the advantages and disadvantages of this funding method. Advantages include the potential to break the stranglehold on research funding from hyper-bureaucratic organizations. But the downside may be that the purported democratization of research is both a dumbing-down and homogenization — a beauty pageant, where the more attractive projects will be “winners” and those who cannot position themselves to curry popular favor are losers in this particular game. The appeal of such a market-led mechanism for university research funding may, in time, lead away from government funding for the authentic assessment of the apparently unpopular but genuine projects where outcomes are either highly technical, may involve a large amount of intellectual property rights, and where the funding depends on the open minds of highly experienced and informed decision makers, not those at the other end of a computer mouse.

The research question addressed in this study is: Does crowdfunding represent a threat or opportunity to the continuation of more traditional research funding sources for the university sector, responding to calls that academics could collect and research crowdfunding, and also increase interest in educating our students on its evolution and characteristics. The use of crowdfunding methods by universities to raise material amounts of research funding is scarce. This is a somewhat surprising result, given how long crowdfunding has been around. Crowdfunding has the potential to tap into previously inaccessible funds, as many newer donors are from a generation that responds to social media and understands an Internet-based philosophy to banking activity and funding decisions. This study concludes that the Ivory Towers are alive and well, as far as research funding is concerned for all but a handful of tertiaries.

However, even as we write this review, we have no doubt that some universities will be actively packaging research into discrete parcels to commence marketing to alumni and other supporters in this manner.

It remains unclear at this point whether the development of a crowdfunding market in the tertiary sector will complement, supplement, or crowd-out more traditional patterns of funding allocations, and relationships with very large funding bodies such as the UK Economic and Social Research Council⁴ and the EU European Research Council.⁵ Neither of these bodies carry any reference on their sites to research on this activity, thus appearing on the funding landscape as two further Ivory Towers. We hope that other studies currently underway will shed light on the evolution and growth of crowdfunding as a distinctive and high potential funding source for core university research.

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Endnotes

1. "Bootstrap Financing — Using Your Own Money to Get Your Business Off the Ground."
2. The term *scienter* refers to a state of mind often required to hold a person legally accountable for her acts. The term may be used interchangeably with Mens Rea, which describes criminal intent, but *scienter* has a broader application because it also describes knowledge required to assign liability in many civil cases <http://legal-dictionary.thefreedictionary.com>.
3. Rescission: The abrogation of a contract, effective from its inception, thereby restoring the parties to the positions they would have occupied if no contract had ever been formed
4. <http://www.esrc.ac.uk>
5. <http://erc.europa.eu>

Authors' Bios**Rachel Baskerville**

Rachel Baskerville has a long interest in research around accounting behaviors and practice. She is a professor of accounting in her home town of Wellington, New Zealand, teaching undergraduate financial reporting and masters' programs, before which she was also at the Universities of Auckland (NZ) and Exeter (UK).

**Carolyn Cordery**

Carolyn Cordery's research interests are focused on not-for-profit accounting and accountability, incorporating financial and non-financial reporting, regulation, and governance. She is part of the Volunteer Management Research Programme. Her teaching areas include accounting information systems and financial accounting. Carolyn is a member of the New Zealand Accounting Standards Board.



An Alternative Take on Alternatives: Not Just Adding a Slice, But Rethinking the Whole Pie

Peter Chiappinelli, CAIA
Portfolio Strategist, GMO

At GMO, we have a deep appreciation for alternative asset classes. We manage nearly \$10 billion in hedge funds and have an experienced team offering timberland and agriculture investments. Yet we are nervous about the increasingly uncritical embrace of all things alternative. Just as with traditional assets, investors must always ask the key question: Is the asset priced well? Rather than embracing alternative assets, we believe investors should embrace an alternative way of thinking about the investment equation.

Let's first review what alternative assets are and how they are being marketed. When we say alternative assets we are referring to the usual suspects: hedge funds, private equity, commodities, and real estate. But there are more esoteric and illiquid categories including timber, infrastructure, and volatility. Each is typically being marketed to advisors by highlighting one or more of the following key selling points:

- Alternative assets offer low correlations to other asset classes.
- Alternative assets can act as an inflation hedge.
- Alternative assets can be a source of pure alpha.
- Alternative assets can provide protection in down markets.
- Alternative assets should be a "slice" of your strategic mix.

The purpose of this article is to throw a bit of cold water on each of these selling points and to propose an alternative to evaluating alternatives. Let's go one by one.

Low Correlations

The conventional thinking in the capital markets today is that all risky assets are moving together or, in the parlance, "correlations are going to 1.0." Therefore, the argument goes, an advisor *must* consider adding alternatives because they behave so differently. Alternative thinking, on the other hand, asks the more critical question:

"Are correlations the right risk to obsess about?" We would argue no. Advisors should focus on the most important risk, overpriced assets. Let's explore how focusing on correlation risk can be dangerous.

GMO's investment process seeks to identify cheap and expensive asset classes (see Exhibit 1).¹ On December 31, 2001, our models considered emerging equities to be cheap and U.S. large cap stocks, as represented by the S&P 500 index, to be expensive. Now, look at Exhibit 2. On the day we made the forecast, the correlation between emerging market stocks (as represented by the MSCI Emerging Markets Index) and the S&P 500 stood at 0.71, already high. Over the next 10 years, the correlation increased even more, to 0.86. But look at the actual realized *returns*. During this decade of rising correlations, the cheap asset outperformed the expensive one by *11 percentage points, per year, for 10 years*. Advisors that did not put money into emerging markets because they were obsessing about rising correlations may have missed out on the investment opportunity of their careers. The takeaway here is to focus on identifying cheap and expensive assets and to not lose sleep over correlations.

Inflation Hedge: Commodities

The second conventional marketing pitch for commodities is two-fold. First, there is the belief that a long commodities portfolio can hedge inflation; and second, that growing consumption in the emerging markets ("the changing diet of the Chinese household," or, "a car in every driveway in Mumbai") and shrinking supplies paints a very bullish picture.

GMO's Focus Is On Identifying Cheap vs. Expensive Asset Classes

GMO's 10-Year Forecast on December 31, 2001

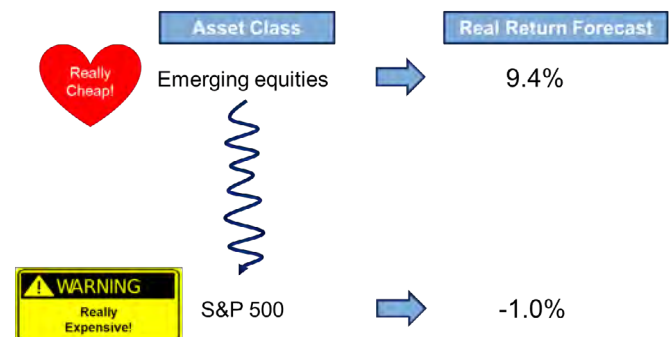


Exhibit 1 GMO's Focus Is on Identifying Cheap vs. Expensive Asset Classes

Source: GMO

What Matters: Correlations vs. Cheapness?

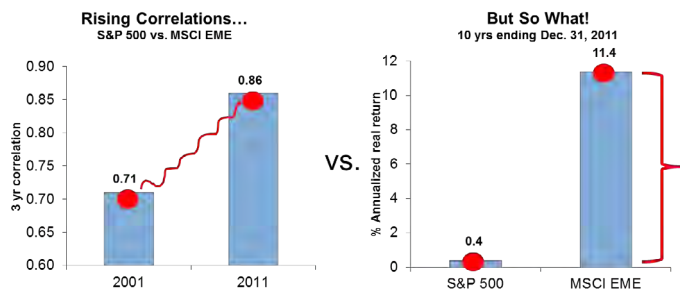


Exhibit 2 Asset Class Valuations Matter, Even in Highly Correlated Assets

Source: GMO

Alternative thinking asks this: “Are commodities such a good inflation hedge if they’re expensive?” Theoretically, being long a basket of commodities should be a source of excess return. A wheat farmer, for example, may not want to bear the risk of a wild price swing between planting season and harvest. He wants to lock in his price today, if possible. The futures markets allow him to do this. The farmer takes a haircut on current spot prices in order to entice a speculator to take on this risk. When most commodities markets are functioning normally, as fair compensation, futures prices should sit below the current spot price. Unfortunately, the markets at times, do not behave normally. During the last decade, the creation of new structured products such as exchange-traded funds (ETFs) combined with the compelling story of higher emerging market consumption have conspired to attract too many players, primarily from the hedge fund and institutional communities. There was a period not too long ago from 2003 to 2011 wherein roll yields were actually negative — there was too much money on one side of the trade. Investors, rather than getting paid to take risk, were actually *paying the farmer*.

Negative roll yields prevailed, and roll yields have been one of the main drivers of returns, historically. A dedicated strategic allocation to commodities at that time was absolutely the wrong thing to do. Now, there may come a time when pricing normalizes and commodities are an excellent investment opportunity, but that should be the reason — that they are priced well, not because they are an alternative asset class.

Cumulative Roll Yield on S&P/GSCI Reduced Energy Index

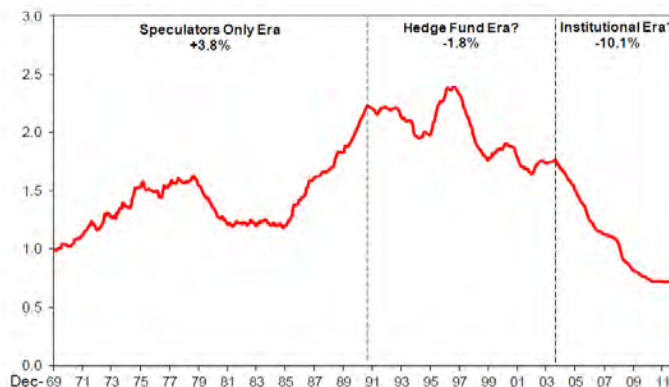


Exhibit 3 Roll Yields for the S&P GSCI Reduced Energy Index — Which Tracks a Range of Liquid Commodity Contracts — Have Declined Over the Past 10 Years.

Source: S&P, Federal Reserve

Pure Alpha

Alternative investors, especially hedge fund managers, have convinced the marketplace that they alone have the necessary engineering tools to deliver “pure alpha” or absolute return. Alternative thinking says that the practice of separating alpha from beta is well established, even in boring old mutual funds. You most certainly do not need a hedge fund to engineer this kind of return profile. As shown in Exhibit 4, an actively managed U.S. large cap equity strategy benchmarked to the S&P 500 is trying to deliver two return streams — first, the return of the benchmark, or beta; and second, the excess return, or alpha.

The problem with this structure is that it is a package deal. If you want a manager’s alpha, the beta comes along with it. Suppose you believe, as we do today, that the S&P 500 is dramatically overvalued and you don’t want that beta in your portfolio. While you would love to have the manager’s alpha, you really don’t want the attached beta, but you’re stuck with the package.

However, an engineering technique called portable alpha unsticks you. What if you had at your disposal a method of investing that allowed you to isolate the alpha component? For example, invest \$1,000 in an actively managed fund and simultaneously short or hedge the S&P 500 by the same amount. The alpha generated by the fund is ported to cash. The market’s beta is completely neutralized.

Market direction is no longer a factor because you are long and short equal amounts. All that matters is whether the manager you've hired is adding 1% or 2% above the beta. If so, then you or your clients actually receive cash plus 1% to 2%. Voilà! Absolute return in a boring old mutual fund.

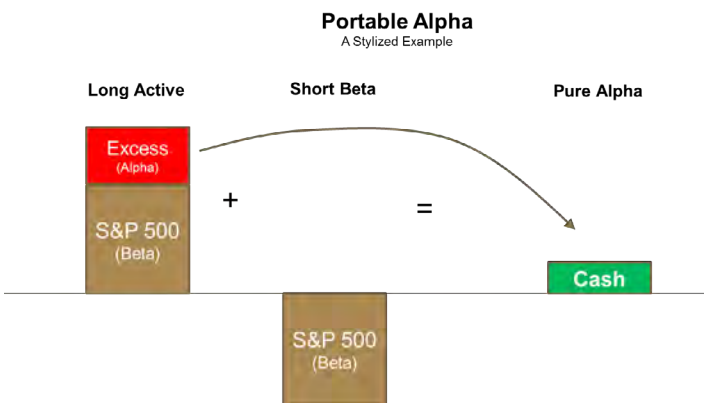


Exhibit 4 By Simultaneously Investing in an Actively Managed Fund While Shorting the S&P 500 Index, Investors Can Come Close to Capturing an Active Manager's Alpha Without Taking on Market Risk
Source: GMO

Protection in Down Markets

The conventional thinking about hedge funds and their managers is that they alone have the tools and skills to protect you in down markets. We offer an alternative point of view. As Exhibit 5 shows and we all remember far too well, equity markets suffered a devastating blow in 2008. Risk assets suffered huge losses. Yet the HFRX index, a common hedge fund index, lost almost as much as the average, plain-vanilla 60% stock/40% bond portfolio² in spite of the benefit provided by those much ballyhooed, sophisticated tools and skills. The index posted a loss again in 2011, by the way. Ouch!

In 2008, the GMO Benchmark Free Allocation Strategy, which is an unconstrained, go-anywhere portfolio, lost a relatively moderate 12.1%, net of fees.

The silver lining of that relatively modest loss was that even though the hedge fund and global equities indexes were still under water more than four years later, the GMO Benchmark Free Allocation Strategy was back in positive territory by March 2009, with a string of 10 consecutive positive months to finish 2009 with a gain of 19.9%, followed by positive net annual returns for each year from 2010 to 2014.

Alternative Thinking In A Down Year...

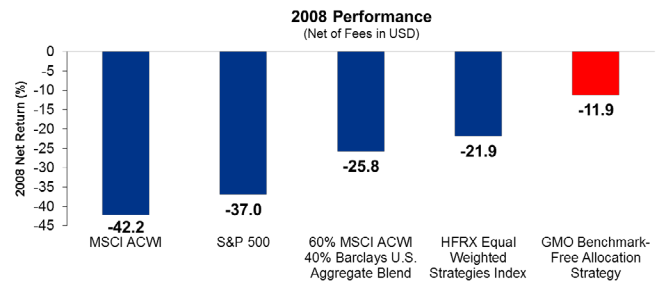


Exhibit 5 Alternative Thinking Helped Us Deliver a Narrower Loss than Many Market Benchmarks During the Global Financial Crisis of 2008

Source: GMO

An Alternative Way to Think About Core Managers — It's Not About Adding a Slice

The conventional thinking on alternatives says that you should carve out a dedicated slice of a strategic allocation, such as 5%, for an alternative asset class. Alternative thinking, on the other hand, asks “*Are you kidding?*” A 5% slice, even if it did everything it promised to do, would barely move the dial for an entire portfolio. In addition, these strategies can be complex, necessitating a new analyst or team of analysts to understand the wide array of alternative asset classes. All that effort for a 5% allocation?

Furthermore, adding a 5% slice misses the bigger picture. We believe that even a modified 60/40 portfolio still suffers from two major flaws. First, it completely ignores valuation. It didn't ask in 1999 or in 2007 whether stocks might be expensive. And it's not asking today, with historic low bond yields, whether bonds might be expensive. It simply holds the mix. Second, a 60/40 portfolio *never moves*. It stares at an oncoming train and never gets off the tracks. The classic 60/40 needs to give way, not to a small slice of alternative assets, but to an alternative way of thinking about the entire portfolio. We believe advisors should combine three, or perhaps four, different managers that think alternatively and are willing to challenge the conventions of modern portfolio management. Break free from benchmarks. Think in absolute returns, not relative. Define risk the way your clients define risk: don't lose money by trying not to lose money! Identify these managers and then make them the core of your clients' portfolios.

