



# Alternative Investment Analyst Review

## **WHAT A CAIA MEMBER SHOULD KNOW**

### **CTAs: Which Trend Is Your Friend?**

*Fabian Dori, Manuel Krieger, Urs Schubiger, Daniel Torgler, CAIA*

## **FEATURED INTERVIEW**

### **On Money Mania: Booms, Panics, and Busts from Ancient Rome to The Great Meltdown**

*Bob Swarup*

## **RESEARCH REVIEW**

### **Comparing First, Second, and Third Generation Commodity Indices**

*Joëlle Miffre*

## **CAIA MEMBER CONTRIBUTION**

### **The Hidden Cost of Liquidity: How Alternatives Can Reward Long-Term Investors**

*Brody Browe, CAIA*

## **INVESTMENT STRATEGIES**

### **Alternatives Reality**

*Verne Sedlacek*

## **PERSPECTIVES**

### **Crowdfunding**

*Ryan Kantor*

## **IR&M MOMENTUM MONITOR**

### **IR&M Momentum Monitor**

*Alexander Ineichen, CAIA*

## **VC-PE Index**

### **Where Does Private Equity Performance Stand at Year End 2013?**

*Mike Nugent and Mike Roth*

## Editor's Letter

Alternative investments, hedge funds, and private-equity funds in particular, have been in the news lately. For instance, we read that allocations to alternative investments have hurt pension funds' performance during this bull market, and that pension funds' funding status would have been much stronger if only they had increased their allocations to U.S. equity markets. There were several articles and opinion pieces arguing why hedge funds are underperforming, and why there is this fascination with alternative investments. In addition, now that alternative investments are becoming part of the mainstream, some are arguing that alternative investments are too dangerous, and therefore, should be banned. Private equity has been in the spotlight as well for excessive amounts of fees that they charge their investors and their portfolio companies.

On the other hand, we read that allocations to alternative investments are at an all-time high, and even in the mutual world, fund flows to liquid alternatives have been almost as high as the fund flows to traditional active mutual funds. What is going on? Why is it that some are cutting back their allocations to alternative investments, while others are adding to their allocations?

More than any other asset class or investment thesis, the case for investing in alternative investments seems to be in the eye of the beholder. Some consider them as insurance against another sharp drop in equity markets, while others consider them to be absolute return products that should outperform everything else all the time! Alternative investments, and hedge funds in particular, were never meant to outperform a booming equity market. In fact, it is almost impossible for active equity funds to outperform a rising equity market. Cash holdings, short positions, and yes, fees, simply prevent most active funds from outperforming passive indices when everything is going up. Anyone who invested in alternatives in order to outperform the market is sure to be disappointed. It is true that some strategies, such as private equity and global macro, are expected to provide outsized returns because of their abilities to take advantage of certain market inefficiencies. However, as a broad asset class, alternative investments should underperform equities during a bull market.

Then why should one invest in alternative asset classes? Assuming that one has done the appropriate due diligence and selected a portfolio of funds that are managed professionally, investment in alternatives is similar to having a closet that contains impeccable suits and dresses as well as T-shirts and jeans. Also, having a rain coat does not hurt. The point is you do not know, months or weeks ahead of time, when you will need a formal dress and when you will have to put on that pair of old jeans. Of course,

you can wait and do some last-minute shopping for the clothes that you need, but you are bound not to find the right size or color dress at the right price.

We do not know when the next downturn is going to happen. Thinking that you could find the right hedge fund or the right private-equity fund when equity or fixed income markets are not performing as expected is likely to lead to disappointment. For pension funds, endowments and other institutional investors, timing the markets or investment strategies is likely to be a loser's game.

This issue of the *AIAR* covers a variety of topics. Joëlle Miffre provides an excellent overview of the methodologies behind various commodity indices. Similar to the revolution that has taken place in equity indices (e.g., fundamental indices, style indices, quality indices, etc.), the world of "passive" commodity investing has seen its share of changes as well. Joëlle and her colleagues have shown that commodity indices that attempt to take advantage of certain systematic features of futures markets tend to outperform passive indices that are based on production size. This paper provides an insightful summary of this new generation of commodity indices.

This summer, we had a chance to sit down with CAIA Member Bob Swarup to discuss his new book *Money Mania: Booms, Panics, and Busts from Ancient Rome to the Great Meltdown*. Readers should enjoy his keen observations on European history, financial markets, human behavior, and how so much is interconnected in our own world and beyond.

Brody Browe, CAIA, provides fresh evidence that long-term investors can benefit from investing in alternative investments because they are able to earn risk premiums associated with long-term and illiquid investments. Browe discusses a variety of investment products and discusses how each product is able to reward long-term investors for their patience.

Crowdfunding is a hot topic. It is supposed to open up the venture capital investment space to retail investors and, at the same time, to allow entrepreneurs access to a new source of funding. Ryan Kantor addresses the question whether crowdfunding will crowd out venture capital funds. Kantor explains and analyzes the relationships and overall dynamics that will exist between crowdfunding and venture capital funds (VCs). He discusses why investors should avoid or, at the very least, be wary of investing money through the crowdfunding medium, and explains why crowdfunding should only be used as a last resort for budding entrepreneurs.

In “Alternatives Reality,” Verne Sedlacek provides both a retrospective of the last two decades of growth in alternatives to assess the extent to which alternatives have “worked,” and offers a perspective on the role and relative importance of alternatives going forward. Sedlacek argues that alternatives have now become the traditional, and points out that while 30 years ago alternatives were in fact “alternatives,” they have now become mainstream. The paper notes that the latest NACUBO–Commonfund Study of Endowments (NCSE) reports that more than half of all assets held by university endowments are in a broad array of strategies that we refer to as alternatives. While the magnitude of allocations to alternatives among endowments and foundations remains skewed to the largest pools, institutions of all sizes have increased allocations. In the last decade, allocations have increased dramatically among other institutional pools, most notably pension funds. What has not changed is the wide dispersion of returns in alternative investments, making manager access and selection key determinants of success. What has propelled and continues to drive this growth in alternatives? Sedlacek argues that they are fundamental to the structure of the so-called “endowment model” of investing, which concludes that long-term asset pools (whether endowments, foundations, long-term reserves, or pension funds) can outperform investors with shorter-term time horizons by providing capital to less efficient, more complicated, and illiquid sectors of the capital markets.

In “CTAs: Which Trend Is Your Friend?” Fabian Dori discusses how trends should be measured and how different signals can be used to identify trends. Dori explains that while financial markets do display trends, not all trends represent potential trading opportunities. According to the paper, the literature has recorded the development of a host of different trend measurement methods, and rather than focusing on the specific methodology of these techniques, the intention is to point out that no single approach systematically delivers better results across all dimensions. In fact, the suitability of a given method depends on certain context-specific questions – which trend do you want to measure, and which characteristics of the measurement do you view as especially important?

Finally, in addition to Momentum Monitor provided by Alexander Ineichen, CAIA, which appears regularly in AIAR, we are happy to add another regular feature. Bison, a private equity and venture capital market's monitor, will be providing commentary and data on the private equity industry. We are grateful to Bison and Mike Nugent, its CEO, for providing our readers with these timely and valuable commentaries and performance data.

Hossein Kazemi, Editor

These articles reflect the views of their respective authors and do not represent the official views of AIAR or CAIA.



## Call for Articles

Article submissions for future issues of *Alternative Investment Analyst Review* 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](mailto:AIAR@CAIA.org).

Chosen pieces will be featured in future issues of AIAR, archived on [CAIA.org](http://CAIA.org), and promoted throughout the CAIA community.

# Table of Contents

## What a CAIA Member Should Know

**CTAs: Which Trend is Your Friend?** ..... 10  
By Fabian Dori, Manuel Krieger, Urs Schubiger, Daniel Torgler, CAIA

**ABSTRACT:** The occurrence of trends within financial markets is inconsistent with the assumptions of classical financial theory. Nevertheless, it can be empirically validated that market prices can be subject to trends and profitably exploited. But – which trends should you measure? Which trend is your friend? This paper shows that this question cannot be answered solely on the basis of the data. Rather, various aspects have to be considered in order to decide which method is regarded as appropriate in which environment. The length of the measured trend, the way the signal is compared and, ultimately, the conversion of the signal into a position are key factors that determine the character of the trend sequence. These factors can also be used to classify different CTA strategies and assess their risk/return profile more accurately.

## Featured Interview

**Bob Swarup, CAIA, on Money Mania** ..... 16

**ABSTRACT:** AIAR interviews Bob Swarup about his new book *Money Mania: Booms, Panics, and Busts from Ancient Rome to The Great Meltdown*.

## Research Review

**Comparing First, Second, and Third Generation Commodity Indices** ..... 22  
By Joëlle Miffre

**ABSTRACT:** Commodities are now treated as a mainstream asset class. As of April 2012, Barclays Capital reported that assets under management in commodity-based exchange traded products, structured notes, and index swaps totalled a record high of \$435 billion versus \$100 billion of investment in 2006. This rise can be explained in part by the fact that commodities are now standard components of an investor's strategic asset allocation due to the fact that they generate equity-like returns in the long-run, act as risk diversifiers, and serve as inflation hedges. One easy way to gain exposure to commodities consists simply in tracking an index.

At present, the universe of commodity indices is split into three categories: 1) the

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# Table of Contents, page 2

first generation indices, which are long-only and do not pay much attention to the fundamentals of backwardation and contango, 2) the second generation indices, which are also long-only, but attempt to lessen the negative effect on performance of contango while exploiting backwardation, and 3) the third generation indices which are long-short and capitalize on both the price appreciation associated with backwardation and the price depreciation related to contango. This paper narrates the history of commodity indexing in brief, introduces new developments, and appraises the performance of the different generations.



## CAIA Member Contribution

**The Hidden Cost of Liquidity: How Alternatives Can Reward Long-Term Investors** . . . . . 34  
By Brody Browe

**ABSTRACT:** The financial crisis and persistent market volatility have intensified investor bias toward liquid securities. Unfortunately for investors, this increased demand has coincided with deteriorating yields for highly liquid assets in the public markets. Yields in more liquid assets have been decreasing due to a shortage of supply, while yields in less liquid parts of the market have been increasing due to a lack of demand. The result has been an increase in the illiquidity premium – that is, the difference in yield between liquid and less liquid securities. As investors' demand for liquidity has increased, so too has the relative cost of owning a fully liquid portfolio. This paper will discuss the mismatch between the demand for and supply of liquid securities and offer alternatives for those willing to employ a long-term alternative investment strategy.



## Investment Strategies

**Alternatives Reality**. . . . . 40  
By Verne Sedlacek

**ABSTRACT:** The “endowment model” of investing has been synonymous with increasing allocations to alternative investment strategies, defined largely as hedge funds, private real estate, private equity, venture capital, and other less liquid strategies. There is clear academic and empirical evidence that these alternative investment strategies have contributed significantly to portfolio returns over the last 20 years. The fundamental principles that have contributed to higher investment returns remain largely unchanged as we look ahead. Nevertheless, allocations to alternatives should be reserved for investors who can access top-

tier managers, since the distribution of returns among alternative managers is far greater than it is among traditional managers. Further, it is important to consider the following questions: have investors been adequately compensated with higher risk adjusted returns compared to traditional strategies over this period of growth? And, perhaps even more importantly, what should investors expect from their allocations to alternative strategies in the future? This paper provides a basis for discussion of these and other issues pertaining to alternative investment strategies in the years to come.

## *Perspectives*

### **Why Venture Capital Will Not Be Crowded Out By Crowdfunding. . . . . 59**

*By Ryan Kantor*



**ABSTRACT:** As the recovery period from one of the worst recessions in our history continues on, life for the fledgling and even, often times, experienced entrepreneur has been tough. Indeed, President Obama remarked that credit has been tight, and no matter how good ideas are, if an entrepreneur can't get a loan from a bank or backing from investors, it's very difficult to get their businesses off the ground. In response to this ever-present need for business funding, and in an attempt to stimulate the economy and job growth, Obama signed the Jumpstart Our Business Startups Act ("JOBS Act") into law on April 5, 2012. The Act, among other things, increases a business's access to capital by enabling them to sell securities to both accredited and non-accredited investors without registering or completing the full disclosure requirements typically required for public offerings.

The overarching purposes of this paper will be to: 1) explain and analyze the relationship and overall dynamic that will exist between crowdfunding and VCs; 2) elucidate why investors should avoid or, at the very least, be wary of investing money through the crowdfunding medium; and 3) expound reasons as to why crowdfunding as a means of financing should be used as a last resort for a budding entrepreneur.



# Table of Contents, page 4

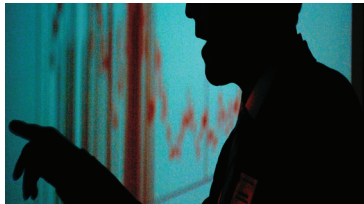


## *IR&M Momentum Monitor*

**IR&M Momentum Monitor** . . . . .71  
*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 3.

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.



## *VC-PE Index*

**Where Does Private Equity Performance Stand at Year End 2013?** . . . . .74  
*By Mike Nugent and Mike Roth*

**ABSTRACT:** Private equity returns are bouncing back. Whether or not returns bounce back to pre-global financial crisis levels remains to be seen. Buyout funds have consistently outperformed the All Private Equity classification; venture capital performance has seen a resurgence of late, but investors will want to see if it continues.



## CTAs: Which Trend is Your Friend?

### **Fabian Dori**

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## 1. Introduction

The occurrence of predictable trends within financial markets is inconsistent with the assumptions of classical financial theory and efficient markets hypothesis. Nevertheless, it can be empirically validated that market prices can be subject to trends. But, which trends should you measure? Which trend is your friend?

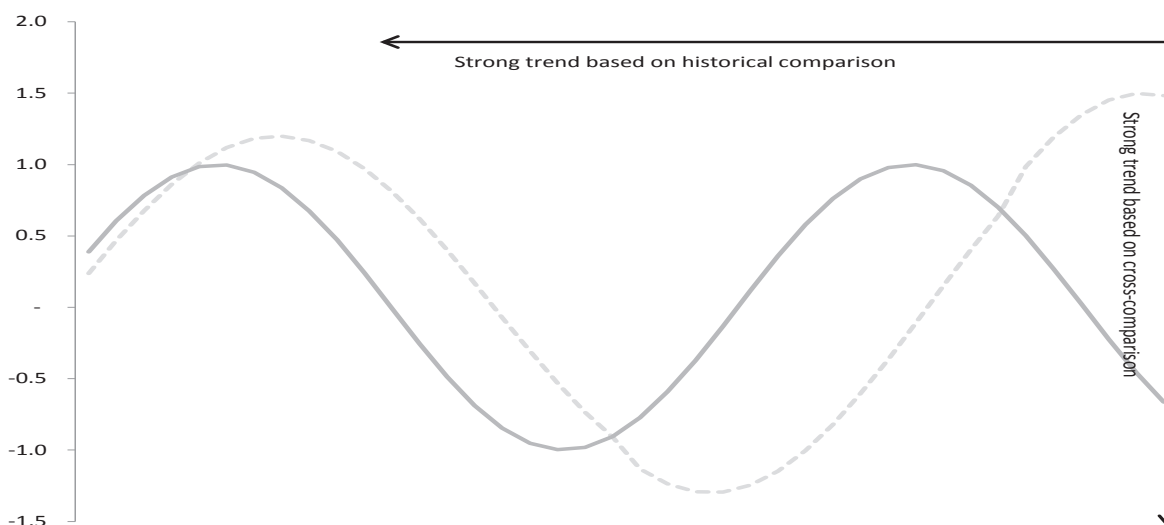
## 2. Measuring trends

In recent decades, the literature has recorded the development of a host of different trend measurement methods. They can essentially be divided into what are known as linear and non-linear approaches. Rather than focusing on the specific methodology of these techniques, the intention of this article is to point out that no single approach systematically delivers better results across all dimensions. In fact, the suitability of a given method depends on certain context-specific questions – which trend do you want to measure, and which characteristics of the measurement do you view as especially important? Which trend should be your friend? To simplify matters, we use moving averages in the following discussion. These can be understood intuitively, and they are easy to implement. They may therefore be regarded as representative of the various methods.

The first control variable that is used to specify the nature of the measured trend is the number of observations, which directly determines whether the short-term, medium-term, or long-term trend is to be measured. The more observations we process in order to measure the trend, the longer the measured trend will be. This point brings up one primary characteristic of the measure-

ment, which seems to be unavoidable. The measurement of the trend is generally subject to a delay that, in turn, depends on the number of observations. In the case of moving averages, the trend over the defined time interval is subject by design to a delay corresponding to about one half of the observations. The measurement of a trend over 36 days is therefore delayed by about 18 days. It follows that the measured trend lags behind the observed price by half of the period that is used.