Conclusion: Alternative Thinking is Unconstrained and Dynamic

So what does Alternative Thinking really mean? First, it means being willing to own an “unconventional portfolio.” As an example, take a look at Exhibit 6. In July 2003, the GMO Benchmark Free Allocation Strategy held an unconventional mix of assets, including 31% in international small cap, a then esoteric class. The portfolio also held 14% in emerging equities, a smattering of real estate investment trusts, and a small allocation in international value. While it was unconventional in what it owned, the real story is what the portfolio did *not* own, which was essentially no U.S. stocks. U.S. equity is the most commonly held asset in any 60/40 mix, yet we owned essentially none because in our view U.S. stocks looked expensive at that time. A 60/40 portfolio, in contrast, will always hold the conventional assets, even if they are priced for sub-par returns in the future.

It is far more logical that a portfolio’s allocations would shift in response to current valuations. As an example, in the early 2000s, as interest rates were rapidly declining and helping to inflate a global asset bubble, we became nervous.

In the April 2007 GMO Quarterly Letter we warned our clients about this bubble. At that time, we also dramatically reduced our exposure to risk assets. We all know what happened when the global bubble burst, but after the collapse we published a short piece in March 2009 titled “Reinvesting When Terrified.” Risk assets had gone from being ridiculously expensive to ridiculously cheap in less than two years, and we responded by shifting our portfolios to take advantage. We believe our long-term performance (see Exhibit 7) shows the benefits of such a strategy.

Achieving an alternative pattern of returns does not result from simply adding alternative assets. It’s not about adding a slice — it’s about re-thinking the whole pie.

Must Be Unconventional And Dynamic

Benchmark-Free Allocation Strategy

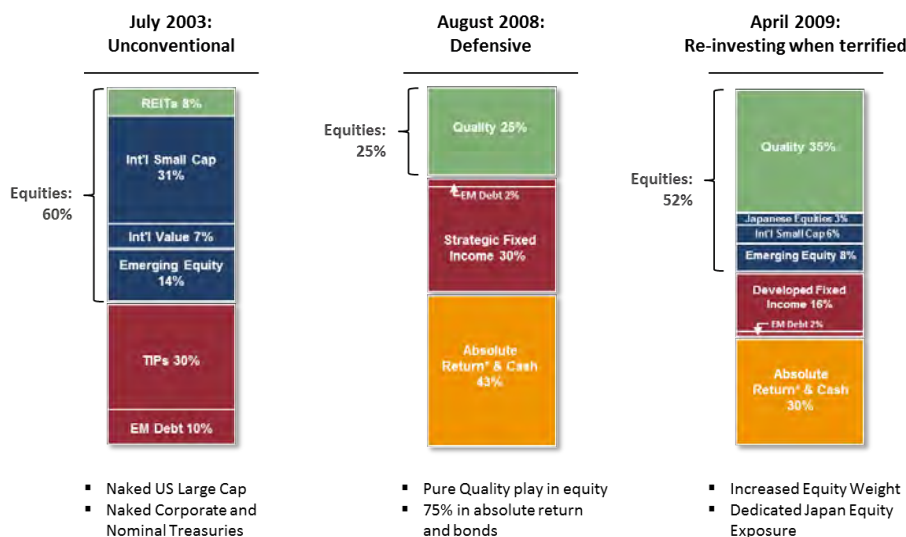


Exhibit 6 Alternative Thinking Is Dynamic, Not Strategic

Source: GMO

Endnotes

1. This example was chosen solely to illustrate that GMO's decision-making is based on how cheap or expensive we believe an asset class is and to coincide with an example of how a high correlation can exist between two asset classes with very different 10-year performances. The accuracy of these forecasts does not guarantee that current or future predictions will be accurate and may in fact be incorrect. The accuracy of forecasted returns for asset classes generally varies from period to period. In 2002, GMO stopped using 10-year forecasts and began using 7-year forecasts. The forecasts above were, at the time they were made, forward-looking statements based upon the reasonable beliefs of GMO and were not a guarantee of future performance.

2. 60% MSCI All Country World Index (ACWI)/40% Barclays U.S. Aggregate Index.

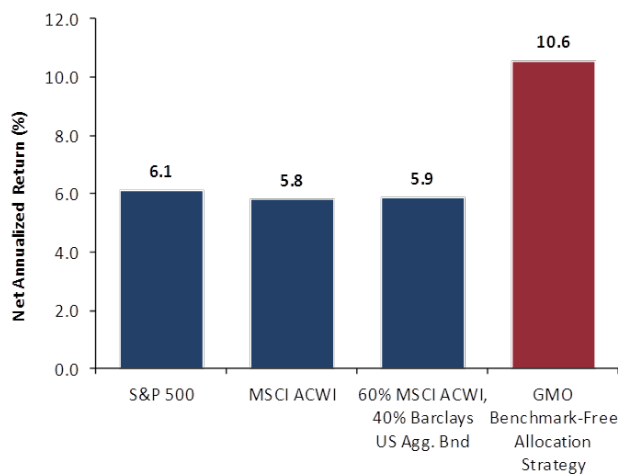
Author's Bio



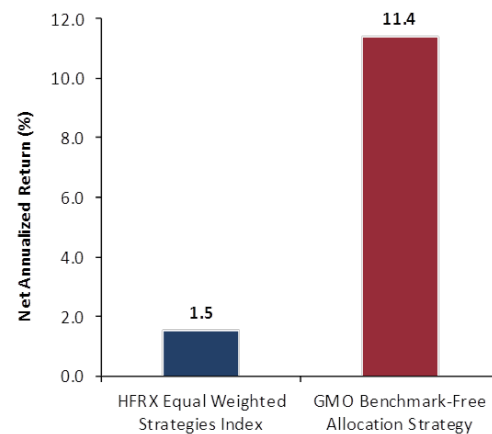
Peter Chiappinelli, CAIA, CFA

Mr. Chiappinelli is a member of GMO's Asset Allocation team. Prior to joining GMO in 2010, he was an institutional portfolio manager in the asset allocation group at Pyramis Global Advisors. Previously, he was the director of institutional investment strategy and research at Putnam Investments. Mr. Chiappinelli earned his MBA from The Wharton School at the University of Pennsylvania and his B.A. from Carleton College. He is a CAIA charterholder, and is the founder of the CAIA Boston chapter. He is also a CFA charterholder.

Inception of Benchmark-Free Allocation Strategy to 12/31/14



Inception of HFRX (3/31/03) to 12/31/14



Source: GMO

Inception date of GMO Benchmark-Free Allocation Strategy: 7/31/2001

The chart above shows the past performance of the Benchmark-Free Allocation Composite (the "Composite"). Prior to January 1, 2012, the accounts in the Composite served as the principal component of a broader real return strategy. Beginning January 1, 2012, accounts in the composite have been managed as a standalone investment.

Performance data quoted represents past performance and is not indicative of future performance. Returns are shown after the deduction of model advisory fees, transaction costs, and other expenses. The returns assume the reinvestment of dividends and other income. A GIPS® compliant presentation of composite performance has preceded this presentation in the past 12 months or accompanies this presentation, and is also available at www.gmo.com. Actual fees are disclosed in Part 2 of GMO's Form ADV and are also available in each strategy's compliant presentation.

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Exhibit 7 If You Seek Unconventional Returns

Source: GMO



Seeking Fully Investable and Optimized Exposure to Alternative Assets

Philip Boigner

Vice President, TIG Ecosystem at the
Dubai Silicon Oasis Authority

Gregory Gadzinski

Professor of Finance, International University of Monaco

Introduction

Historically, some alternative investments have achieved higher returns than their traditional counterparts and have exhibited low(er) correlation with other assets. These characteristics make them attractive investments for most asset managers in search of both alpha and diversification benefits. As a matter of fact, the number of sophisticated investors including endowments that allocate a significant portion of their capital to alternative investments, or follow the alpha/beta separation investment style, is continuously increasing. On average, alternative investments have grown faster than traditional investments over the last six years and have surpassed their 2007 peak levels. For instance, in 2012, the Yale endowment fund allocated more than 60% of its funds in private equity, real estate, and natural resources.¹ However, while hedge fund portfolio optimization has been studied thoroughly, (e.g., Popova, Morton, and Popova, 2003, Switzer and Omelchak, 2009), research on combining hedge funds with private equity and real estate investment strategies has been scarce (see Bird, Liem, and Thorp, 2013). In addition, most academics and professionals appear to be more concerned about including a constrained amount of alternatives in a “traditional” portfolio (equity, debt, and “cash-equivalent” investments).

Professionals and academics tend to agree that standard risk measures are not able to quantify the true risk embedded in modern investments accurately. Due to the non-normal nature of most asset returns, allocation methodologies that only consider the first two moments are inherently flawed, especially when they are applied to alternative investments (Fischer and Lind-Braucher, 2010). In non-Gaussian portfolio optimization, the variance is then replaced by another coherent risk metric that accounts for the higher moments.

For multi-asset allocation, the estimation of the covariance matrix is also a major issue, as it is often estimated with a lot of error when the sample size is reduced. However, shrinkage methods (e.g. Ledoit and Wolf, 2003) are widely used nowadays and provide researchers with a more robust sample covariance matrix.

However, despite all these fixes, a main issue remains: the resulting portfolios are rather concentrated in a few assets. In the search for well-diversified portfolios, a recent strand of the literature brought forth new diversification measures, the most popular methods being the most diversified portfolio of Choueifaty and Coignard (2008), and the maximum diversification technique of Meucci (2009). Meanwhile, another strand of the literature advocates diversification through volatility contribution; notably the so-called equal risk-parity portfolio methodology overweights safer assets such that each has the same contribution to the overall portfolio risk (see Maillard, Roncalli, and Teiletche, 2010).

This article further explores the problem of optimizing and managing a portfolio composed of a wide range of alternative asset classes. We consider only fully investable investment schemes in hedge funds, private equity, real estate, and exotics as some studies found that non-investable indices may overstate the true risk-return characteristics of the asset class (see Boigner and Gadzinski, 2013). We study eight different optimizing methodologies divided into four broad approaches, each based on a different metric: risk-adjusted expected return, predicted risk measure, diversification ratio, and heuristics. Interestingly, the out-of-sample performances of the portfolios are rather contrasting, with substantial differences in allocations over time. We also mix alternatives and traditional assets to build long-only portfolios without imposing an upper bound on the asset weights. Several conclusions are drawn on the importance of alternatives and the relevance of these portfolios for investors.

Data Description

While there is some debate as to what asset classes should fall under “alternatives,” it is generally agreed that they include hedge funds, private equity, real estate, commodities, and store-of-value-assets such as fine art. Investors seeking passive exposure to commodities can use futures, swaps, structured notes, and ETFs.

However, managers may also access commodities through specialized hedge funds or funds of funds (within the CTA and Managed Futures hedge fund strategies). While investments into store-of-value assets, such as art are less common, the search for investments that exhibit low correlation with standard portfolios, has brought about the emergence of *exotic* alternatives. These include fine art, rare wines, timber, and carbon trading certificates, among others. Consequently, we construct our portfolios from a set of investable indices or trackers covering a broad universe of alternative assets. The data are all expressed in US dollars.

Hedge Funds

Hedge Fund Research (HFR) and Dow Jones Credit Suisse (DJCS) offer investable hedge fund indices construed to represent the hedge fund universe. They contain fewer funds than the corresponding benchmark indices as well as different risk-return characteristics (see Boigner and Gadzinski, 2013, for more details). These investments can be combined in order to build a hedge fund portfolio or an investment into a Fund of Hedge Funds (FoHF), and are available at significantly lower minimum investment sizes.²

Private Equity

Due to its risk-return profile, private equity is becoming increasingly attractive to institutional investors (Lahr and Herschke, 2009; Aigner *et al.*, 2012). Private equity consists of investors and funds that purchase stakes in companies that are not publicly traded. Such investments are primarily made by private equity firms with a motivation to nurture expansion, develop new products, or restructure the company's operations, management, and/or ownership. The most common strategies in private equity include (leveraged) buy-outs, venture capital, and mezzanine investments.

Since there is no generally accessible secondary market for private equity, this investment class is considered to be illiquid. However, an increasing number of private equity firms are listed on exchanges, so that private equity can be traded publicly. The so-called Listed Private Equity (LPE) funds are the best available proxies for the general private equity universe,

even though they exhibit higher systematic risk than their non-listed counterparts (Lahr and Herschke, 2009). We use the LPX index family published by LPX GmbH, which constructs several indices including the LPX50, containing the 50 largest liquid LPE companies.

Real Estate

Real estate and property investments have long been an important pillar of any diversified institutional portfolio. The benefits of adding real estate into a mix of securities are well discussed in the academic literature (see Hudson-Wilson *et al.*, 2005). Real estate activities are defined as the ownership, trading, and development of income-producing real estate. Real estate is usually sub-divided into several different categories depending on the investment style followed. We use the FTSE EPRA/NAREIT Global Real Estate Index Series, as well as the iShares domestic real estate ETFs, in order to cover general trends in eligible listed real estate stocks worldwide.

Exotic Alternatives

Even though they are not under serious consideration by large segments of the investment community, these exotics should not be completely neglected (Bond, Hwang, and Satchell, 2007). The availability of investable "exotic" alternatives is limited, of course. However, some investment possibilities have been identified. Liv-ex publishes a monthly investable fine wine index. The Liv-ex Fine Wine Investables Index tracks around 200 red wines from 24 top Bordeaux chateaux. The component wines date back to the 1982 vintage and are chosen on the basis of their score from Robert Parker. The Barclays Capital Global Carbon Index (BGCI) is designed to measure the performance of the most liquid carbon-related credit plans. The index currently includes two plans: the European Union Emission Trading Scheme or EU ETS Phase II and the Kyoto Protocol's Clean Development Mechanism. Barclays Capital also makes an investable ETF that tracks the BGCI: the iPath Global Carbon ETN. Guggenheim Funds Investment Advisors, an investment company, provides the Guggenheim Timber ETF, which seeks to track the performance of the Beacon Global Timber Index.

The S&P Global Water Index provides exposure to fifty international companies that are involved in water related activities, such as water utilities and infrastructure, as well as water equipment and materials; the iShares S&P Global Water Index Fund closely tracks this index.

Traditional Assets

Our traditional asset classes comprise the followings: the JPM Global Bond Index, the MSCI World Index, the MSCI Emerging Markets Index, the DJ UBS Commodities Index, and the Barclays US Aggregate Credit Index. These liquid market indexes are all available through futures/ETFs.³

The data spans from November 1997 to September 2013.⁴ We use the first 60-month rolling window as our initial in-sample period. If the overall dataset comprises 60 indices, however, due to data limitations, we start with three indices at the start of our out-of-sample exercise. We update the universe and weights of our portfolios as more data become available every month and then calculate the out-of-sample monthly portfolios returns.

The following methodologies are used: the Modified Sharpe ratio (MSR), the Bayes-Stein modified Sharpe ratio (BAY), the Conditional Value-at-Risk (CVaR), the Omega measure of Keating and Shadwick (2002), the Most Diversified ratio (MDR) of Choueifaty and Coignard (2008), the maximum diversification technique or Diversified Risk Parity (DRP) of Meucci (2009), the Equal Risk Parity (ERP) and the Equally Weighted scheme (EW). We do not impose any upper bound on the assets weights. The Variance-Covariance Matrix is estimated using the shrinkage method of Ledoit and Wolf (2003). More details are available in the Appendix.

Out-of-Sample Performance

Exhibits 1 and 2 report the out-of-sample geometric average returns, volatility, maximum drawdown, and Sharpe ratio of the optimized rolling long-only portfolios for our universe of alternative assets. It appears that the MSR and BAY methodologies are the best strategies, as they outperform the others in terms of cumulative returns, Sharpe ratio, and maximum drawdown. However,

the alternative portfolios based on our heuristics and diversification methodologies perform poorly on all accounts. Exhibit 1 also highlights the sharp differences in performance between the “unconstrained” portfolios and the “constrained” portfolios, such as the equally-weighted and risk parity portfolios, which incorporate, by definition, all of the available assets in the portfolio.

Exhibit 3 displays the rolling weights. The best methodology, namely the Bayes-Stein modified Sharpe ratio, only involves a limited number of assets at one point in time. Consequently, the performance of the portfolios at time t is greatly influenced by the performance of a few assets. The total number of assets and the average number of assets included in the portfolio at one point in time are 24 and 3.4 respectively. Rebalancing occurs every month, with sudden changes or sometimes a complete shift in portfolio preferences. The portfolio is invested mostly in private equity and hedge funds strategies from 2002 to 2004, then heavily in real estate from 2004 to 2006, and fine wine from 2005 to 2007, but mostly in hedge fund arbitrage strategies from 2008 onwards.

We now include both traditional and alternatives indices and run our methodologies to find the optimized rolling long-only portfolios, still imposing no upper bound on the assets weights. Exhibit 4 shows that the mix of traditional and alternatives achieves the best performance with the Bayes-Stein modified Sharpe ratio methodology. As noted above, including all assets still leads to poorer results. The equally weighted portfolio is the best of its category, returning 4.3% per year. The BAY portfolio outperforms the other methodologies significantly, with 8.9% per year before fees. It also returns the best Sharpe ratio of all portfolios notably, thanks to a lower volatility than the “best” alternatives-only portfolio.

Interestingly, for all portfolios, the share of alternatives is, on average, well above 50% over the sample. For our best portfolios, the ratio even increases to 80%, with some periods fully invested in alternatives. This last result emphasizes the importance of including selected alternatives to a significant extent in order to achieve outstanding performance.

Conclusions

Alternative assets are promising institutional and private investors high-yielding investments. But how does one construct a portfolio of alternative assets that fulfills the requirements of modern portfolio theory and achieve at least comparative risk-adjusted performance to a traditional investment scheme? We explore this issue using a wide range of alternative assets. Our portfolios are optimized

using four different objectives with weights periodically re-allocated based on the time-varying risk and return characteristics of the securities available. Our results highlight the importance of a careful and time-varying selection of alternatives chosen among an exhaustive universe in order to achieve outperformance over the last decade. Moreover, we advise sophisticated investors to combine dynamically traditional and alternatives (mixed portfolios) while putting no constraints on the weights allocated to alternatives. We argue that nowadays such a strategy is possible given the availability of fully investable and liquid indices covering most asset classes.

However, for investors who do not want to (or cannot) allocate a large part of their funds to alternatives, we advise them to adopt a core/satellite approach, where the satellite is dynamically managed following the “best” methodologies implemented in this article.

	Geometric Average Return (% p.a.)	Std Dev (% p.a.)	Max.DD	Sharpe Ratio*	Average Number of Assets
MSR	6.4%	8.0%	18.3%	0.63	3.6
BAY	8.6%	9.3%	18.3%	0.72	3.4
CVaR	5.2%	12.2%	48.7%	0.31	2.4
Omega	2.7%	8.4%	30.4%	0.15	4.2
MDR	-1.0%	6.4%	27.6%	-0.37	7.7
DRP	-0.3%	10.9%	43.3%	-0.15	3.7
ERP	0.6%	7.6%	33.7%	-0.10	17.2
EW	2.8%	13.3%	54.8%	0.11	24.0

*Risk-free rate has been averaged over the whole period.

Exhibit 1 Performances of the Alternatives Portfolios

Source: Author's calculations

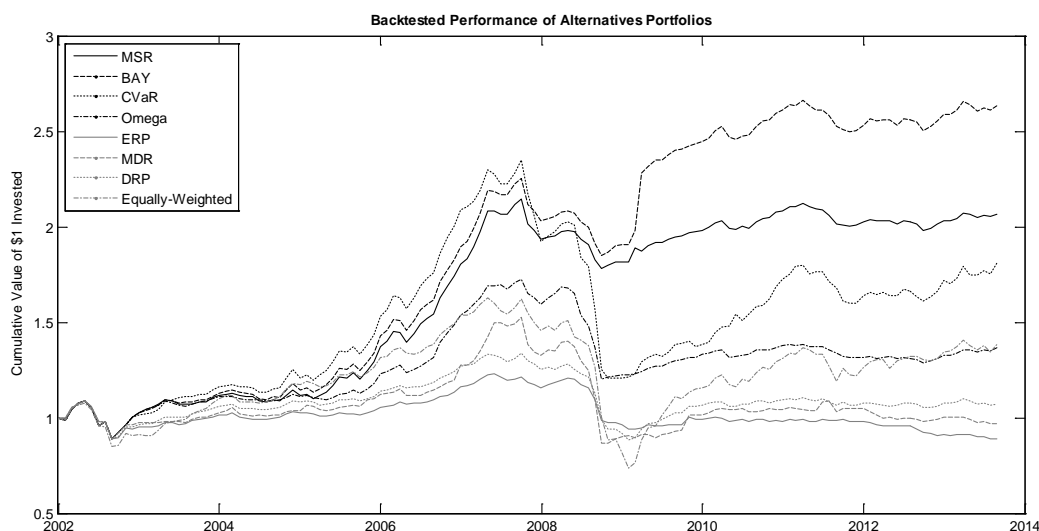


Exhibit 2 Cumulative Returns of Optimized Alternatives Portfolios

Source: Author's calculations

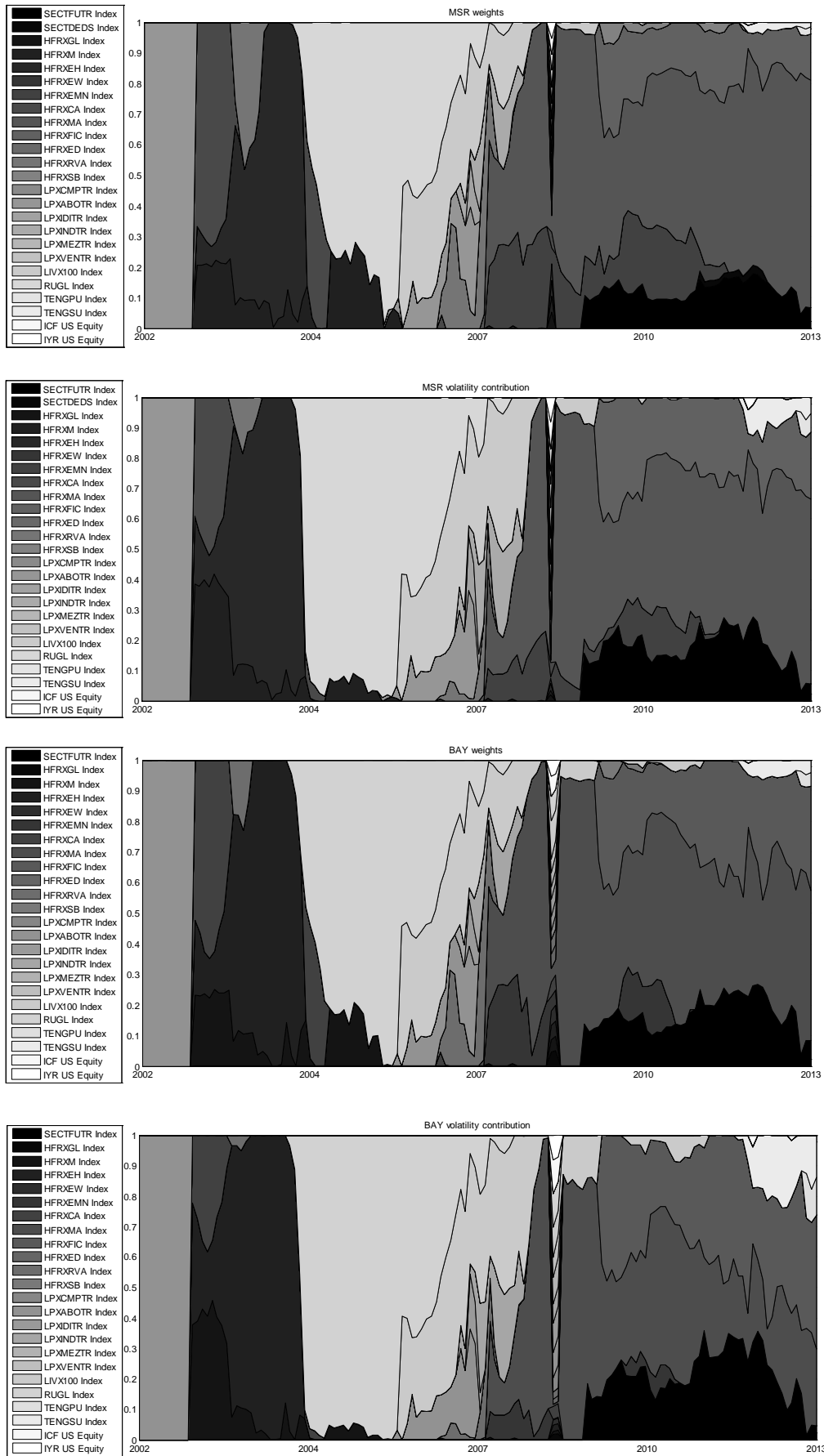


Exhibit 3 Optimal Weights and Volatility Contribution for Alternatives Portfolios

Source: Data as listed in the legend and author's calculations

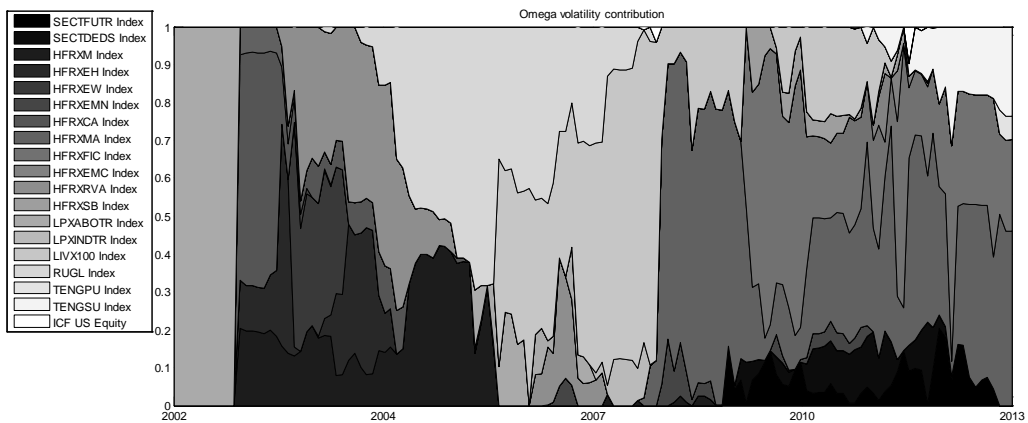
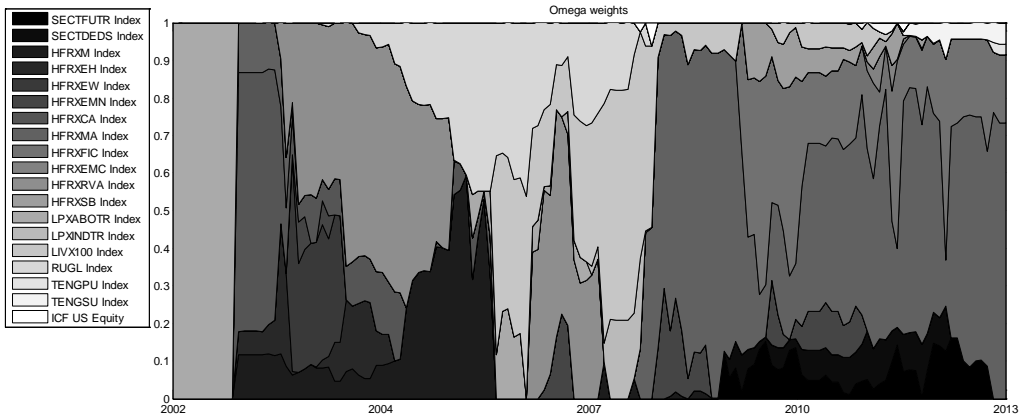
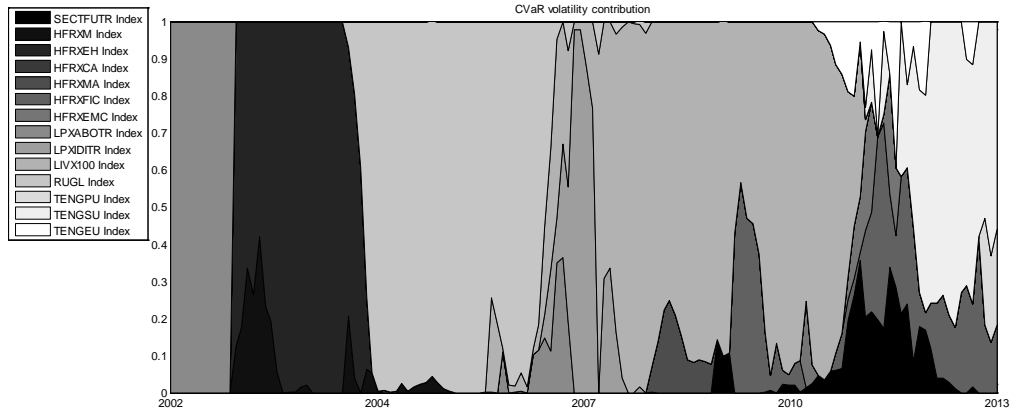
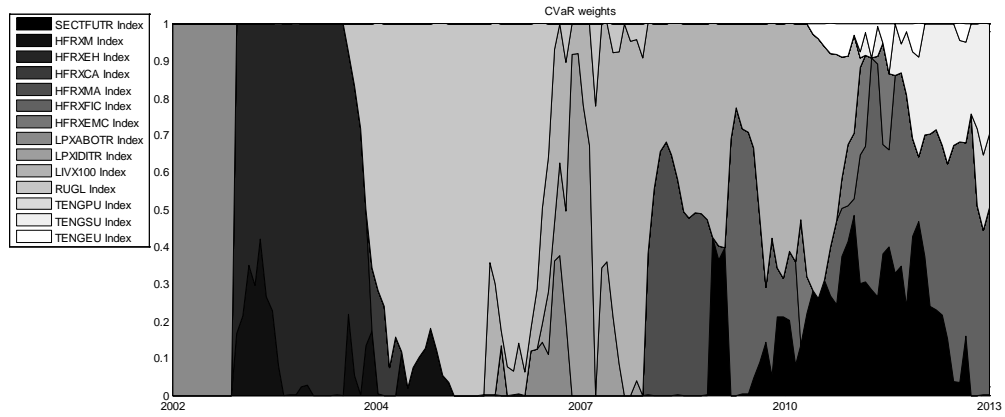


Exhibit 3 (Cont'd) Optimal Weights and Volatility Contribution for Alternatives Portfolios