Second, in addition to the inherent delay in trend measurement, the precision of the measurement plays a key part. This factor reflects how precisely the trend component is extracted from the time series, without including too much information that is not relevant to the trend measurement, while ensuring that sufficient relevant information is included. The following related result applies as well: our ability to extract the trend improves as we include more observations – but again, this entails a longer delay (and vice-versa). We have to decide whether to focus on precision and to accept the disadvantage of the delay, or whether it is necessary to avoid a measurement delay at the expense of precision. When measuring shorter trends, it is advisable to select a method that focuses on precision, because the inertia of the trend means that the delay is insignificant in the shorter term. When dealing with long-term momentum cycles, however, precision is less significant due to the large number of observations; on the other hand, it is important to have the shortest possible measurement delay.



**Exhibit 1:** Historic comparison and cross-comparison of trend strength

Once the trend has been measured, the question arises as to how we can process this measurement in a context. A single measured value in isolation is of only limited use. So how can we find out whether the trend in question is strong or weak? Is that trend a strong friend? To answer this question, the current trend can be compared with its own history in order to determine its strength. Alternatively, we can compare it with current trend measurements for a group of different time series that we regard as comparable.

Exhibit 1 illustrates this principle and shows that the current trend strength for the dashed-line time series is similar not only in historical terms, but also as compared to the trend for the solid-line time series. This provides us with a dual view that will enable us to determine the true strength of the trend. These methods of calibrating the information obtained from a trend measurement constitute an essential factor for achieving intrinsic stability and for a sound and broad-based determination of the position size (derived from the trend measurement).

### 3. Selecting trends

Once the trend has been measured and calibrated, the next question that arises is: which trend is your friend? Based on the trend measurement, how should the position be sized appropriately on the market? Here, we draw a basic distinction between two signal categories – binary signals and steady signals.

Exhibit 2 summarises their main characteristics. Binary signals only make use of the prefixed (plus or minus) sign from the trend measurement. This application is based on the assumption that the trend strength does not contain any information that can be evaluated for

financial purposes. In periods when market trends are unambiguous, the signal gives rise to very little turnover. But in the absence of a clearly predominant trend in the markets, turnover increases substantially. When executing the trades on the market, we should therefore bear in mind that there could be a resultant impact on market prices. Sensitivity to trendless markets is very high, because the fixed position size leads to an over-allocation in weak trends. In technical terms, the minimum of trend information is processed in this situation.

The second category (the steady signal) closely follows the trend measurement. The stronger the measurement, the larger the position will be. The assumption is that the persistence of a trend can also be applied to its strength, so a stronger trend implies better returns. Markets characterised by extreme trends (as in 2008, for example) will result in profitable returns. At the same time, the loss will be less than if a binary signal is used because positions in trendless markets tend to be smaller. This is compounded by the fact that turnover in trendless markets is lower than in markets characterised by trends, where positions are frequently adjusted according to the increase in strength. The impact on market prices is smaller because the adjustments made frequently are minor. With a steady signal, the information content is utilised in full.

Response function signals can be identified as a sub-category within the category of steady signals. These signals are influenced by a number of considerations. First and foremost is the concept of qualified selection, according to which the maximum trend is not necessarily the most profitable trend in every case. Consequently, for instance, the position can only be increased when the trend strength increases. But if the measured

	Binary signal	Steady signal	Response function
<b>Assumption</b>	Persistence and trend strength are not correlated	Persistence and trend strength are positively correlated	Non-linear correlation requires qualified selection
<b>Information content</b>	Lowest	Highest	Can be modelled
<b>Signal frequency</b>	Two signals, very frequent	Steady signals	Can be modelled
<b>Position changes</b>	Usually very major	Usually minor	Fairly minor
<b>Market impact</b>	Potentially substantial	Potentially low	Potentially quite low
<b>Turnover</b>	Very high for volatile markets, very low for quiet markets	Low for trendless markets, high for trending markets	Can be modelled

**Exhibit 2:** Characteristics of trend signals

trend continues to rise, the position is reduced again – in order to take the accumulated profits. Of course, a trend cannot continue to strengthen indefinitely and trend reversals often entail severe losses, especially if the trends in question are strong. In the extreme range of the signal, therefore, it is even possible in principle to take a position contrary to the signal. This is based on the assumption that exaggerated trends tend to produce mean reverting (random walk) behavior. However, one drawback of this signal function is that in markets with extreme trends (e.g., in 2008), the returns earned are not as high as those achieved with steady or even binary signals. Numerous variants are conceivable within this third category, based not only on statistical analyses, but also on fundamental convictions.

The frequency of the respective daily signals is an issue that arises in connection with all strategies. Signals that depend on the prefixed binary sign have two frequencies, but they are very numerous: there will frequently be positive as well as negative signals. On the other hand, scaled signals are determined by the distribution

of the trend measurement and we may assume that the stronger a signal is, the less often it will occur. This fact is of fundamental importance when deciding how to deploy a trend-following strategy, and which trend to follow for this purpose.

#### 4. Empirical results

In order to analyze signals of the three different types on an empirical basis, they were applied to a universe of 96 instruments (including 30 currency pairs, 19 equity indices, 11 government bonds, 8 money market, and 28 commodity instruments) over the period from 1993 until 2013. The data were recorded exclusive of transaction costs.

The various approaches are compared on the basis of two different risk-adjusted returns. First, they are compared using the information ratio (defined as annualised return divided by annualised volatility). The second comparison uses the ratio of annualised return to maximum drawdown.

Information ratio	Currencies	Equities	Bonds	STIR	Commodities
	0.35	0.43	0.54	0.94	0.65
Return / maximum DD	Currencies	Equities	Bonds	STIR	Commodities
	0.17	0.16	0.28	0.38	0.23
Return attribution	Currencies	Equities	Bonds	STIR	Commodities
Long side	+	+	+	+	+
Short side	-	-	-	-	+

#### Exhibit 3: Binary Signal

Information ratio	Currencies	Equities	Bonds	STIR	Commodities
	0.23	0.12	0.42	0.83	0.67
Return / maximum DD	Currencies	Equities	Bonds	STIR	Commodities
	0.09	0.04	0.22	0.26	0.36
Return attribution	Currencies	Equities	Bonds	STIR	Commodities
Long side	+	+	+	+	+
Short side	+	-	-	-	+

#### Exhibit 4: Steady Signal

Information ratio	Currencies	Equities	Bonds	STIR	Commodities
	0.33	0.40	0.61	0.99	0.82
Return / maximum DD	Currencies	Equities	Bonds	STIR	Commodities
	0.18	0.20	0.35	0.44	0.41
Return attribution	Currencies	Equities	Bonds	STIR	Commodities
Long side	+	+	+	+	+
Short side	+	+	-	-	+

#### Exhibit 5: Response Function Signal

As regards the information ratio, the empirical comparison shows that the binary method and the response function signal produce comparable results, although the latter signal may produce slight outperformance. For virtually all asset classes, on the other hand, the steady signal produces the lowest return per unit of risk entered into. The steady signal only performs marginally better than the binary method in the commodities asset class. These relationships can be attributed to the characteristics of the individual approaches. The essential difference between the three methods is explained by the conversion of trend strength into a trading position. With extreme signals, therefore, we can deduce from the results that the steady approach is likely to tend towards large positions that impact the risk/return ratio negatively in the event of trend reversals. Accordingly, very pronounced trends seem to go hand-in-hand with disproportionately high risk.

The ratio of annualized return to maximum drawdown may be regarded as a measurement of the signal's stability. Based on this yardstick, the response function approach prevails over the other two methods across all asset classes. This leads one to conclude that a slow increase on the inception of a trend together with a continuous reduction as excessive trends emerge can evidently make a substantial contribution towards the stability of the trend-following process.

Finally, it is interesting to note that the long positions for all signal types deliver a positive contribution to return regardless of the asset class, whereas clear differences are evident in the case of short positions. The binary signal performs worst in this regard. Commodities are the only asset class where the binary signal can generate positive returns from short positions. By contrast, the steady signal even manages to produce a positive return on the currency side as well. In this case, the short side is understood as a position against the interest-rate advantage that is normally present in the currency pair. The best performance is achieved by the response function signal, which is able to produce a positive contribution to return on commodities, currencies, and equities. Interest-bearing bonds and STIRS are the only classes where it delivers a negative return.

## 5. Conclusions

In summary, we may state that the time-frame used for the measurement represents the first key parameter. It was also demonstrated that a conflict between the pre-

cision and the delay of a trend measurement is an inherent feature of momentum-oriented models. Once a trend has been measured, the next step is to assess its strength. As well as using the trend's own history for this purpose, we can also correlate it with the trend of comparable time series. The information obtained from the trend measurement can be converted into a trading signal with the help of three functions, each of which displays different characteristics.

All of the foregoing boils down to the conclusion that our – “Which trend is your friend?” – cannot be answered solely on the basis of the data. Rather, we must first consider the various aspects in order to decide which method we regard as appropriate (in which environment). The approach is not “method follows trend,” but “trend is defined by method.” The length of the measured trend, the way the signal is compared and, ultimately, the conversion of the signal into a position are key factors that determine the character of the trend sequence, and they can be used for various CTA classifications.

The first classification relates to the length of the measured trends. It defines whether the trends to be measured are short-term, medium-term, or long-term. Although almost every manager uses a slightly different definition here, the rule of thumb for guidance purposes is that short-term trends range from intraday to one week, medium-term trends refer to a timeframe of between one and about six months, while long-term trends continue for more than one year. The second classification differentiates the method of trend comparison. The objective here is to ascertain whether the strength of the trend is calibrated in absolute terms, in relation to the history or on the basis of a cross-comparison. Finally, a distinction can be drawn according to whether a binary signal, a steady signal, or even a response function signal is used for the conversion into a trading position. These categories can be used to classify the majority of CTAs so that we can compare their performance more adequately.

## Author Bios



**Fabian Dori**, M.A. HSG, CFA, FRM is Head of Portfolio Management at 1741 Asset Management Ltd. and has been a member of the executive board since 2013. Before joining 1741 in 2012, he was a quantitative analyst and portfolio manager at Wegelin & Co. Private Bankers, de-

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# **An Interview with Bob Swarup about *Money Mania***



This summer, we met up with Bob Swarup, author of *Money Mania: Booms, Panics, and Busts from Ancient Rome to the Great Meltdown*, a book examining the lessons to be learned from the last 25 centuries of financial crises, that has received high praise from a number of prominent publications including the *Financial Times*, *The Economist*, and *The Guardian*. Bob has an M.A. (Hons.) from the University of Cambridge and a Ph.D. in cosmology from Imperial College London. He has managed investments at financial institutions and served on the boards of hedge funds and private equity firms. He also works closely with leading think tanks, advising both policymakers and industry executives. Bob is a CAIA member and a former member of the CAIA Exam Council. He also holds a seat on the Editorial Board of the *Journal of Alternative Investments*. *Money Mania* is his first book.

**BJM:** So, I am reading the book and it takes a very long perspective on the booms, panics, and busts. One of the things that I noticed in particular is that you have a Ph.D. in Cosmology and now you are working in finance; that is quite an interesting combination and I wonder if you could comment on your background and current interests.

**Bob Swarup:** As you said, my Ph.D. is in cosmology and the pursuit of a way to understand the universe. That kind of study certainly does give you the ability to develop a long perspective - when you're examining events over billions of years, a few centuries is neither here nor there. But it also highlights the fact that very simple, small events can have very large consequences. My research focused on the early universe. I was studying the universe mere instants after the Big Bang in an effort to understand how what we see in the universe today - the planets, stars, galaxies and all the rich complex structure we observe - came about. The simple point of the matter is that during those moments, just after the Big Bang, when the universe was infinitesimally small, but growing incredibly rapidly, the tiny fluctuations of quantum particles and their collisions, all those little tiny events had enormous ramifications that eventually laid the seeds for galaxies and everything else.

For me, the experience had a deep and profound effect on my philosophical bent of mind. However, the problem is that the work is so theoretical, there is almost no way that you will know whether your views are right or wrong. Certainly in cosmology, it is not unusual to

spend your whole career believing in one particular theory of the universe, only to find out in the end that you were completely wrong and wasted the last forty years of your life. That teaches you to be skeptical of models and not to take any theory - no matter how elegant - as being sacrosanct. This has had a strong influence on how I view the world, the way that I approach life, and the way that I have approached finance.

I moved into finance, partly because I found it interesting, but also, to be bluntly honest, because the state of funding in physics was not very good. If you wanted to get a permanent position at a good university, you probably had to spend about ten years travelling the world as a nomad, perhaps a year or two in Berlin, a couple of years in Asia, likely something at Harvard or another Ivy League - all in an effort to build up those precious CV points and always surrounded by copious amounts of form-filling. The lack of positions was so acute, that any time something came up, a flood of overly talented people would rush to apply. One lucky person got the position, the rest brushed their bruised egos and continued on their wanderings. I suddenly understood why so many physicists I knew were single - incentive rather than intent - and the prospect of badly paid altruism didn't seem so attractive anymore.

So I became one of the latest brain drain statistics to flee the world of academia for finance. In finance, if you are a quant - someone who understands mathematics at a deep level - it is very easy to be accepted in the field; they can teach you the economics and the financial aspects, but not the math. And you're well paid, because you have a skill in high demand. This is actually kind of bizarre, if you think about how important math is today - and yet in most finance and economic courses, math is still taught relatively simplistically.

So I have spent the last decade or so in finance, mostly in alternatives, and variations on that. But a lot of what I learned previously helped me to be skeptical of models and to have a perspective that is not just tied to the next week, month, or quarter. In the markets, for all the talk of sophisticated models and financial wizardry, we are still primal creatures driven by emotion. For example, the current Bank of England Governor, Mark Carney, recently talked about how interest rates were going to be two and a half percent in three years time and that was going to be the new normal. He then pointed to the financial markets as supporting this, noting that the for-

ward yield curve predicted for 2017 that interest rates will be two and half percent as well.

The irony is, of course, that what the financial markets tell you is going to happen in 2017 is not a forecast. It is actually a projection of huge pools of expectations and emotions. All you are doing is projecting forward what you hope or fear will happen, based on what you know today, and volatility is nothing more than these pools of emotion competing against one another. Uncertainty is the norm and the danger is that we always create models that try to convert uncertainty to risk, but forget that risk is nothing more than an idealized mathematical proxy for uncertainty. The problem in finance or any other aspect of life, is that if you like the story enough, you will begin to believe the ideology or the models more than the reality.

**BJM:** A lot of what you are saying reminds me of the quant finance community, particularly in London and New York. People with backgrounds similar to yours, like Emanuel Derman, found in physics that if you hadn't found a really critical problem to do your dissertation on, it created great difficulty for you, not just in terms of a nomadic lifestyle, but also in what are you devoting your life to; it may be so small or in the wrong direction, it could be quite disappointing in the longer term.

**BS:** Certainly the situation for scientists is very acute, but it affects every aspect of human endeavor. One of the things I focused on at university was the history and philosophy of science. There is a famous philosopher called Thomas Kuhn who wrote a book called *On the Nature of Scientific Revolutions*, which subsequently became hugely influential across many disciplines; the phrase "paradigm shift" actually comes from that book. In spite of what we may believe, revolutions in science don't happen because somebody finds a better theory and somehow we all realize that the science is better, and the consensus rationally shifts over. His point was that rather, you have a dominant theory that over time gradually begins to accumulate more and more flaws - eventually it becomes unworkable. However, partly due to ego and partly blind belief, the people at the time refuse to accept the erosion of the theory and keep inventing more and more fantastical flights of fancy that try to force the world to continue to fit the theory somehow.

Eventually the evidence is so great against the old the-

ory that there is a dramatic shift when another theory comes along that actually explains something meaningful. Also over time, the older adherents die out. New ideas sometimes don't even win the battle; they just outlive the old. So, the paradigm shift is driven by human emotion, ego, generational change, and the like. This view destroyed the myth of the scientist as some rational relentless seeker of knowledge. In fact, maybe most scientists (and people for that matter) are ideologues who become obsessed with certain views of the world and will fight, sometimes literally to the death, to defend those views.

**BJM:** I read the Kuhn book as an undergrad in an anthropology class and it was a life-changing book...

**BS:** Yes. In *Money Mania*, I have a section on financial crises from the perspective of revolutions and the Kuhnian shift. It's very important, because most systems exhibit similar dynamics in how they evolve. If you think about the quant community, many people blame quants for what happened in the past few years, and when you talk to a lot of quants, they are relatively obsessive about their models and the belief that they can capture all the relevant risks in the context of a few numbers. The world can be defined through the perfect lens of their model.

What is interesting, however, is that within the same community, if you take someone like Paul Wilmott or Emanuel Derman, you will find that they are amongst the most skeptical people that you will ever meet. Paul Wilmott and I agree a lot on areas of risk management, because he believes much as I do that the real question of risk management isn't one where you call on some beautiful scenario that tells you the downside is 17.38%, add a couple of additional decimal places and scenarios for good measure. Actually good risk management starts off by saying, "I have just lost 25%, what the hell happened here?" and working backwards.