Source: Data as listed in the legend and author's calculations

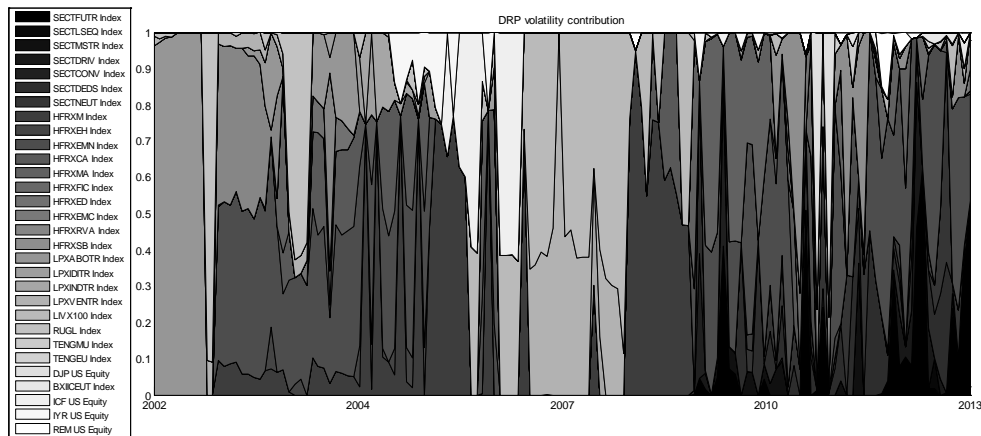
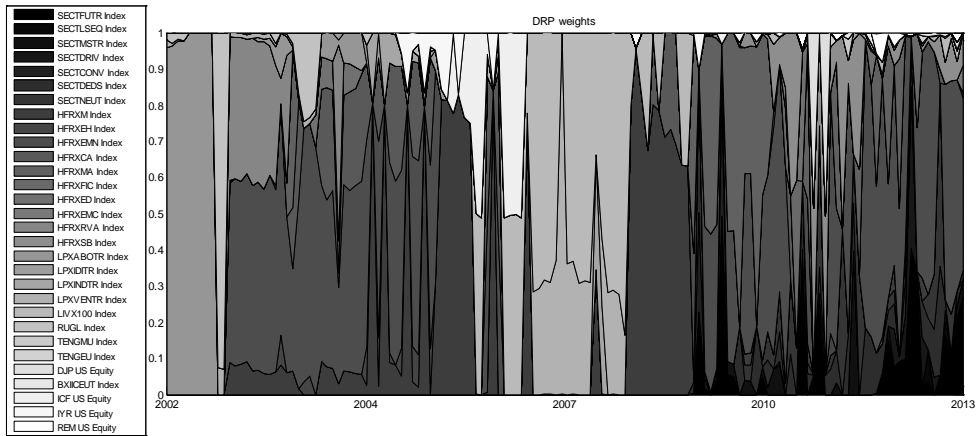
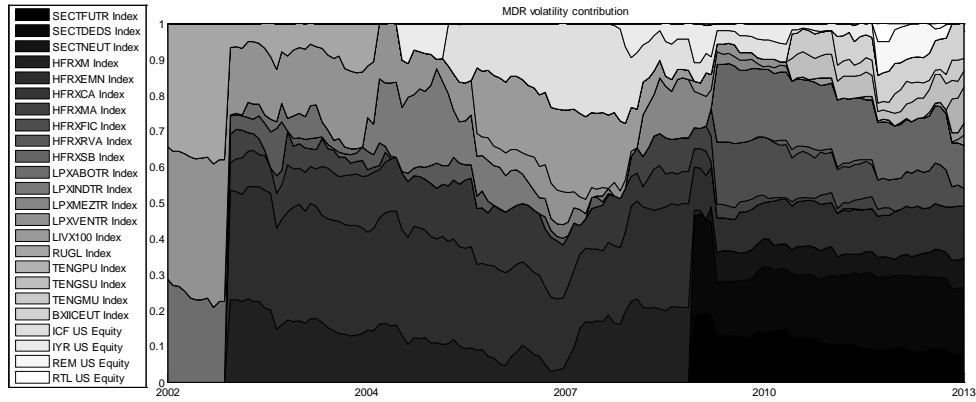
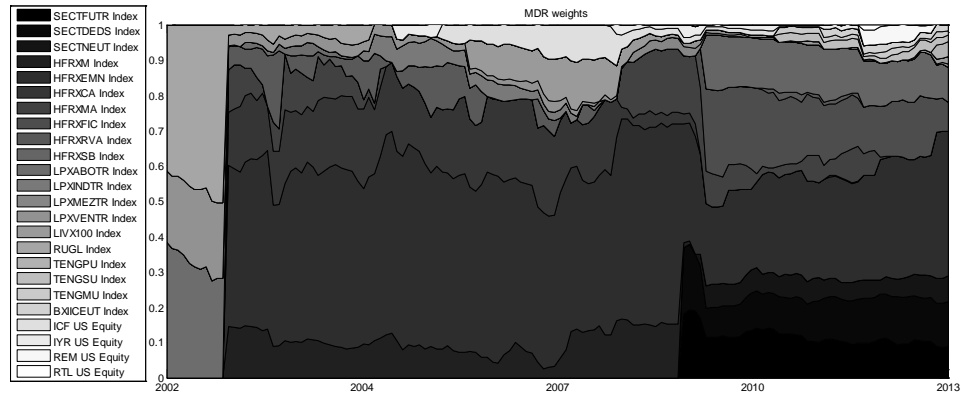


Exhibit 3 (Cont'd) Optimal Weights and Volatility Contribution for Alternatives Portfolios

Source: Data as listed in the legend and author's calculations

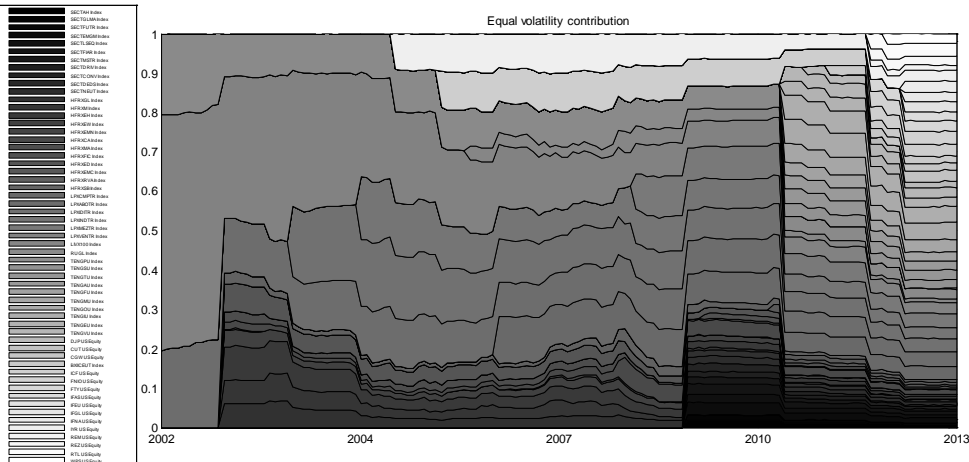
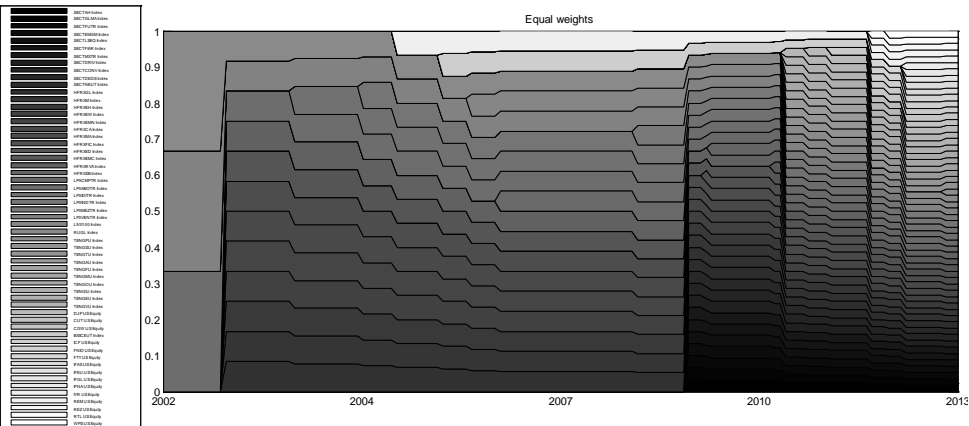
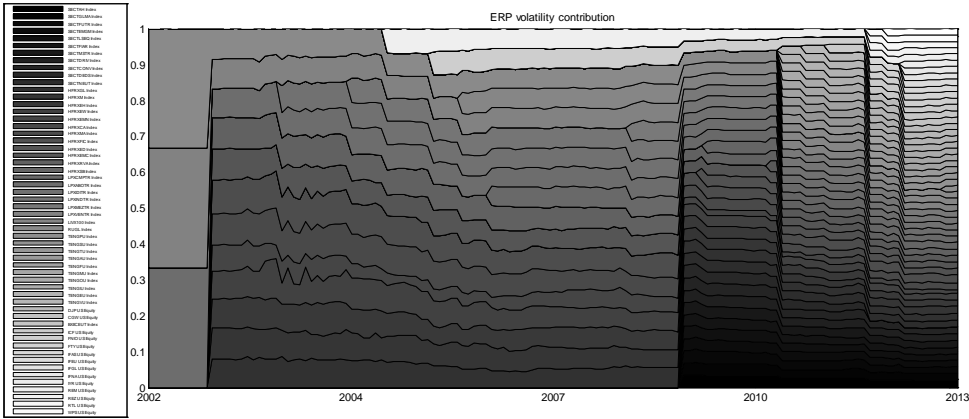
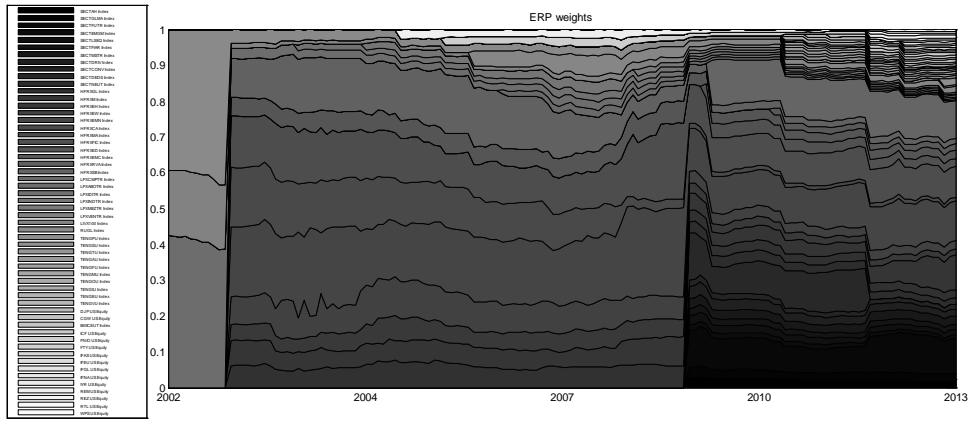


Exhibit 3 (Cont'd) Optimal Weights and Volatility Contribution for Alternatives Portfolios

Source: Data as listed in the legend and author's calculations

	Geometric Average Return (p.a.)	Std Dev (p.a.)	Max.DD	Sharpe Ratio*	Share of Alternatives
MSR	6.6%	6.3%	18.1%	0.81	0.80
BAY	8.9%	7.7%	18.5%	0.89	0.81
CVaR	5.4%	11.6%	48.9%	0.35	0.78
Omega	4.8%	5.4%	18.5%	0.62	0.69
MDR	1.3%	4.4%	20.3%	-0.01	0.76
DRP	6.3%	9.0%	19.9%	0.54	0.69
ERP	2.6%	6.1%	29.9%	0.19	0.73
EW	4.3%	12.1%	51.1%	0.24	0.77

*Risk-free rate has been averaged over the whole period.

Exhibit 4 Performances of the Traditional/Alternatives Assets Portfolios

Source: Author's calculations

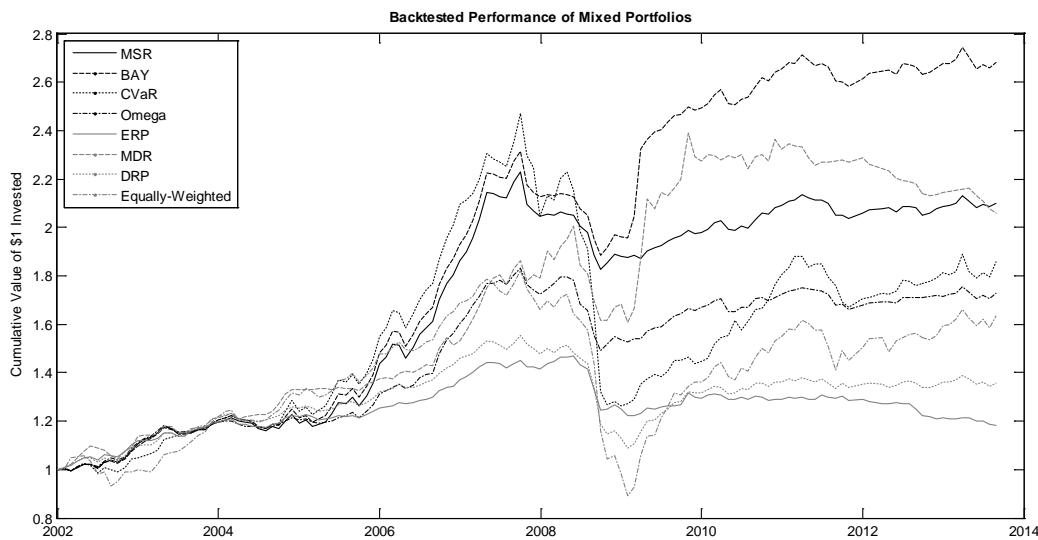


Exhibit 5 Evolution of the Performance of the Optimized Mixed Portfolios

Source: Author's calculations

Portfolio Optimization Frameworks

We build unleveraged long-only optimized portfolios without imposing an upper bound on the assets weights, using the following objective functions.

Risk-Adjusted Expected Returns

Modified Sharpe Ratio

The Modified Sharpe ratio is a variation of the standard Sharpe ratio taking non-normality into account. The MSR replaces the standard deviation in the denominator with the Modified VaR as follows:

$$MSR = \frac{r - r_f}{MVaR} \quad (1)$$

$$\text{with } MVaR = \mu - \left\{ z_c + \frac{1}{6}(z_c^2 - 1)s + \frac{1}{24}(z_c^3 - 3z_c)k - \frac{1}{36}(2z_c^3 - 5z_c)s^2 \right\} \sigma \quad (2)$$

where r represents past return, r_f is the return of the risk-free asset, μ is the arithmetic mean, σ is the standard deviation, z_c is the number of standard deviations at the VaR_α , s is the skewness, and k is the (excess) kurtosis.

Bayes-Stein Estimator

To address estimation error in the expected returns, the Bayes-Stein estimator uses a shrinkage method where the sample means are multiplied by a coefficient lower than one. We follow Jorion (1985) and shrink the expected returns towards the Minimum Variance Portfolio (MVP) average returns as follows:

$$\bar{r}(\hat{w}) = \hat{w} * \hat{r}_0 + (1 - \hat{w}) * \bar{r}_j \quad (3)$$

$$\hat{w} = \frac{\hat{\lambda}}{T + \hat{\lambda}} \quad (4)$$

$$\hat{\lambda} = \frac{(N + 2)(T - 1)}{(r - r_0)' \Sigma^{-1} (r - r_0)(T - N - 2)} \quad (5)$$

Where \hat{r}_0 and \hat{w} are estimated from the data. The average is “shrunk” toward the new mean $\bar{r}(\hat{w})$. Since the variance-covariance matrix Σ is not known in practice, it is replaced by the shrinkage estimate given by Ledoit and Wolf (2003). (See below.)

Risk Measures

Conditional Value-at-Risk

To take into account the skewness and kurtosis, we implement the Cornish-Fisher expansion of the $CVaR_\alpha$ as:

$$CVaR_\alpha(X) = \mu - \frac{1}{1 - \alpha} f(\hat{z}_\alpha) \sigma \quad (6)$$

$$\text{with } \hat{z}_\alpha = z_\alpha + \frac{1}{6}(z_\alpha^2 - 1)s + \frac{1}{24}(z_\alpha^3 - 3z_\alpha)k - \frac{1}{36}(2z_\alpha^3 - 5z_\alpha)s^2 \quad (7)$$

Where $f(\cdot)$ is the standard normal density, μ is the arithmetic mean, σ is the standard deviation, z_α is the number of standard deviations at the $VarR_\alpha$, s is the skewness, and k is the (excess) kurtosis.

The Omega Model

Keating and Shadwick (2002) developed the Omega measure, which consider returns below and above a specific loss threshold, providing a ratio of total probability weighted losses and gains.

$$\dot{U}(r) = \frac{\int_{r_f}^{+\infty} (1 - F(x)) dx}{\int_{-\infty}^{r_f} F(x) dx} \quad (8)$$

Where r_f is the return level regarded as a loss threshold (risk-free rate), and $F(\cdot)$ the cumulative distribution function of the assets returns.

Diversification Measures

Most Diversified Portfolio

Choueifaty and Coignard (2008) define the diversification ratio as the ratio of the weighted average of volatilities divided by the portfolio volatility. The Most Diversified Portfolio is then computed by maximizing this ratio:

$$w_{MDP} = \operatorname{argmax}_w D(w) = \frac{w' \cdot \sigma}{\sqrt{w' \Sigma w}} \quad (9)$$

Maximum Diversification

Using principal component analysis, Meucci (2009) intends to extract the main drivers of the assets' variability. The principal components represent then the uncorrelated risk sources inherent in the portfolio assets. Meucci (2009) defines the risk contributions of these components as:

$$p_i = \frac{w_i^2 \lambda_i}{Var(R_w)} \quad (10)$$

Where λ_i are the principal portfolio's variances, $Var(R_w)$ is the variance of the portfolio, and the p_i 's sum to one.

A portfolio is well diversified when the distribution is uniform, i.e. when the p_i 's are equal to $1/N$.

A distribution or diversification metric (see Exhibit 8) is derived and equal to:

$$\mathbb{N}_{Ent} = \exp\left(\sum_{i=1}^N p_i \ln p_i\right) \quad (11)$$

It is straightforward to see that when all the p_i 's are all equal to $1/N$, the entropy is maximized and equal to N .

With the budget constraints, we then solve the following problem:

$$w_{DRP} = \operatorname{argmax}_w \mathbb{N}_{Ent} \quad (12)$$

Heuristics

Equal Risk Contribution

The ERC portfolio is designed such that each constituent has the same weighted marginal contribution to risk. We follow Maillard, Roncalli, and Teiletche (2010) :

$$w_{FRP} = \operatorname{argmin}_w \sum_{i=1}^N \sum_{j=1}^N (w_i(\Sigma w)_i - w_j(\Sigma w)_j)^2 \quad (13)$$

which essentially minimizes the variance of the risk contributions.

Sample Variance-Covariance Matrix

Ledoit and Wolf (2003) define the shrinkage estimator of the covariance matrix as

$$\hat{\Sigma}_{\text{Shrink}} = \hat{\delta}^* * F + (1 - \hat{\delta}^*) * S \quad (14)$$

Where S is the sample covariance matrix and F is the constant correlation covariance matrix calculated as follows:

Given the sample correlations on assets i and j :

$$r_{ij} = \frac{S_{ij}}{\sqrt{S_{ii}S_{jj}}} \quad (15)$$

And the average sample correlation:

$$\bar{r} = \frac{2}{(N-1)N} \sum_{i=1}^{N-1} \sum_{j=i+1}^N r_{ij} \quad (16)$$

We define the sample constant correlation matrix F by means of the sample variances and the average sample correlation:

$$f_{ii} = S_{ii} \quad \text{and} \quad f_{ij} = \bar{r} * \sqrt{S_{ii}S_{jj}} \quad (17)$$

Endnotes

1. See <http://investments.yale.edu>.
2. There is no attempt to allocate funds dynamically and funds are selected through due diligence in order to reduce extreme risks due to operational issues (e.g. fraud, bankruptcy), rather than for their hypothetical future potential returns. As a result, both management and incentive fees tend to be significantly lower for investable hedge fund indices than for FoHF. (Gehin & Vaissié, 2004).
3. We do not use the trackers, but the main indices series.
4. We do not report either the descriptive statistics or the correlation matrix due to the large number of assets involved. (We can provide them to interested readers.)

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Author Bios



Philip Boigner

Philip Boigner is Vice President of TIG Ecosystem at the Dubai Silicon Oasis Authority. He has over 10 years of experience in the investments industry. His resumé includes assignments at a German buy-out fund, an Australian Venture Capital company, a Dubai-based Alternative Investments Fund-of-Funds, and a Swiss alternative assets advisory firm among others. Mr Boigner has a DBA from the University of Nice Sophia Antipolis and the International University of Monaco. He holds an MBA degree from the University of Southern California's Marshall School of Business in Los Angeles. His research concentrates on hedge fund return replication, asset allocation, and sovereign wealth funds.



Gregory Gadzinski

Gregory Gadzinski is Professor of Finance at the International University of Monaco. Previously, he worked for the Hedge Fund Research Institute in Monaco and was an Assistant Professor of Economics and the Chair for International Economics in Cologne. He also served as a consultant for the European Central Bank in Frankfurt and for Alpstar Capital, a European Hedge fund based in Geneva. Professor Gadzinski holds a Ph.D. in econometrics from the GREQAM, Aix-Marseille University.



Reducing Your Reliance on Risk Models: Another Look at Active Share

Michael Hunstad

Director of Quantitative Research, Northern Trust Asset Management

Introduction

One common complaint concerning quantitative equity strategies is that they rely too heavily on standard risk models such as Barra or Axioma. Ostensibly this means risk metrics computed using these tools, most notably portfolio volatility and tracking error, are inaccurate if the future behavior of equities is not properly characterized by the model. This could result in exposure to considerably more risk than had been otherwise anticipated or desired.

While risk models have historically performed quite well, there have been periods when these models have failed to make reliable predictions. Although risk model errors are an unfortunate reality, in this article we show that not all portfolios are equally sensitive to these misspecifications. In particular, we demonstrate that, all else being equal, portfolios with higher active share are much more sensitive to model errors than those with lower active share. Therefore, confidence bands around risk metrics for high active share equity products are larger and, as a result, we have less faith in their accuracy.

Model Errors

Most risk models are comprised of two basic pieces: a set of factor exposures for each individual stock and a factor covariance matrix. With these two pieces in hand we can compute the expected volatility of a portfolio and/or the expected tracking error of the portfolio against a benchmark index. Expected volatility is computed as:

$$\sigma_p = \sqrt{(w'f)\Sigma(w'f)'} \quad (1)$$

Where σ_p is the volatility of the portfolio, w is a vector of portfolio weights, f is a matrix of factor exposures, and Σ is the factor covariance matrix. We can also compute tracking error as:

$$\sigma_E = \sqrt{(d'f)\Sigma(d'f)'} \quad (2)$$

Where σ_E is the portfolio tracking error and d is a vector of active weight deviations of the portfolio from a benchmark index.

Perhaps the most important risk model error is misspecification of the factor covariance matrix, such that the matrix Σ_M actually used in the model is not equal to the realized covariance matrix Σ_R . If this is the case, both portfolio volatility and tracking error estimates are biased. For example, the degree to which actual tracking error deviates from the risk model estimate is:

$$\Delta\sigma_E = \sqrt{(d'f)(\Sigma_R - \Sigma_M)(d'f)'} \quad (3)$$

For simplicity we can define the change matrix $\Sigma_C = \Sigma_R - \Sigma_M$ such that:

$$\Delta\sigma_E = \sqrt{(d'f)(\Sigma_C)(d'f)'} \quad (4)$$

And the factor deviation as $\delta = d'f$ and move the square to the left hand side such that:

$$\Delta\sigma_E^2 = \delta(\Sigma_C)\delta' \quad (5)$$

Since most risk models are designed such that factors are uncorrelated we note that Σ_R , Σ_M and hence Σ_C will have no non-zero off-diagonal elements. We can now write the above equation as simply:

$$\Delta\sigma_E^2 = \sum_{i=1}^N \Delta\sigma_i^2 \delta_i^2 \quad (6)$$

which is just the sum of the squared factor deviations times the change in their respective factor variances. Since $\delta = d'f$ and f remains unchanged, for any non-zero variance change $\Delta\sigma_i^2$, the squared change in tracking error $\Delta\sigma_E^2$ depends only on the square of the active weight vector d .

Equation 6 shows unambiguously that tracking error inaccuracies are magnified as the squared values of active weights are increased. This is directly equivalent to stating that tracking error changes are magnified as active share increases, since an increase in active share will *always* result in an increase in the sum of squared active weights.

Simulation

To confirm our assertion, we constructed a simple Monte Carlo simulation to study what happens to tracking error as the factor covariance matrix is perturbed. These perturbations are intended to reflect misspecifications in the covariance matrix and we will measure inaccuracies in tracking error from these misspecifications across a range of different active share levels. As we will see, tracking error inaccuracies rise polynomially with active share.

For each active share increment of 0.1 between the theoretical minimum of 0 and the maximum of 1.0 we generate 10,000 iterations. Each iteration models Σ_M as an identity matrix and Σ_R as an identity matrix with random, normally-distributed perturbations with mean of zero and standard deviations as described below. Factor exposures to three common factors (meant to represent the Fama French factors for beta, value, and size) are also simulated as random draws from a standard normal distribution.

The starting active weights are also chosen randomly, but are bound by the prescribed level of active share. These active weights and their corresponding factor exposures are then used to compute expected tracking error using Σ_M and realized tracking error using Σ_R . The difference between these two measures is saved and the standard deviation of these differences is then computed following completion of all iterations. These standard deviations define the confidence intervals around our model tracking error estimates. For a perturbation standard deviation of 0.01, the confidence intervals are shown in Exhibit 1.

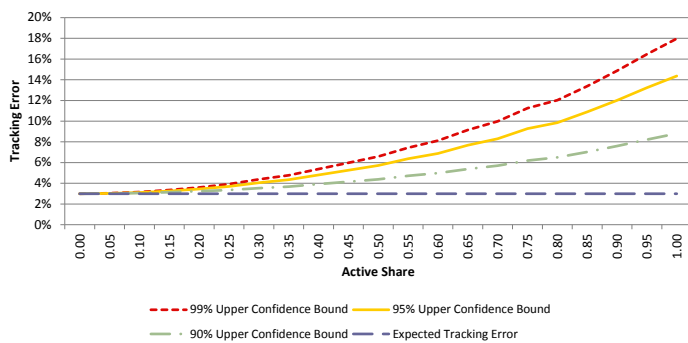


Exhibit 1 Confidence Bounds

Source: BARRA and author’s calculations

Partial results for perturbation standard deviations of 0.01 and 0.02 are detailed in Exhibit 2. We base our analysis on an expected tracking error of 3% and show the 95% upper bound on realized tracking error as active share is increased. It is clear that at low levels of active share, errors in the risk model have very little impact on measured versus realized tracking error. However, as active share increases the errors are magnified such that realized tracking error could be significantly different from what was anticipated.

Are the 1% and 2% levels of perturbation realistic? The 1% value corresponds to an expected change in factor variance of about 10% and 2% to an expected change in factor variance of roughly 14% — not at all unlikely from a historical perspective. It seems that our concern about the reliability of high active share risk metrics is warranted.

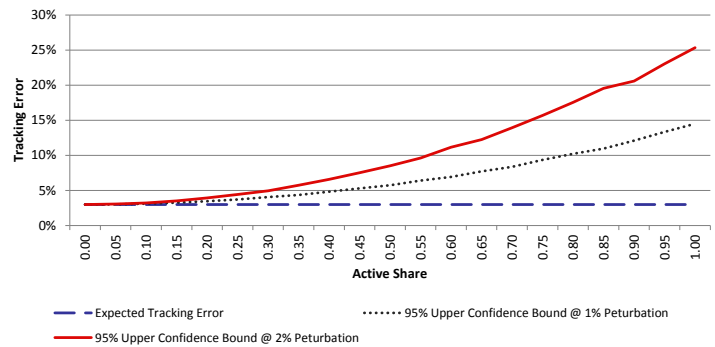


Exhibit 2 Perturbed Confidence Bounds Under

Source: BARRA and author’s calculations

While we have focused on perturbations of the factor covariance matrix, we get very similar results when we perturb the individual stock factor exposures. Since the matrix f is simply a multiplier on the deviation vector d , we can clearly see how larger active shares once again produce significant biases in risk metric estimates when factor exposures are misspecified. Importantly, note that these errors are multiplicative and not additive. If both the factor covariance matrix and the factor exposures are misspecified, then the confidence interval around risk metrics is even more extreme.

Finally, we note that errors in either the factor covariance matrix or the factor loadings are directly synonymous with errors in the individual stock return covariance matrix. To illustrate this simply, note from Equation 2 that we can use the factor covariance matrix Σ and individual stock factor loadings f to recover the covariance matrix of individual stock returns we’ll call Σ_{SR} where:

$$\Sigma_{SR} = f(\Sigma f') \quad (7)$$

Individual Factor Misspecification

Up until now, we have assumed risk model errors are equally likely for any factor. In other words, misspecification of factor loadings or factor covariances are, for example, just as probable for size as they are for value or beta.

We know, however, that this is not the case and the likelihood of errors in a specific factor increases as its return volatility becomes less stable or less consistent through time. If factor volatilities are changing, then estimates of factor covariances and loadings are probably biased.

We can get a rough gauge of factor return stability by measuring how its volatility changes through time. This measure, known as the “volatility of the volatility” or “vol. of the vol.,” is simply the annual standard deviation of rolling 12-month return volatilities. The higher the “vol. of the vol.” the more the factor return volatility changes over time and the less confidence we have in risk model components associated with that factor.

Exhibit 3 details the “vol. of the vol.” estimates for several BARRA risk factors. These figures were calculated from January 1974 to December 2014 and show that different factors do indeed have different “vol. of vol.” measures. The particularly high “vol. of vol.” for momentum and volatility are strongly intuitive. Numerous studies have highlighted the temporal inconsistency of equity volatilities and demonstrated that the volatility of momentum is equally episodic.

BARRA Factor	Annualized Vol. of Vol.	Skew
Momentum	2.6%	1.97
Volatility	2.5%	1.51
Size	1.0%	.087
Earnings Yield	0.9%	1.88
Value	0.6%	1.34
Dividend Yield	0.6%	0.92
Leverage	0.5%	1.16
Earnings Variability	0.5%	0.90
Growth	0.5%	0.09

Exhibit 3 Factor Vol. of Vol. 1974 to 2014

Source: BARRA and author’s calculations

These results are confirmed by examining the historical time series of factor standard deviations from the BARRA covariance matrices themselves. From Exhibit 4 it is clear that few of the factors have standard deviations that are consistent through time. As with our previous analysis, volatility and momentum show the highest degree of instability, with standard deviations that fluctuate between 30% and 100%. More importantly, it shows our perturbation assumptions in our Monte Carlo study are entirely realistic.

Another measure we can use to assess the inconsistency of factor volatility is skewness. In this case, skewness measures the relative frequency of volatility spikes within the factor returns. The higher the skewness, the more likely a factor is to have a volatility spike and, hence, the more likely the factor will have inconsistent volatility. Exhibit 4 shows that momentum and volatility are particularly prone to volatility spikes. A histogram of momentum volatilities is shown in Exhibit 5, which clearly suggests a long right hand tail (strong positive skewness) to the distribution such as that approximated by a lognormal fit.

These findings suggest that portfolios targeted as specific factors, particularly high momentum and high volatility (i.e., high beta), are more exposed to factor model misspecifications and, hence, the confidence bands around their risk metrics are particularly wide. Fundamental equity strategies that typically have a high active share along with a relatively high exposure to momentum are particularly prone to risk metric bias.

¹In statistics this phenomenon is known as heteroskedasticity.

²Tests for heteroskedasticity were also conducted using the Breusch-Pagan (1979), Breusch-Pagan-Koenker modification (1980) and White (1980) tests. All factors were found to be heteroskedastic with the exception of Value.