The point is that you can't divorce the human being from the model or the market. They are very much entwined and part of the problem with the human is that the brain is a remarkably difficult thing to model. Therefore, you have to allow for the uncertainty that human behavior brings to the financial markets. It is not efficient or perfectly rational, rather it is bounded by gigantic pools of emotion. Whatever we may call volatility is the end result of huge herd mentalities fighting it out for dominance in the market. We are emotional

creatures and we cannot get away from that ebb and flow; we will fall in and out of love, get angry and hate, and be passionate about the teams we support, the food we eat, the assets we buy and trade; this is true about almost anything in life.

**BJM:** There has been a great increase in the number of books that touch on behavioral economics lately and many have gained traction in the popular press...

**BS:** There is an interesting paradox about books that try to take these perspectives out to the masses; the authors will show you how your biases really affect almost all economic decisions, but part of the message of behavioral economics is that we all love stories. If it's a good story, we'll believe it, irrespective of the facts. So, the irony is, if you read a book like *Freakonomics* or *Thinking Fast and Slow*, you are more likely to end up believing the narrative, as opposed to thinking more deeply about all of the things you do every day. It has simply provided a new narrative in how people talk about the world.

There is an episode in *Money Mania* called the "Seattle Windshield Epidemic," which is an amazing exercise in human hysteria. It started with some reports in a small town near Seattle, where vandals were said to have been sling-shotting stones at people's car windshields, causing little dings and scratches. As people talked about it, the police investigating this situation soon had more reports coming in. Then the media picked up the story and once it was in the news, other towns began reporting similar occurrences. The police began setting up roadblocks between towns, trying to catch the vandals. That effort failed. Then, some cars showed up dinged badly at a military base, so the base shut down and soldiers went through the site with a fine-toothed comb, but could not find anyone.

At that point, the investigators and wider populace felt it could not be vandals and moved on to instead speculating if the windshield damage was linked to the new hydrogen bomb that had been exploded just a few months before, or cosmic rays (the space race had recently begun) or fleas laying eggs in the glass. It was a wonderful example of how people had taken simple events and woven them into a narrative, not because it was true, but because they could not explain the events otherwise.

It got to the point where there were 1,000s of reports in a single day and the Governor sent a panicked demand to the President to call in the National Guard. A scientific task force was set up and at the end of it all, what they found was that the dings had always been there. The difference was that people had always looked through their windshields and never at them; they had accumulated over the years from driving on the roads in the region. But once people did notice the damage, they tried to put it into a narrative that could explain their new view of the world. You may know Occam's Razor, but there is also Hanlon's Razor, "Never attribute to malice that which can be explained adequately by stupidity."

**BJM:** That is a funny, if somewhat disturbing story! So the book has been well-received – how do you feel and where are you planning to go with your next projects?

**BS:** That's a tough question. As a writer, when you put a new book out there, it is your baby and you are deeply sensitive about the feedback. So, of course, when people like it, you tend to be over the moon. I'm lucky to have had such nice reviews from the *Financial Times*, *The Economist*, Paul Tudor Jones, and *The Guardian*, amongst others.

The book has only been out for five or six months now, so it's a bit hard to think about the next one in detail yet. However, if I look at what are the burning issues out there, two come to mind. The first is inequality - Piketty's book has really set off that whole perennial debate again. In times of crisis, as I discuss in my book, the debate about equality and society is never far behind. A crisis exposes structural frailties and very often when crises keep occurring, we can see that the structural flaws are just papered over and so, keep cropping up again and again. Eventually the system will fix the problem, but often in a catastrophic way.

A classic example would be the French Revolution. It was not about freedom or democracy, rather, it was the culmination of nearly a century of financial crises that had acutely destroyed faith in the financial system, in the French government, and eventually in their model of society. So, at some point people move toward mass revolution. As with many revolutions, once the middle class committed to change, everything else followed very rapidly. It is important to understand inequality in the right context - society and the structures we create

are, by definition, unequal, because we have a human bias towards getting ahead and being competitive.

In addition, if you look at almost every structure we have, it's still a very feudal system - every political party has a hierarchy that ends up with a leader, every company has a hierarchy that ends up with a CEO, every family has a hierarchy with parents, as it were. We don't really do decisions by committees in any sphere of our lives and often view them negatively (after all, who doesn't gripe about bureaucracy?). So, even though we have ideological systems like democracy, the reality of "first among equals" endures. Given all that, how do you manage the tensions in such a way that people can work together for the greater good and not decide periodically that the game may be permanently fixed against them?

**BJM:** And you mentioned a second topic or theme...

**BS:** Well, the second one is regulation and policy makers in general. In the book, I mention that in the last 400 years, there has been a financial crisis in Western Europe about once a decade, on average. In the last 200 years, there has been new regulation introduced once a decade on average as well. What this tells you is that the way we do regulation doesn't really work. What it comes down to is a fundamental flaw - we always try to fight complexity with complexity. Furthermore, we tend to forget that policy makers are people too and therefore are subject to the same kind of biases as the rest of us. If you go back to Keynesianism, the one glaring flaw in his work is his belief that the state can somehow provide better outcomes; the state itself is a nebulous independent entity in his work.

The problem is that the state, particularly if you accept the way that society works on a hierarchical level, is ultimately going to be run by a few people who have their own views of the world. We can all see an enormous disconnect between economists and people in financial markets. Equally, on one hand, policy makers argue that banks should be safer and hold more capital, and on the other hand, they also demand that banks should be lending more to small businesses and widening home ownership. They seem to miss the fact that the two objectives cannot work together. There is a constant tradeoff between financial stability and growth. A more stable system is usually a less leveraged system, with less credit as a result. That is rarely palatable given the temporal myopia of policymakers, and so what hap-

pens with that particular tension is that financial stability usually ends up being sacrificed on the altar of growth.

So, one goal is to understand the government advisors and policy makers and how they behave. Then to examine what a sensible regulatory framework would look like - how do you tackle these bigger issues, given all of the tensions and constraints in the world? This is a fascinating and critical area of study. More than broad thinking about inequality, world peace, or the environment, what you are talking about here is how to manage that basic tension between the human drive to move forward and achieve economic growth and the desire to keep things stable, in a kind of status quo. Society will always have dislocations and disruptions from growth and how do you balance those dual forces, so it doesn't fall apart.

There is one other episode that is worthy of a book in itself. One of my opening chapters is about Rome in 33 A.D. and how they had a huge real estate-fueled bust that was very similar to our subprime crisis. The solution in the end was that the Emperor Tiberius flooded the system with money, set up a bad bank, and proceeded to bail out all the senators. He gave them money against their mortgages and took little pieces of paper as security - a rudimentary form of mortgage-backed securities.

Today, if you talk about too-big-to-fail banks, probability and history will tell you that eventually everything fails. So if you create a system where things are too big to fail, you have a problem, because when that failure happens, you haven't planned for it and you won't know what to do.

Looking at the Middle Ages, in the 12th and 13th centuries, there was an early Renaissance where art, culture, innovation and money all grew rapidly. Marco Polo travelled to China; the loom and button were invented; the first great European writers like Chaucer emerged; and art and architecture began to evolve rapidly past the icons of the last millennium. These developments were accelerated thanks to the rise of large banking families and the use of human ingenuity to find ways around the ban on usury that the Catholic Church has implemented. In doing so, credit growth was fuelled and in time, there were more innovations like cheques, forward contracts and currency exchange contracts. For example,

monasteries – the great farmers of the day - began to sell forward their wool harvest a year, 10 years, 20 years into the future, sometimes losing enormous amounts of money because tradeoff their ill-judged bets. All of this came to a crashing standstill at the end of the 13th century, because as these families got bigger, they became gigantic conglomerates whose tendrils extended deep into European trade. They also began to lend a lot of money to the kings and sovereigns of the day - who were seen as the safest to lend to thanks to their absolute power.

In the 1290s, a number of sovereigns started to run into trouble and suddenly these families found that their biggest clients were defaulting - they were completely exposed. Events rapidly escalated, building up to a crescendo in the mid-14th century. In those days, the families could not finance themselves through a depositor base, instead they had borrowed money from other guilds and families around Europe - effectively wholesale financing to make these loans to sovereigns. So when this started to fall apart, they all went bankrupt in different ways. Some very famous cities in Italy, like Siena, literally became frozen in time at that point, as all the money went away. A few of these groups were so vital to the economy, with tendrils everywhere, that as soon as the money dried up, the economy died. The next hundred years was basically the Great Depression of the time - what we now think of as The Dark Ages. There is a hundred year gap when too big to fail simply did fail.

**BJM:** And then later the Medicis picked up the pieces.

**BS:** Yes, at the end of the 14th century, decades after the whole thing went under and it took almost a hundred years to put it all behind. But a major part of the reason the system recovered was due to the Black Death. Ignoring the horrors of it, just economically speaking, when a third of the population was lost, suddenly everyone who survived was one half times richer. It rebooted the system, but no one ever signs up for that kind of creative destruction. It shows how too big to fail can be disastrous.

**BJM:** Thanks very much for this great discussion - there is plenty of food for thought here and we will look forward to your next endeavors.

In addition to the publication of *Money Mania* and

planning for his next book, Bob is also a contributor to *The Guardian*, *City AM*, *The Huffington Post*, and specialized trade publications like *Coindesk.com*, and *AllAboutAlpha.com*, covering issues in the alternatives arena as well as bitcoin and the digital currency world. A sampling of recent work is available through the links below.

- 2,500 Years of financial crises, a video interview with Bob Swarup by John Authers, courtesy of the Financial Times, April 25, 2014. Part 1: <http://t.co/cApIrbIUTr>
- Keep it Simple, Stupid, FT video interview with Bob Swarup by John Authers, courtesy of the Financial Times, April 28, 2014. Part 2: <http://tinyurl.com/o53wge4>
- How 'Too Big to Fail' Became 'Too Big to Manage,' in *The Huffington Post*, April 7, 2014: [http://www.huffingtonpost.com/bob-swarup/how-too-big-to-fail-becam\\_b\\_5100646.html](http://www.huffingtonpost.com/bob-swarup/how-too-big-to-fail-becam_b_5100646.html)
- Is Bitcoin Fated for Boom and Bust?, in *Coindesk*, April 12, 2014: <http://www.coindesk.com/bitcoin-fated-boom-bust/>
- Bubble trouble: We're sacrificing financial stability for a growth illusion, June 12, 2014: <http://www.cityam.com/article/1402603210/bubble-trouble-were-sacrificing-financial-stability-growth-illusion>
- How QE has harmed the economy, April 07, 2014: <http://www.cityam.com/article/1396898990/why-qe-now-harming-growth>
- London property - the barbarous gold of our times, May 16, 2014: <http://www.theguardian.com/business/economics-blog/2014/may/16/london-property-barbarous-relic-economics-blog>

You can find Bob on Twitter as well: [www.twitter.com/BobSwarup](http://www.twitter.com/BobSwarup)



# Comparing First, Second, and Third Generation Commodity Indices

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## 1. Introduction

Commodities are now treated as a mainstream asset class. As of April 2012, Barclays Capital reported that assets under management in commodity-based exchange-traded products, structured notes, and index swaps totalled a record high of \$435 billion versus \$100 billion of investment in 2006. This rise can be explained in part by the fact that commodities are now standard components of an investor's strategic asset allocation, due to the fact that they generate equity-like returns in the long-run, act as risk diversifiers,<sup>1</sup> and serve as inflation hedges (Bodie and Rosansky [1980], Erb and Harvey [2006], Gorton and Rouwenhorst [2006]). Recent research has made it clear that momentum and term structure strategies work well in commodity futures markets, suggesting that commodities should be part of the tactical asset allocation of investors as well (Erb and Harvey [2006], Gorton and Rouwenhorst [2006], Miffre and Rallis [2007], Fuertes, Miffre, and Rallis [2010] amongst others).

An easy way to gain exposure to commodities consists simply of tracking an index. Then one gets exposure to a broad range of commodities without concerns over rolling contracts, paying margin calls, posting collateral, or setting up complex futures trading processes. As the commodity market developed, new forms of indices were introduced. At present, the universe of commodity indices is split into three categories: i) the first generation indices, which are long-only and do not pay much attention to the fundamentals of backwardation and contango, ii) the second generation indices, which are also long-only, but attempt to lessen the negative effect on performance of contango while exploiting backwardation, and iii) the third generation indices, which are long-short and capitalize on both the price appreciation associated with backwardation and the price depreciation related to contango.

The purpose of this paper is to narrate the history of commodity indexing briefly, to introduce new developments, and to appraise the performance of the different generations. There are many choices of indexes to track. In fact, it takes a very informed and active investor to understand which passive index to choose. Therefore, the comparative investigation and performance evaluation implemented in this paper contribute to the literature on the recent proliferation of indices. This analysis extends the earlier works of Akey [2005] and Schneeweis, Spurgin, Das, and Donohue [2009], who focus on

the first and second generations.

We conclude that the second generation indices outperform the first generation indices by minimizing harmful impact of contango on performance and by using active long-only signals based on momentum or roll-yields. Out of the three generations, the third generation stands out as offering the best performance for the lowest volatility. This outperformance is particularly obvious in periods of increased uncertainty, such as the months following the debacle of Lehman Brothers.

## 2. Fundamentals of Commodity Futures Pricing

The essence of commodity futures pricing comes down to the fundamentals of backwardation and contango. Broadly speaking, backwardation means that the futures price of a commodity is expected to appreciate as maturity approaches and contango means the opposite: the futures price is expected to drop. One can bring two rationales for these observed price evolutions. The first one relies on the hedging pressure hypothesis of Cootner [1960], as generalized in Hirshleifer [1988] and validated empirically in Bessembinder [1992], and Basu and Miffre [2012]. The second rationale relies on the theory of storage of Kaldor [1939] and Working [1948], as empirically supported by Gorton, Hayashi, and Rouwenhorst [2012].

The hedging pressure hypothesis relates backwardation and contango to the propensity of hedgers to be net short or net long. More specifically, backwardation occurs when hedgers are net short (namely, commodity producers are more prone to hedge than commodity consumers and processors), leading to the necessary intervention of net long speculators to restore equilibrium. Contango arises in the opposite case, when hedgers are net long (namely, consumers and processors of a commodity outnumber producers), leading this time around to the necessary intervention of net short speculators.

The theory of storage explains backwardation and contango by means of the incentive that inventory holders have in owning the spot commodity. When inventories are high, commodity futures markets are contangoed and the term structure of commodity futures prices is upward-sloping - to give incentive to inventory holders to buy the commodity spot (at a cheap price) and sell it forward at a profit that exceeds the cost of storage and the cost of financing the purchase of the spot com-

modity. When inventories are low, commodity futures markets are backwardated and the term structure of commodity futures prices is downward-sloping - as the benefits of owning the commodity spot (called convenience yield) then exceed the costs, giving incentive to inventory holders to own the spot asset even though its price exceeds that of the futures contract.

To summarize, a backwardated market (with a downward-sloping term structure or positive roll-yield) is characterized by net short hedging and scarce inventories, while a contangoed market (with an upward-sloping term structure or negative roll-yield) is characterized by net long hedging and abundant inventories. These fundamentals are essential to understanding the evolution of commodity futures indexing.

### 3. Data

Excluding sector specific indices, there were 71 commodity indices listed in Bloomberg as of April, 30 2012. Our dataset focuses on the 38 that have return history over the period May, 31 2008 - April, 30 2012. We limit our sample to indices with 4 years of data to ensure robust inference on performance and to enable comparison of performance across generations. We download excess return data at a monthly frequency. To avoid backfilling bias, only live data are used in the analysis. The cross-section is split into generations, with the first generation comprising of six indices, the second generation of twenty three indices, and the third generation of nine indices.

### 4. Empirical Results

#### *First Generation Commodity Indices*

Members of this category include Deutsche Bank Liquid Commodity Index (DBLCI),<sup>2</sup> Diapason Commod-

ity Index (DCI), Dow Jones-UBS Commodity Index (DJ-UBSCI), Rogers International Commodity Index, S&P Goldman Sachs Commodity Index (S&P-GSCI), and Thompson Reuters-Jefferies/CRB Index. In spite of the recent proliferation of indices, the S&P-GSCI and the DJ-UBSCI are still considered as benchmarks for commodities investing and attract most of the assets under management.

Akey [2005] and Schneeweis, Spurgin, Das, and Donohue [2009] provide interesting and detailed accounts of first generation indices. These indices aim at being representative of a broad commodity market. They rebalance infrequently, sometimes as rarely as once a year. They are fully-collateralized, meaning that their total return depends on both futures returns and collateral yields (e.g., the 3-month T-bill rate). They are long-only and as such, they assume that commodity markets are solely backwardated. With the noticeable exception of DBLCI, they hold liquid contracts located at the front end of the term structure, rolling positions from the front to the second nearest contract. They tend to be heavily weighted towards energy; as a result, their performance is mostly driven by that sector. The number of constituents varies widely from one index to the next and as a result so do the diversification benefits, liquidity, and tracking errors.