Skewness is defined as the third central moment about the mean:

$$\frac{\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^3}{\left(\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2 \right)^{3/2}}$$

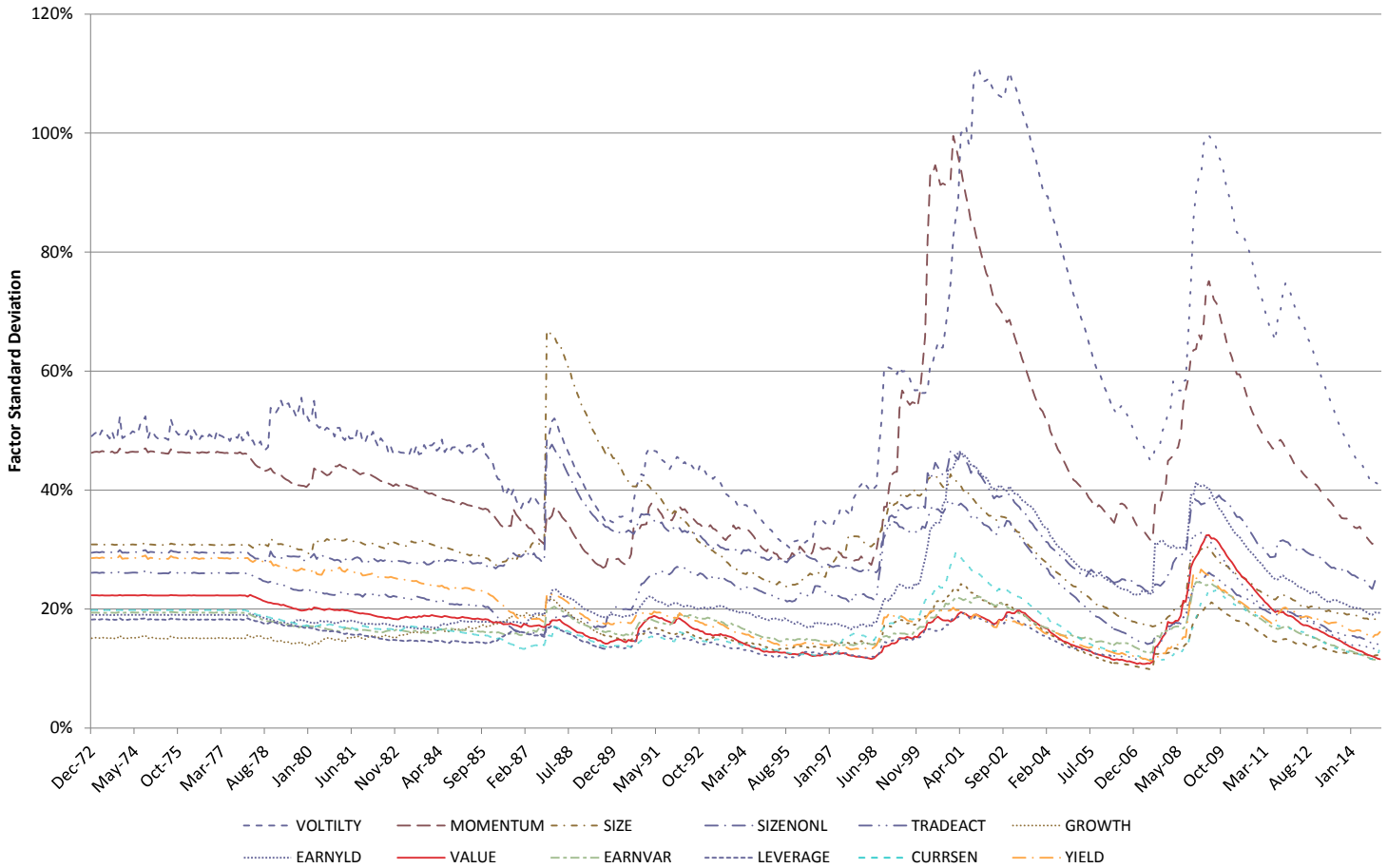


Exhibit 4 BARRA Factor Standard Division

Source: BARRA and author's calculations

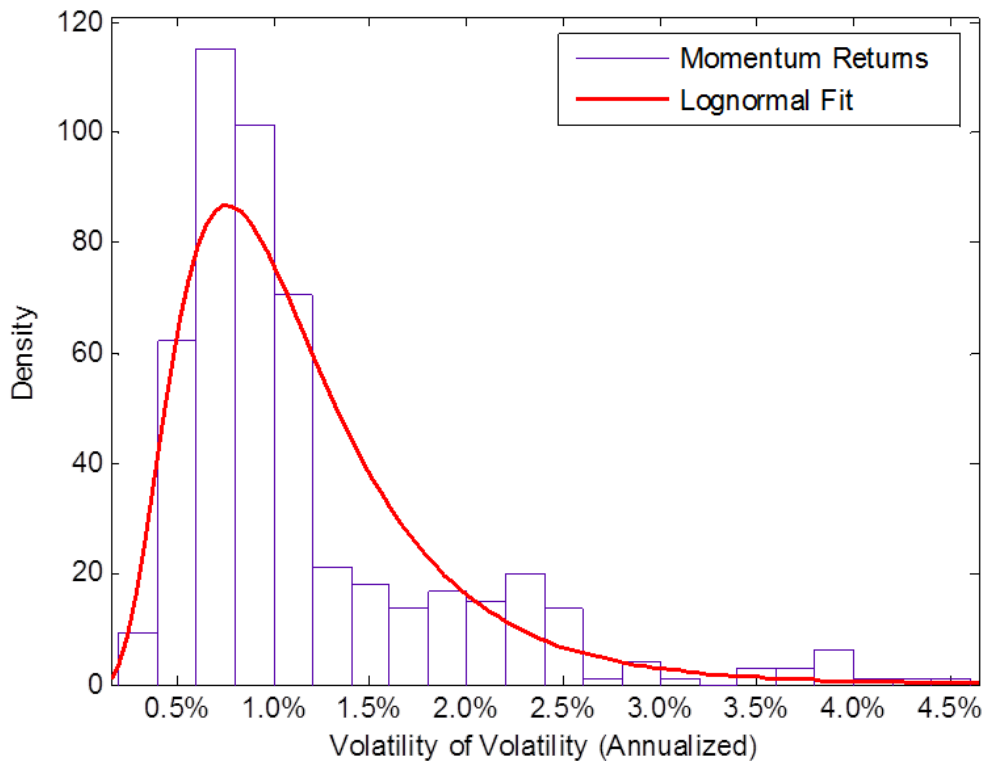


Exhibit 5 Distribution of Momentum Volatilities

Source: BARRA and author's calculations

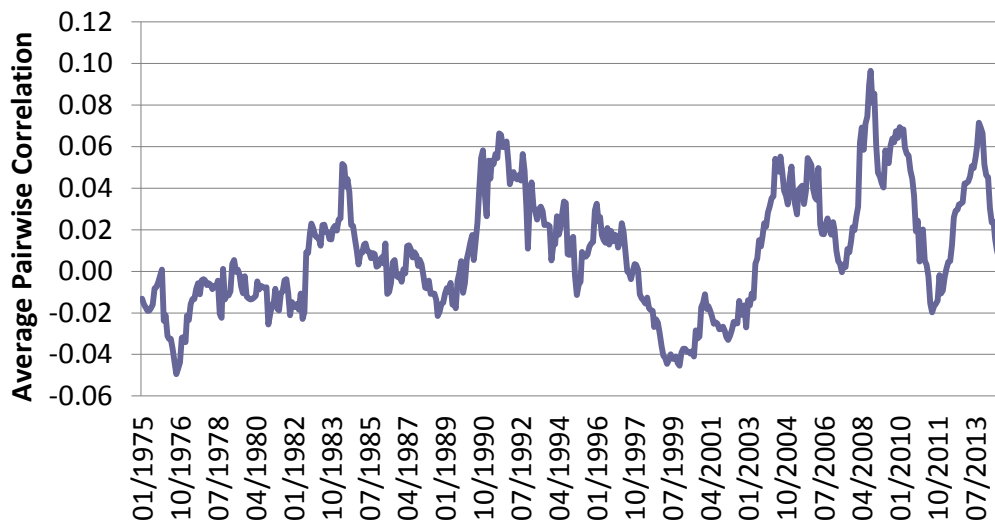


Exhibit 6 Average Pairwise BARRA Factor Return Correlation

Source: BARRA and author's calculations

Misspecification of Correlations

We mentioned previously that most risk models are designed such that factors are uncorrelated and, hence, Σ_R , Σ_M , and Σ_C will have no non-zero off-diagonal elements. While this assumption typically holds, there can be periods in which off-diagonal covariances are non-zero which can also influence tracking error inaccuracies. To see this we can rewrite Equation 6 with covariance terms as:

$$\Delta\sigma_E^2 = \sum_{i=1}^N \Delta\sigma_i^2 \delta_i^2 + 2 \sum_{1 \leq i < j \leq N} \Delta \text{cov}(x_i, x_j) \delta_i^2 \delta_j^2 \quad (8)$$

Where x_i and x_j represent the return series of individual factors i and j used to compute Σ_M . Note that, once again, for any non-zero covariance change $\Delta \text{cov}(x_i, x_j)$ the squared change in tracking error $\Delta\sigma_E^2$ depends only on the square of the active weight deviation d_i (or d_j) since $\delta_i = d_i f_i$ and f_i remains unchanged.

Exhibit 6 shows the average rolling 24 month pair-wise correlation among the 13 Barra factor return series.

Although the average correlation is approximately zero over time, there are distinct periods where correlations and hence covariances are significantly positive. For example, between July of 2007 and August of 2008, the average pairwise correlation jumps from 0.00 to more than 0.10. Although this is a relatively small correlation in absolute terms, it represents a significant change in covariances that can influence tracking error estimates materially. Note that most correlation spikes occur in periods of recession where asset correlations in general tend to increase.

Like individual factor volatilities, misspecification of factor covariances causes tracking error changes to be magnified as active share increases. Although the effect is somewhat less extreme than those shown in Exhibits 1 and 2, the impact can still be meaningful.

Conclusions

The results of this paper show:

- While all portfolio risk metrics are sensitive to errors in the risk model, some portfolios are more sensitive than others.
- The sensitivity of a portfolio to risk model errors rises with active share.
- Monte Carlo simulation shows that at realistic levels of risk model error the confidence bounds on risk metrics grow dramatically with active share and, therefore, these metrics may lose credibility as active share increases.
- The likelihood of risk model error depends on portfolio factor exposure. For example, the higher the exposure to momentum and volatility factors, the larger the confidence band around portfolio risk metrics.
- To minimize reliance on risk models, one should choose an equity portfolio that meets return and risk objectives, but otherwise minimizes active share and exposure to specific factors like momentum and volatility.

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Author's Bio



Michael Hunstad, Ph.D.

Michael Hunstad, Ph.D., is the Head of Quantitative Research within the Global Equity Group of Northern Trust Asset Management. Prior to joining Northern Trust, Dr. Hunstad was head of research at Breakwater Capital, a proprietary trading firm and hedge fund. Previously, he was head of quantitative asset allocation at Allstate Investments, LLC, and a quantitative analyst with a long-short equity hedge fund. Dr. Hunstad holds a Ph.D. in applied mathematics from the Illinois Institute of Technology as well as an MBA in finance and an MA in econometrics.



IR&M Momentum Monitor

Alexander Ineichen, CAIA
Ineichen Research & Management AG

IR&M Momentum Monitor

By Alexander Ineichen, CFA, CAIA, FRM; www.ineichen-rm.com



Calendar Week:	Price Momentum								Earnings Momentum							
	Medium-term				Long-term				Medium-term				Long-term			
	10	11	12	13	10	11	12	13	10	11	12	13	10	11	12	13
Equities by region																
MSCI World	5	6	7	8	2	3	4	5	-26	-27	-28	-29	-16	-17	-18	-19
Europe (STOXX 600)	17	18	19	20	11	12	13	14	-3	1	2	3	35	36	37	38
MSCI Emerging Markets	5	-1	-2	-3	-18	-19	-20	-21	-26	-27	-28	-29	-87	-88	-89	-90
MSCI Asia Pacific ex Japan	7	-1	1	2	-18	-19	-20	-21	-25	-26	-27	-28	-18	-19	-20	-21
Equities by country																
USA (S&P 500)	5	6	7	8	163	164	165	166	-20	-21	-22	1	-8	-9	-10	-11
Canada (SPTSX 60)	7	8	9	-1	2	3	4	5	-20	-21	-22	-23	-11	-12	-13	-14
Brazil (Bovespa)	3	-1	1	2	-13	-14	-15	-16	-27	-28	-29	-30	-27	-28	-29	-30
France (CAC 40)	8	9	10	11	6	7	8	9	-8	1	2	-1	-6	-7	-8	-9
Germany (DAX 30)	16	17	18	19	11	12	13	14	57	58	59	-1	98	99	100	101
Italy (FTSE MIB)	7	8	9	10	1	2	3	4	-19	-20	-21	1	-9	-10	-11	-12
Switzerland (SMI)	3	4	5	6	-4	-5	-6	1	-8	-9	1	-1	-4	-5	-6	-7
UK (FTSE100)	7	8	9	10	3	4	5	6	-21	-22	-23	-24	-16	-17	-18	-19
Australia (S&P/ASX)	7	8	9	10	4	5	6	7	-20	-21	-22	-23	-15	-16	-17	-18
China (Shanghai Composite)	36	37	38	39	31	32	33	34	-4	-5	1	2	-13	-14	-15	-16
Hong Kong (Hang Seng)	9	-1	-2	1	36	37	38	39	-19	-20	-21	-22	-9	-10	-11	-12
India (Nifty)	10	11	-1	-2	72	73	74	75	-6	-7	1	2	67	68	69	70
Japan (Nikkei 225)	7	8	9	10	34	35	36	37	69	70	71	72	106	107	108	109
South Korea (Kospi)	6	7	8	9	-21	-22	-23	-24	13	-1	-2	-3	-92	-93	-94	-95
Bonds																
Barclays Global Aggregate	-27	-28	-29	-30	-21	-22	-23	-24	Commentary							
Barclays Global HY	4	-1	-2	1	-20	-21	-22	-23	Long-term price momentum for the S&P 500 is in its 166th week. This is long but not unprecedented.							
Barclays Euro Aggregate	76	77	78	79	71	72	73	74	Long-term momentum in some broad bond indices remains negative.							
Barclays Asia Pacific Aggregate	-4	-5	1	2	74	75	76	77	Long-term momentum of earnings estimates for the MSCI World turned in November and has been negative ever since.							
Barclays Global Emerging Markets	3	-1	-2	1	-13	-14	-15	-16	The USD has positive momentum.							
Barclays US Aggregate	-1	-2	1	2	60	61	62	63	The Fed's balance sheet stopped rising.							
Barclays US Corporate HY	6	7	8	9	-16	-17	1	2								
Hedge Funds																
HFRX Global Hedge Funds	5	6	7	8	-19	-20	-21	1								
HFRX Macro/CTA	29	30	31	32	34	35	36	37								
HFRX Equity Hedge	5	6	7	8	12	13	14	15								
HFRX Event Driven	4	5	6	7	-21	-22	-23	-24								
HFRX Relative Value Arbitrage	4	5	6	7	-26	-27	-28	-29								
HFRX Fixed Income - Credit	3	4	5	6	-21	-22	-23	-24								
Commodities																
Thomson Reuters/Jefferies CRB	-35	-36	-37	-38	-27	-28	-29	-30								
Gold (Comex)	-3	-4	-5	-6	-25	-26	-27	-28								
Copper (Comex)	-28	-29	1	2	-25	-26	-27	-28								
Oil (WTI)	-35	-36	-37	-38	-28	-29	-30	-31								
FX																
USD (trade-weighted, DXY)	42	43	44	45	34	35	36	37								
EURUSD	-43	-44	-45	-46	-36	-37	-38	-39								
JPYUSD	-32	-33	-34	-35	-27	-28	-29	-30								
Central banks' balance sheets																
Fed balance sheet	-2	-3	-4	-5	117	118	119	120								
ECB balance sheet	15	-1	1	2	9	10	11	12								
BoJ balance sheet	147	148	149	150	238	239	240	241								
BoE balance sheet	24	25	26	27	49	50	51	52								

Commentary
 Long-term price momentum for the S&P 500 is in its 166th week. This is long but not unprecedented.
 Long-term momentum in some broad bond indices remains negative.
 Long-term momentum of earnings estimates for the MSCI World turned in November and has been negative ever since.
 The USD has positive momentum.
 The Fed's balance sheet stopped rising.

Tutorial
 The momentum numbers count the weeks of a trend based on moving averages. Green marks a positive trend, red a negative one. Example: In week 22, the S&P has been in a long-term bullish trend for 123 weeks. See www.ineichen-rm.com for more information and/or trial issue.

Purpose
 The momentum monitor was designed to help investors with risk management, asset allocation, and position sizing. Tail events do not always happen out of the blue. They often occur when momentum is negative. Negative momentum makes hedging more important and suggests position sizing should be more conservative. In a bull market one ought to be long or flat but not short. In a bear market one ought to be short or flat but not long.

Source: IR&M, Bloomberg. Notes: Medium-term based on exponentially weighted average over 3 and 10 weeks. Long-term based on simply weighted average over 10 and 40 weeks. Earnings momentum is based on 12-month forward consensus EPS estimates.

Author's Bio



Alexander Ineichen is founder of Ineichen Research and Management AG, a research firm founded in October 2009 focusing on risk management, absolute returns, and thematic investing.

Alexander started his financial career in derivatives brokerage and origination of risk management products at Swiss Bank Corporation in 1988. From 1991 to 2005 he had various research functions within UBS Investment Bank in Zurich and London relating to equity derivatives, indices, capital flows, and alternative investments, since 2002 in the role of a Managing Director. From 2005 to 2008, he was a Senior Investment Officer with Alternative Investment Solutions, a fund of hedge funds within UBS Global Asset Management. In 2009, he was Head of Industry Research for the hedge fund platform at UBS Global Asset Management.

Alexander is the author of the two publications “In Search of Alpha: Investing in Hedge Funds” (October 2000) and “The Search for Alpha Continues: Do Fund of Hedge Funds Add Value?” (September 2001). These two documents were the most-often printed research publications in the documented history of UBS. He is also author of “Absolute Returns: The Risk and Opportunities of Hedge Fund Investing” (Wiley Finance, October 2002) and “Asymmetric Returns: The Future of Active Asset Management” (Wiley Finance, November 2006). Alexander has also written several research pieces pertaining to equity derivatives and hedge funds including AIMA’s Roadmap to Hedge Funds (2008 and 2012), which has been translated into Chinese and was the most-often downloaded document from their website at the time.

Alexander holds a Bachelor of Science in Business Administration with a major in general management from the University of Applied Sciences in Business Administration Zürich (HWZ) in Switzerland. Alexander also holds the Chartered Financial Analyst (CFA) and Chartered Alternative Investment Analyst (CAIA) designations and is a certified Financial Risk Manager (FRM). He is on the Board of Directors of the CAIA Association and is a member of the AIMA Research Committee.



VC-PE Index: A Look at Private Equity and Venture Capital as of Q3 2014

Mike Nugent
CEO/Co-Founder, Bison

Mike Roth
Research Manager, Bison

Now that the Q3 numbers are in, we can start to look at the numbers and pick out any trends that will likely characterize 2014. Besides the much talked about tech euphoria, 2014 looks like it is shaping up to be a year of strong distributions. Looking at 2003–2012, the average DPI change for top quartile North American managers from Q4 2013 through Q3 2014 is 0.16x. The 2007 and 2009 vintage years stand out as the biggest movers. This is being driven by both buyout and venture capital/growth equity funds. In fact, 2007 and 2009 venture capital/growth equity funds have distributed more, relatively speaking, than buyout funds through the first three quarters of 2014.

This is a positive development for the VC/GE industry. However, the VC/GE industry is still struggling to deliver money back to investors. You need to go back to 1998 to find a median DPI figure that is above 1.0x, meaning they have returned more than their investors paid in.

For a more in depth look at the buyout and venture capital benchmarks, please visit www.bison.co.

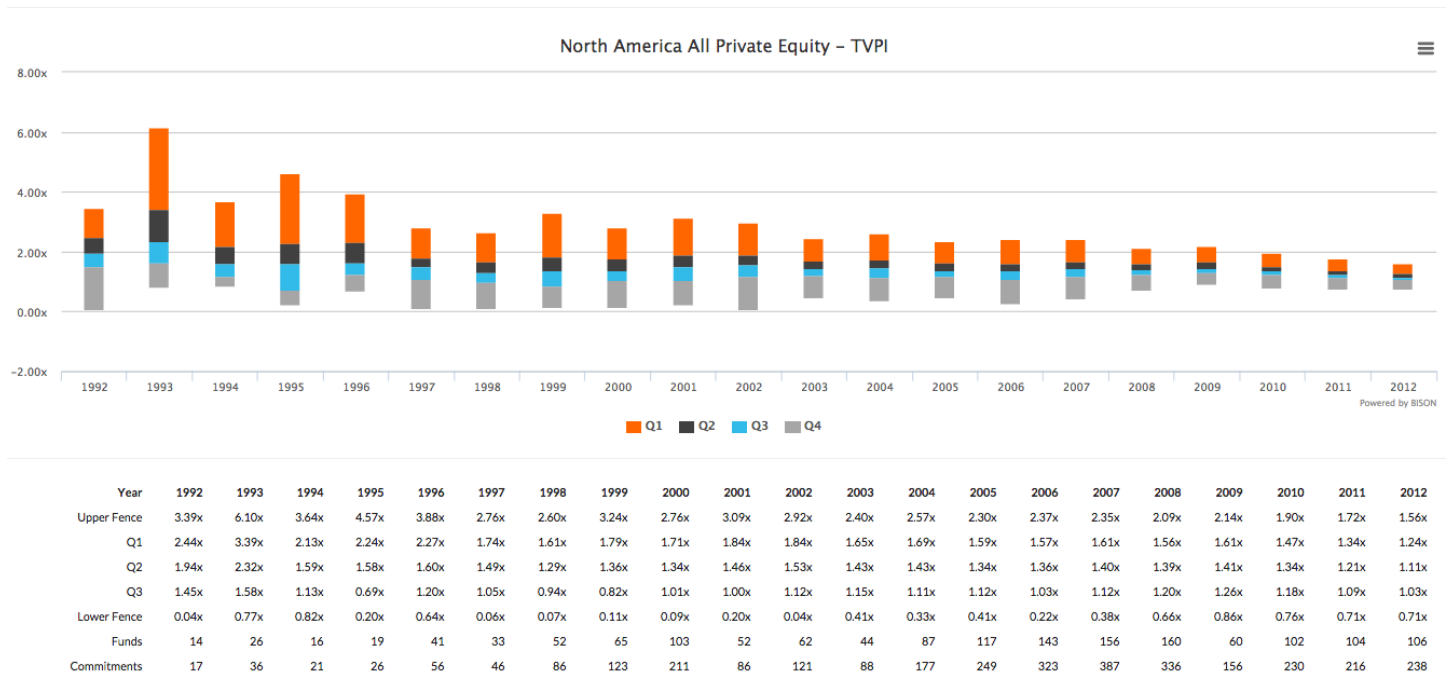
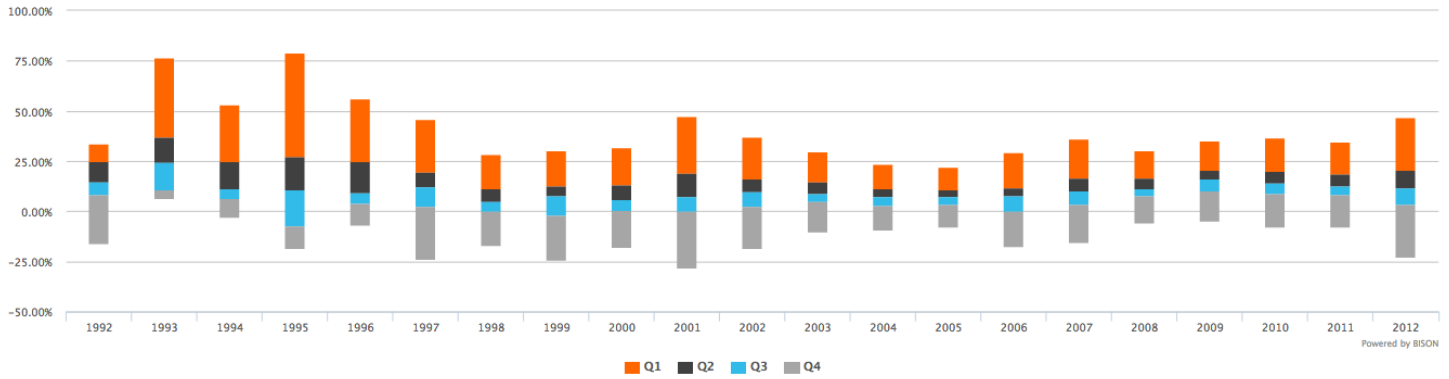


Exhibit 1 North America All Private Equity TVPI Benchmark

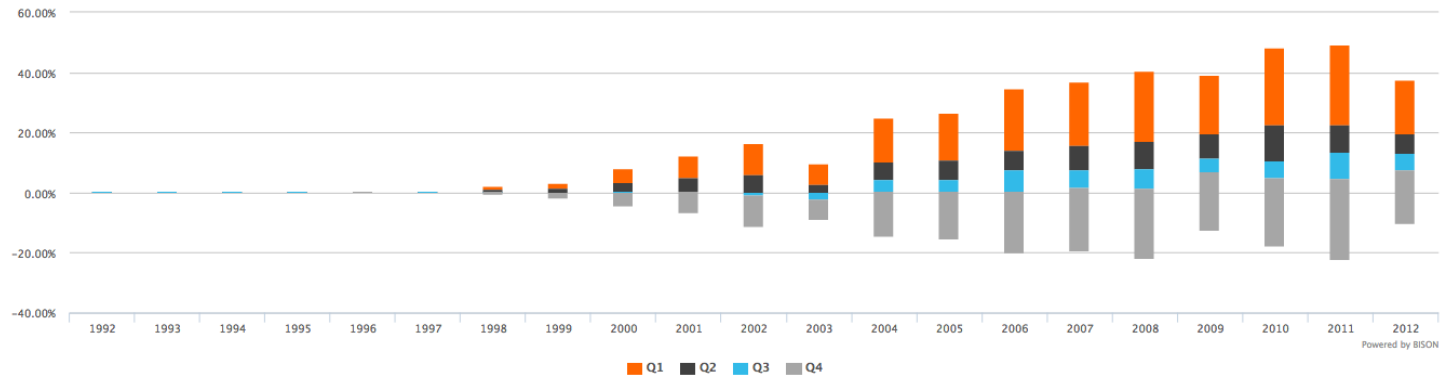
North America All Private Equity – IRR



Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Upper Fence	33.27%	75.66%	52.59%	78.50%	55.40%	45.06%	27.66%	29.68%	30.99%	46.60%	36.25%	28.92%	22.96%	21.17%	28.50%	35.26%	29.76%	34.71%	36.01%	34.09%	45.97%
Q1	24.06%	36.30%	24.48%	26.67%	24.30%	19.08%	10.70%	11.95%	12.47%	18.40%	15.58%	14.01%	10.72%	10.14%	11.10%	15.90%	16.10%	19.69%	19.37%	18.17%	20.02%
Q2	14.33%	24.09%	10.85%	10.28%	8.94%	11.85%	4.70%	7.29%	5.48%	6.76%	9.61%	8.68%	6.92%	6.82%	7.59%	9.91%	11.11%	15.73%	13.63%	12.36%	11.29%
Q3	7.69%	10.06%	5.73%	-7.89%	3.57%	1.76%	-0.61%	-2.72%	0.12%	-0.40%	1.80%	4.08%	2.55%	2.79%	-0.50%	2.99%	7.00%	9.68%	8.29%	7.56%	2.72%
Lower Fence	-16.87%	5.66%	-3.73%	-18.85%	-7.61%	-24.22%	-17.58%	-24.72%	-18.40%	-28.60%	-18.87%	-10.83%	-9.70%	-8.23%	-17.90%	-16.37%	-6.65%	-5.34%	-8.35%	-8.35%	-23.24%
Funds	14	25	16	19	41	32	51	64	104	53	58	38	86	114	137	156	160	59	99	101	99
Commitments	18	37	21	26	58	46	89	125	217	87	117	83	182	245	311	390	333	150	212	192	196

Exhibit 2 North America All Private Equity IRR Benchmark

North America All Private Equity – MOMENTUM



Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Upper Fence	0.00%	0.00%	0.00%	0.02%	0.13%	0.00%	1.65%	2.77%	7.53%	11.93%	16.05%	9.27%	24.50%	26.12%	34.03%	36.56%	40.01%	38.69%	47.91%	48.90%	37.25%
Q1	0.00%	0.00%	0.00%	0.01%	0.05%	0.00%	0.66%	0.96%	2.90%	4.77%	5.63%	2.30%	9.80%	10.45%	13.69%	15.43%	16.66%	19.39%	22.03%	22.08%	19.24%
Q2	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.12%	0.29%	0.00%	-0.05%	4.26%	4.26%	7.25%	7.52%	7.89%	11.20%	10.46%	13.40%	12.85%
Q3	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.01%	-0.25%	-0.18%	0.00%	-1.32%	-2.34%	0.00%	0.00%	0.13%	1.35%	1.08%	6.53%	4.78%	4.19%	7.23%
Lower Fence	0.00%	0.00%	0.00%	-0.01%	-0.08%	0.00%	-1.01%	-2.06%	-4.81%	-7.16%	-11.73%	-9.31%	-14.70%	-15.67%	-20.22%	-19.78%	-22.27%	-12.76%	-18.09%	-22.64%	-10.78%
Funds	14	26	16	18	39	30	52	60	100	50	60	41	73	101	126	133	136	56	89	90	79
Commitments	17	33	20	23	50	43	83	110	198	78	106	76	128	193	257	303	245	132	186	169	177

Exhibit 3 North America All Private Equity Momentum Benchmark

Author's Bios



Mike Nugent

Prior to founding Bison, Mike Nugent held senior roles at SVG Advisers, LP Capital Advisors and HarbourVest Partners, and has more than \$3B in private market commitments to his credit. Mike started his career in the public markets with the NASDAQ Stock Market, and also gained significant operating experience while running operations for a textiles manufacturer. He received his MBA from Boston College, and his BA from St. Bonaventure University. Mike lives on the North Shore of Massachusetts with his wife and two sons.



Mike Roth

Mike Roth is the Research Manager at Bison and oversees the data collection and content production. Before Bison, Mike spent six years on the investment team at SVG Advisers. There, he conducted research and due diligence on buyout and venture capital funds in the Americas. Mike received his BA in Economics from Boston College and is a CFA Level III candidate.