Exhibit 1 reports summary statistics of the performance of first generation indices over a period common to all 38 indices here considered (May 31, 2008 - April, 30 2012). The first generation indices earn negative (albeit insignificant) annualised excess return, ranging from -9.54% (S&P-GSCI) to -2.64% (DCI). This is due to the impact of the financial and sovereign debt crises on the real economy. The measure of risks varies widely

	Annualized Mean Excess Returns		Annualized Standard Deviation	Sharpe Ratio	Skewness	Excess Kurtosis		
Deutsche Bank Liquid Commodity Index	-0.0735	(-0.56)	0.2646	-0.2779	-0.7286	(-2.06)	1.1820	(1.67)
Diapason Commodity Index	-0.0264	(-0.16)	0.3348	-0.0789	0.7988	(2.26)	5.0120	(7.09)
Dow Jones-UBS Commodity Index	-0.0713	(-0.64)	0.2235	-0.3192	-0.7739	(-2.19)	1.5059	(2.13)
Rogers International Commodity Index	-0.0421	(-0.33)	0.2530	-0.1664	-0.7928	(-2.24)	1.8861	(2.67)
S&P Goldman Sachs Commodity Index	-0.0954	(-0.67)	0.2863	-0.3333	-0.7234	(-2.05)	1.7479	(2.47)
Thompson Reuters-Jefferies/CRB Index	-0.0465	(-0.41)	0.2256	-0.2059	-0.7745	(-2.19)	1.8282	(2.59)
<b>Average</b>	<b>-0.0592</b>		<b>0.2646</b>	<b>-0.2303</b>	<b>-0.4991</b>		<b>2.1937</b>	

(*t*-statistic in parentheses)

**Exhibit 1:** Performance of first generation indices over the period May, 31 2008 - April, 30 2012

Source: Bloomberg and Author's Calculations



too, with standard deviations ranging from 22.35% to 33.48%, skewness ranging from -0.7928 to 0.7988, and excess kurtosis ranging from 1.1820 to 5.0120. It is interesting to note that all indices except DCI are negatively skewed and leptokurtic at the 5% level, indicating a high probability for large negative excess returns. At first sight, this might look puzzling given Gorton and Rouwenhorst [2006], who note that the skewness of commodity futures positions is positive. As reported in Rallis, Miffre, and Fuertes [2012], the negative skewness observed here comes from very poor index performance over the period July 2008 - February 2009, where this dramatic fall in prices was the result of a slowdown in worldwide economic activity triggered by the 2008 financial crisis.

First generation indices suffer from the pitfall of assuming that commodity futures markets are solely in backwardation. In other words, they do not take the shape of the term structure into account. Since markets tend to switch between backwardation and contango, based on hedging demand or inventory levels, for example, the first generation indices perform poorly in contangoed markets. Further, contracts closer to maturity tend to be more contangoed than more distant contracts. Contracts closer to expiration are also known to be the most volatile (Samuelson [1965], Daal, Farhat, and Wei [2006]), as they are more sensitive to supply/demand shocks. Second generation indices challenge these issues by investing in contracts further out on the term

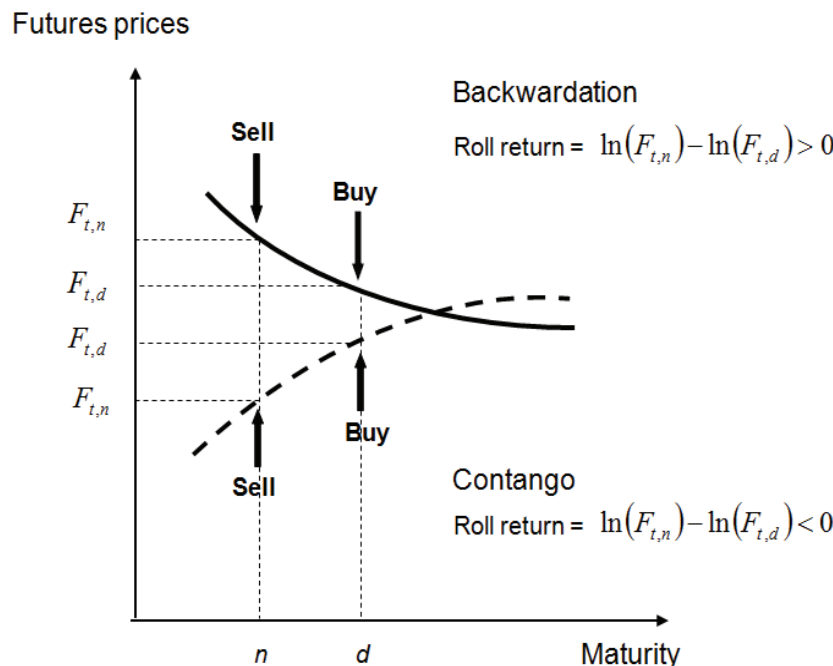
structure of commodity futures prices.

### Second Generation Commodity Indices

Exhibit 2 considers what happens when a position is rolled from a near ( $n$ ) to a more distant ( $d$ ) contract. If the market is in backwardation (continuous curve), the term structure is downward-sloping and the roll yield (defined as a function of the price differential between the nearby contract  $n$  that is closed out and the distant contract  $d$  that is rolled into) will then be positive. In other words, investors rolling positions in backwardated contracts earn positive roll-yields. However should the market be in contango (dashed curve), the term structure is then upward-sloping, resulting in a negative roll yield. To put this differently, rolling positions in contangoed markets can have a very damaging impact on the total returns of commodity indices.

The second generation indices were introduced to mitigate the impact on performance of these potentially disastrous negative roll-yields. These indices, instead of rolling from the front to the second nearest contracts as would their first generation counterparts, attempt to reduce the losses incurred when roll yields are negative by considering the whole price curve, while simultaneously bearing in mind liquidity requirements. Within our cross section, we could identify the following rolling techniques (see also Tsui and Dash [2011]):

- (i) Enhanced roll: These indices choose per commodity



**Exhibit 2:** Term structure of commodity futures prices

a relatively liquid contract located in the mid to far end of the futures curve and hold it until it nearly matures. It follows that the cost of rolling in contangoed markets is incurred less often than with first generation indices, where front contracts are held continuously. Since contracts are traded less often, the cost of replication is also reduced. Longview Extended Commodity Index and S&P GSCI Enhanced Index are structured using this strategy.

(ii) Constant maturity: Instead of choosing a single futures contract, these indices invest in a number of

contract months across the futures curve, in order to achieve a targeted maturity. They can also hold all contracts on the futures curve up to a certain target maturity. JPMorgan Commodity Curve Index and UBS Bloomberg Constant Maturity Commodity Index use this strategy.

(iii) Implied roll yield: A dynamic approach is used first to determine implied roll yields for all contracts up to a given maturity and then to choose the contract with the maximum implied roll yield. Examples in this category include DBLCI Optimum Yield and DCI BNP Paribas