The IPD Global Intel Report

Max Arkey

Vice President, Product Management
MSCI Real Estate

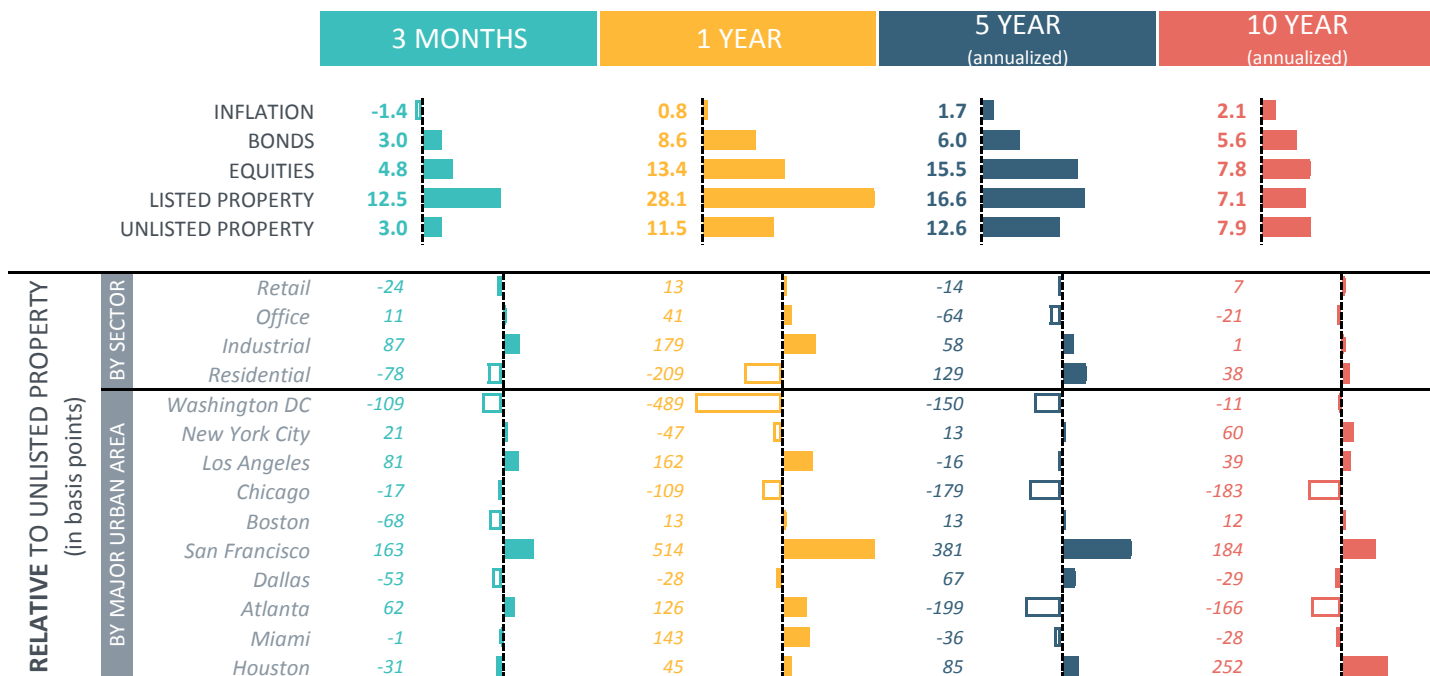
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US COMMERCIAL PROPERTY PERFORMANCE & INCOME RISK
Q4 2014

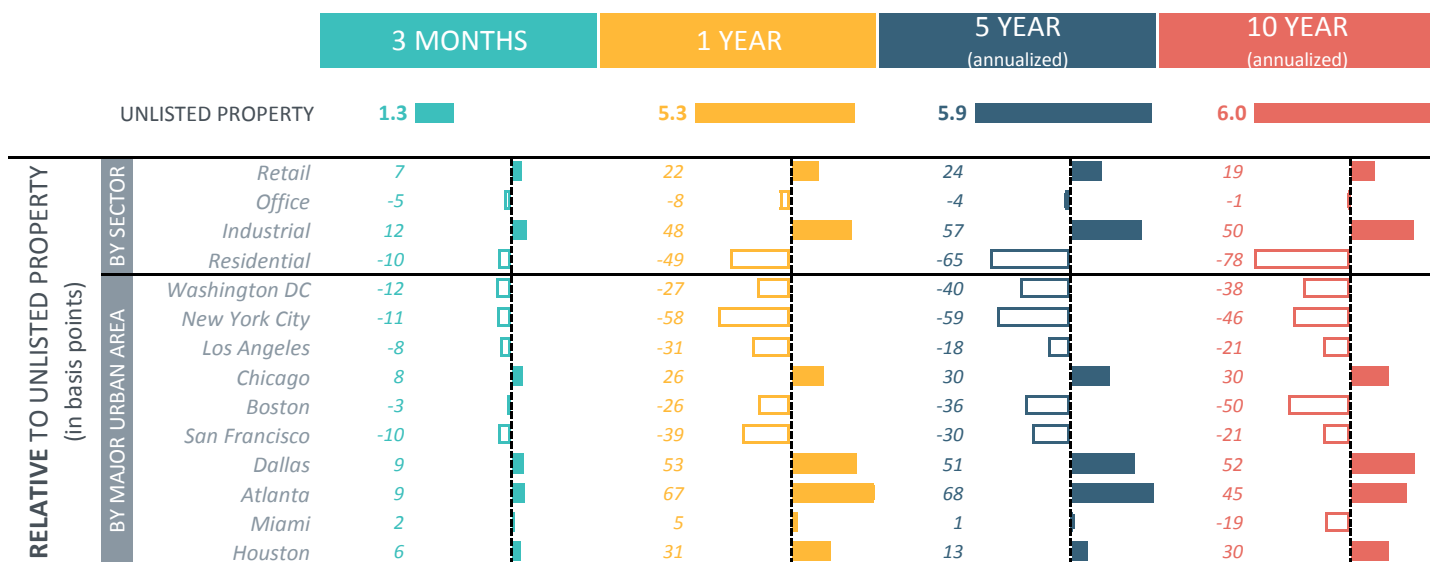


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US TOTAL RETURNS Q4 2014



US INCOME RETURNS Q4 2014



Sources: MSCI for equities, listed property, unlisted property (IPD US Quarterly Index); JP Morgan (bonds); and US Bureau of Labor Statistics (inflation)

SPOTLIGHT THIS QUARTER **HOUSTON**

Unlisted real estate in Houston provided investors with an annualized return of 10.4% over the past 10 years (previous page), outperforming other major US cities over the same period as well as other major asset classes. By Q4 2014 Houston's performance had slipped below the IPD US Quarterly Index for unlisted property. This paralleled a slide in oil prices, a commodity closely tied to the city's economy. Houston property owners may be left to wonder, how secure is my investment here, especially my income stream? In this issue, we mine MSCI's IPD Rental Information Service (IRIS) to investigate.

■ US REAL ESTATE INCOME RISK—As of Q4 2014, more than half the US tenant leases tracked by MSCI were set to expire by 2018. Those leases that came due in late 2014 were well positioned for gains, with leases ready to roll to market rates averaging more than 20% above expiring contracts. Expiring leases in New York and the Bay Area are particularly poised for future gains if they renew at current market rates. More than half of contracted rent in the institutional US market falls in the office sector, with investors generally favoring CBD over suburban spaces. Industrial properties are the next biggest concentration but these leases have shorter average terms than office or retail as well as fewer opportunities for rolling to higher market rates. Credit risks can be masked when individual tenants are pooled to higher categories, but nuances exist nonetheless, such as the slightly elevated risks associated with industrial and retail mall tenants.

US REAL ESTATE INCOME RISK* Q4 2014

		CONCENTRATION	TERM	MARKET	CREDIT	
		CONTRACTED RENT % of national market	REMAINING LEASE TERM years (weighted)	% GAIN / LOSS TO LEASES contract rent vs market rate	RISK SCORE LOW MEDIUM HIGH	
US ALL PROPERTY		100.0%	5.1	7.9%		
BY EXPIRY	2014	3.8%	—	22.1%		
	2015	11.1%	—	2.9%		
	2016	11.8%	—	2.7%		
	2017	12.6%	—	5.9%		
	2018	12.1%	—	3.6%		
	2019 & beyond	48.6%	—	11.1%		
BY METROPOLITAN AREA	LA / OC / Riverside	12.7%	4.5	2.4%		
	Washington DC	11.0%	5.7	2.2%		
	SF Bay Area	11.0%	4.7	19.2%		
	NY / NNJ / LI	9.1%	6.0	26.3%		
	Boston	6.0%	5.5	11.5%		
	Houston	5.3%	5.8	3.8%		
	Chicago	4.7%	6.6	12.1%		
	Seattle	4.5%	5.7	5.7%		
	South Florida	4.5%	4.0	5.0%		
	Dallas / Ft. Worth	4.4%	5.5	-9.1%		
	Denver	2.3%	6.4	17.4%		
	San Diego	2.2%	2.9	-1.9%		
Atlanta	2.0%	5.1	2.6%			
BY PROPERTY SECTOR	OFF	CBD Office	36.3%	5.7	12.6%	
		Suburban Office	21.5%	4.5	5.4%	
	IND	Warehouse	18.3%	4.1	3.8%	
		Flex/R&D	2.5%	2.7	-3.5%	
		Other Industrial	0.2%	7.0	12.1%	
	RET	Community/Neighborhood	11.9%	6.2	5.5%	
		Super/Regional Malls	3.0%	4.5	2.5%	
		Other Retail	3.0%	5.4	19.5%	
	Power Centers	2.9%	5.8	5.6%		

Sources: MSCI's IPD Rental Information Service, or 'IRIS' (tenancy-related risk metrics); and Dun & Bradstreet (credit risk)

*based on IPD databases of institutional property holdings

HOUSTON REAL ESTATE INCOME RISK* Q4 2014

		CONCENTRATION RISK	
		US	HOUSTON
		CONTRACTED RENT % of national market	CONTRACTED RENT % of Houston market
ALL PROPERTY TOTAL		100.0%	100.0%
BY EXPIRY	2014	3.8%	2.4%
	2015	11.1%	4.4%
	2016	11.8%	7.8%
	2017	12.6%	9.6%
	2018	12.1%	7.7%
	2019 & beyond	48.6%	68.1%
BY PROPERTY SECTOR	OFF		
	CBD Office	36.3%	59.2%
	Suburban Office	21.5%	27.4%
	IND		
	Warehouse	18.3%	7.8%
	Flex/R&D	2.5%	—
	Other Industrial	0.2%	—
	RET		
	Community/Neighborhood	11.9%	5.7%
	Super/Regional Malls	3.0%	—
Other Retail	3.0%	—	
Power Centers	2.9%	—	

■ **HOUSTON CONCENTRATION RISK**—When the futures price of WTI crude oil tumbled from \$91/bbl to \$53 during the course of Q4 2014, many property investors were left wondering, what about Houston? Those investors with long memories can still recall the twin shocks of oversupply and dissipating demand that swept the local real estate market in the late 1980s as oil prices collapsed. An immediate concern this time around is that institutional investors are very heavily concentrated in the Houston office sector—about 87% of contracted rent lies in this sector alone, with more than two-thirds of it clustered in the few dozen blocks just south of Buffalo Bayou that make up the CBD. But within this concentration rests one potential upside: nearly 70% of the institutional market is locked up in long-term leases which may yet outride the temporary downturn in the energy market.

■ **HOUSTON TERM RISK**—The average remaining lease term in the US institutional property market is 5.1 years. Houston is closer to 6.0, and this is especially true in the heavily concentrated office sector where the average remaining lease term is 5.7 years in the CBD and 6.2 years in the suburban market. Among other sectors of the Houston market, community and neighborhood shopping centers show longer expected lease terms than the US average, but for warehouses the average remaining lease term trails the US average by a small margin.

■ **HOUSTON MARKET RISK (next page)**—Although two-thirds of institutional leases in Houston are locked up past 2018, sooner or later those contracted leases will expire. And to what? Houston has not experienced the same degree of market rent increases as a New York or a San Francisco has in this cycle. In fact, the 4-5% of leases due to roll in 2015 are currently overrented. Renewing these expiring leases at market rates will pull contracted rents down by nearly 3%. While 2015 expirations will be a small portion of the contracted institutional market, the two-thirds coming due in 2019 or beyond are currently expected to see a slim gain to market of just 3.4%, and this is less than one-third of the overall 11.1% US gain to market expected for long-run expirations.

		TERM RISK	
		US	HOUSTON
		REMAINING LEASE TERM years (weighted)	REMAINING LEASE TERM years (weighted)
ALL PROPERTY TOTAL		5.1	5.8
BY EXPIRY	2014	—	—
	2015	—	—
	2016	—	—
	2017	—	—
	2018	—	—
	2019 & beyond	—	—
BY PROPERTY SECTOR	OFF		
	CBD Office	5.7	5.7
	Suburban Office	4.5	6.2
	IND		
	Warehouse	4.1	3.9
	Flex/R&D	2.7	—
	Other Industrial	7.0	—
	RET		
	Community/Neighborhood	6.2	7.3
	Super/Regional Malls	4.5	—
Other Retail	5.4	—	
Power Centers	5.8	—	

Sources: MSCI's IPD Rental Information Service, or 'IRIS' (tenancy-related risk metrics); and Dun & Bradstreet (credit risk)

*based on IPD databases of institutional property holdings

HOUSTON REAL ESTATE INCOME RISK* Q4 2014

		MARKET RISK			
		US		HOUSTON	
		% GAIN / LOSS TO LEASES contract rent vs market rate		% GAIN / LOSS TO LEASES contract rent vs market rate	
ALL PROPERTY TOTAL		7.9%		3.8%	
BY EXPIRY	2014	22.1%		24.2%	
	2015	2.9%		-2.9%	
	2016	2.7%		4.8%	
	2017	5.9%		2.1%	
	2018	3.6%		5.8%	
	2019 & beyond	11.1%		3.4%	
BY PROPERTY SECTOR	OFF				
	CBD Office	12.6%		3.3%	
	Suburban Office	5.4%		11.1%	
	IND				
	Warehouse	3.8%		-2.4%	
	Flex/R&D	-3.5%		—	
	Other Industrial	12.1%		—	
	RET				
	Community/Neighborhood	5.5%		-17.2%	
	Super/Regional Malls	2.5%		—	
	Other Retail	19.5%		—	
	Power Centers	5.6%		—	

■ **HOUSTON CREDIT RISK**—Credit scores are assigned at the firm level, but inherent company or industry level risks can roll up to the asset or fund level depending on specific lease-up or investment strategies. Weighted credit risks can appear more diluted at a national or metropolitan level, so any geographic analysis requires a close look at the nuances. In Houston, the immediate concern is the credit health of energy industry tenants which pose a potential ripple effect in the local market. A number of energy tenants are likely to be found in CBD offices, but these leases in fact carry slightly lower weighted average risk scores than do other property types in Houston. A prolonged period of depressed oil prices would inevitably lead to downgraded credit scores for some energy tenants. For now, however, institutional owners hold a degree of security by having most of their Houston leases to these companies at least 4 years away from expiration, thus allowing some time for oil prices to rebound.

		CREDIT RISK					
		US			HOUSTON		
		RISK SCORE			RISK SCORE		
		LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
ALL PROPERTY TOTAL							
BY EXPIRY	2014						
	2015						
	2016						
	2017						
	2018						
	2019 & beyond						
BY PROPERTY SECTOR	OFF						
	CBD Office						
	Suburban Office						
	IND						
	Warehouse						
	Flex/R&D						
	Other Industrial						
	RET						
	Community/Neighborhood						
	Super/Regional Malls						
	Other Retail						
	Power Centers						

Sources: MSCI's IPD Rental Information Service, or 'IRIS' (tenancy-related risk metrics); and Dun & Bradstreet (credit risk)

*based on IPD databases of institutional property holdings

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Author's Bio



Max Arkey works in product management at MSCI Real Estate where he heads up indexes and market information products. These analytics are mission critical to the investment process for 19 of the top 20 largest global asset managers, all the way through to specialized domestic investors.

For further details contact: max.arkey@msci.com

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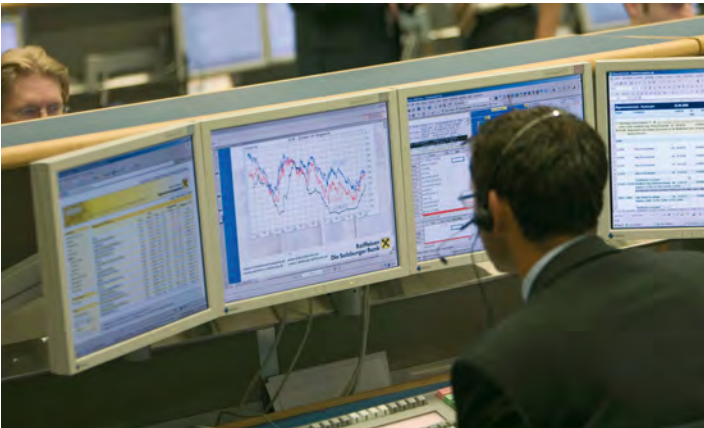
Wonderland Walker 2

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