	Annualized		Annualized	Sharpe				
	Annualized Mean	Standard	Standard	Ratio	Skewness	Excess	Kurtosis	
	Excess Returns	Deviation	Deviation			Returns		
<b>Panel A: Enhanced Roll</b>								
Longview Commodity Index	0.0255	(0.22)	0.2327	0.1097	-0.7377	(-2.09)	1.0945	(1.55)
Longview Extended Commodity Index	0.0208	(0.19)	0.2218	0.0939	-0.7820	(-2.21)	1.2486	(1.77)
S&P GSCI Enhanced Index	-0.0491	(-0.37)	0.2670	-0.1838	-0.8992	(-2.54)	2.0446	(2.89)
Average	-0.0009		0.2405	0.0066	-0.8063		1.4626	
<b>Panel B: Constant Maturity</b>								
JPMorgan Commodity Curve Index	-0.0445	(-0.37)	0.2390	-0.1864	-0.9180	(-2.60)	1.7457	(2.47)
UBS Bloomberg Constant Maturity Commodity Index	-0.0104	(-0.09)	0.2230	-0.0466	-0.9674	(-2.74)	1.9671	(2.78)
UBS Bloomberg SPGSCI Constant Maturity Composite	-0.0395	(-0.30)	0.2607	-0.1515	-0.8147	(-2.30)	1.7428	(2.46)
Average	-0.0315		0.2409	-0.1282	-0.9000		1.8185	
<b>Panel C: Implied Roll Yield</b>								
Barclays Index Pure Beta	0.0085	(0.07)	0.2359	0.0360	-1.0433	(-2.95)	2.3593	(3.34)
DB Commodity Booster	-0.0346	(-0.25)	0.2741	-0.1263	-0.6269	(-1.77)	1.6949	(2.40)
DBLCI-Optimum Yield	-0.0314	(-0.24)	0.2568	-0.1222	-0.6347	(-1.80)	1.1640	(1.65)
DBLCI-Optimum Yield Balanced	0.0080	(0.07)	0.2287	0.0350	-0.9601	(-2.72)	2.2855	(3.23)
DBLCI-Optimum Yield Broad	-0.0099	(-0.08)	0.2461	-0.0402	-0.8564	(-2.42)	2.1758	(3.08)
DCI BNP Paribas Enhanced Index	-0.0189	(-0.17)	0.2283	-0.0826	-0.9981	(-2.82)	2.1332	(3.02)
Average	-0.0130		0.2450	-0.0500	-0.8533		1.9688	
<b>Panel D: Other Roll Methodologies</b>								
Barclays Commodity Curve Allocation Index	0.0378	(0.32)	0.2378	0.1590	-0.9459	(-2.68)	1.9436	(2.75)
Merrill Lynch Commodity Index eXtra	-0.0497	(-0.37)	0.2677	-0.1857	-0.7627	(-2.16)	2.0415	(2.89)
RICI Enhanced Index	-0.0152	(-0.14)	0.2246	-0.0679	-0.9163	(-2.59)	1.8064	(2.55)
Average	-0.0091		0.2434	-0.0315	-0.8750		1.9305	
<b>Panel E: Signal-based Enhancements</b>								
Bache Commodity Index	-0.0079	(-0.10)	0.1580	-0.0498	-0.1833	(-0.52)	0.4344	(0.61)
BNP Paribas COMAC Long Only	0.0107	(0.11)	0.2019	0.0530	-1.3428	(-3.80)	3.0155	(4.26)
BNP Paribas Oscillator Commodities	0.0074	(0.12)	0.1237	0.0599	-0.6146	(-1.74)	0.1983	(0.28)
CYD Long-Only	-0.0118	(-0.12)	0.1943	-0.0608	-0.5248	(-1.48)	1.2765	(1.81)
CX Commodity Index	0.0096	(0.08)	0.2272	0.0421	-0.5828	(-1.65)	1.6926	(2.39)
DBLCI-Mean Reversion	-0.0368	(-0.29)	0.2533	-0.1451	-0.6169	(-1.74)	-0.1564	(-0.22)
Morningstar Long/Flat Commodity Index	0.0368	(0.51)	0.1439	0.2554	-0.6355	(-1.80)	1.2678	(1.79)
Morningstar Long-Only Commodity Index	-0.0186	(-0.16)	0.2319	-0.0803	-0.7790	(-2.20)	1.7465	(2.47)
Average	-0.0013		0.1918	0.0093	-0.6600		1.1844	
<b>Panel F: Averages</b>								
First generation	-0.0592		0.2646	-0.2303	-0.4991		2.1937	
Second generation	-0.0093		0.2252	-0.0298	-0.7888		1.6053	

(t-statistic in parentheses)

**Exhibit 3:** Performance of second generation indices over the period May 31, 2008 - April 30, 2012  
Source: Bloomberg and Author's Calculations

Enhanced Index.

(iv) Other roll methodologies: This section covers methodologies such as forward roll, which shifts the asset allocation to contracts with a given maturity;<sup>3</sup> e.g., 3-month (Barclays Commodity Curve Allocation Index) and methodologies that choose one representative contract each month along the curve (Merrill Lynch Commodity Index).

Mouakhar and Roberge [2010] present evidence that the implied roll yield methodology does improve performance relative to being long front contracts; Rallis, Miffre, and Fuertes [2012] draw the same conclusion, but with respect to the forward roll strategy. It should be noted however that while decreasing the risk of potential losses in contangoed markets, many of the strategies mentioned above (e.g., enhanced roll, constant maturity, forward roll) mitigate the potential gains that come from rolling in backwardated markets equally well. This comes from the fact that, as mentioned in Exhibit 2, the curve is less steep in the mid to far end in both states of nature: backwardation and contango. Besides, the benefits of using commodity contracts with longer maturities must be carefully weighed against the lack of liquidity of distant contracts. Rallis, Miffre, and Fuertes [2012] show that liquidity is concentrated in the front-end of the futures curve and thus that part of the performance of the forward roll strategy is in fact a compensation for the lack of liquidity of distant contracts.

While many second generation indices use advanced rolling techniques to mitigate the cost of negative roll yields, others differentiate themselves from their first category counterparts by using momentum and term structure signals in a long-only framework, where these signals have been shown to add value (2.10% alpha) beyond mere replication of the S&P-GSCI or DJ-UBSCI (Rallis, Miffre, and Fuertes [2012]). Examples in the category include: Bache Commodity Index and Morningstar Long-Only Commodity Index amongst others. Another signal that is often used is based on mean reversion. The widespread use of this signal follows from the seminal papers of Gorton and Rouwenhorst [2006] and Erb and Harvey [2006], which show that investors can earn equity-like returns by rebalancing monthly to equal-weights the constituents of a long-only portfolio of fully-collateralized commodity contracts. Within our cross section, this strategy is followed by DBLCI-

Mean Reversion. Liquidity is yet another signal used to ease replication and thus enhance net performance (CX Commodity Index).

Exhibit 3 presents summary statistics on the performance of second generation indices, with Panels A to D focusing on the four roll methodologies mentioned above and Panel E on enhancements based on e.g., momentum, term structure, or mean reversion signals. Exhibit 3, Panel F compares the performance of first and second generation indices over a period that is common to both: May, 31 2008 - April, 30 2012.

The performance of second generation indices over the period 2008-2012 is better than that reported in Exhibit 1, Panel B for first generation indices. Even though none of the second generation indices earn positive mean excess return at the 5% level in Panels A to E, their average excess returns in Panel F, which stands at -0.93% a year, exceeds that of first generation indices by 5% a year. With the exception of constant maturity strategies that tend to underperform (-3.15% a year in panel B), the performance of the other strategies is found to be close to that of the average second generation index in Panel F. As distant contracts tend to be less volatile than nearby contracts, the annualized standard deviation of second generation indices is on average smaller than that of their first generation counterparts (22.52% a year versus 26.46% for first generation). As a result, the performance of second generation indices stands out on a risk-adjusted basis: their Sharpe ratios average -0.0298 versus -0.2303 for first generation indices. As in Exhibit 1, the distribution of second generation indices is negatively skewed and leptokurtic. Second generation indices fare worse than first generation in terms of skewness (-0.7888 versus -0.4991), but this result is mainly driven by DCI, which has positive and significant skewness in Exhibit 1. Excluding DCI, the average skewness in Exhibit 1 falls to -0.7586 and is thus similar to that reported for second generation indices. This suggests that both generations suffer severely during deep downturns.

### *Third Generation Commodity Indices*

The high volatility observed in long-only commodity indices and the recognition of the importance of contango following the 2008 downturn in commodity futures prices were major factors initiating the creation of third generation indices. These long-short indices take long positions in backwardated commodities (with

low inventory and net short hedgers) whose prices are expected to appreciate and short positions in contangoed commodities (with high inventory and net long hedgers) whose prices are expected to depreciate. As compared to the previous long-only generations, the dynamic long-short indices are designed to perform well both in up and down markets and also to capture the risk premium of commodities futures contracts, by applying more active investment approach.

Backwardation / contango in turn can be modelled via different signals that have been shown by academics to work well in commodity futures markets. These include: momentum (Erb and Harvey [2006], Miffre and Rallis [2007], Shen, Szakmary, and Sharma [2007], Szakmary, Shen, and Sharma [2010]) and the slope of the term structure (Erb and Harvey [2006], Gorton and Rouwenhorst [2006], Fuertes, Miffre, and Rallis [2010]). Macroeconomic and financial factors, geopolitical situation, supply/demand, and technical analysis are also used as signal to add value for commodity selection. In our sample, we have nine third generation indices categorized into the following strategies:

(i) Momentum: These indices use price continuation to determine long or short positions. Indices in this category include Mount Lucas Management Commodity Index and Morningstar Long/Short Commodity Index.

(ii) Term structure: These indices define positions based on the shape of the futures curve, taking long positions

in the most backwardated commodities with the highest roll yields and short positions in the most contangoed ones with the lowest roll yields. CYD Long Short is a good example in this category.

(iii) Market neutral: These indices enter simultaneous long and short positions so as to be market neutral. CYD Market Neutral Plus is included in our cross section as an example.

(iv) Fundamental/Rule-based: These indices are based on a quantitative approach that combines fundamental forecasts and technical signals to design optimum commodity weights. For example, Barclays Capital CORALS defines asset allocation by combining technical signals (momentum) and fundamental analysis (inventory data, roll yield, and unemployment data, for example). Other methodologies in this group base index weights on recommendations from an outside specialist. An example here is BNP Paribas COMAC Long Short, which works jointly with Tiberius Group.<sup>4</sup>

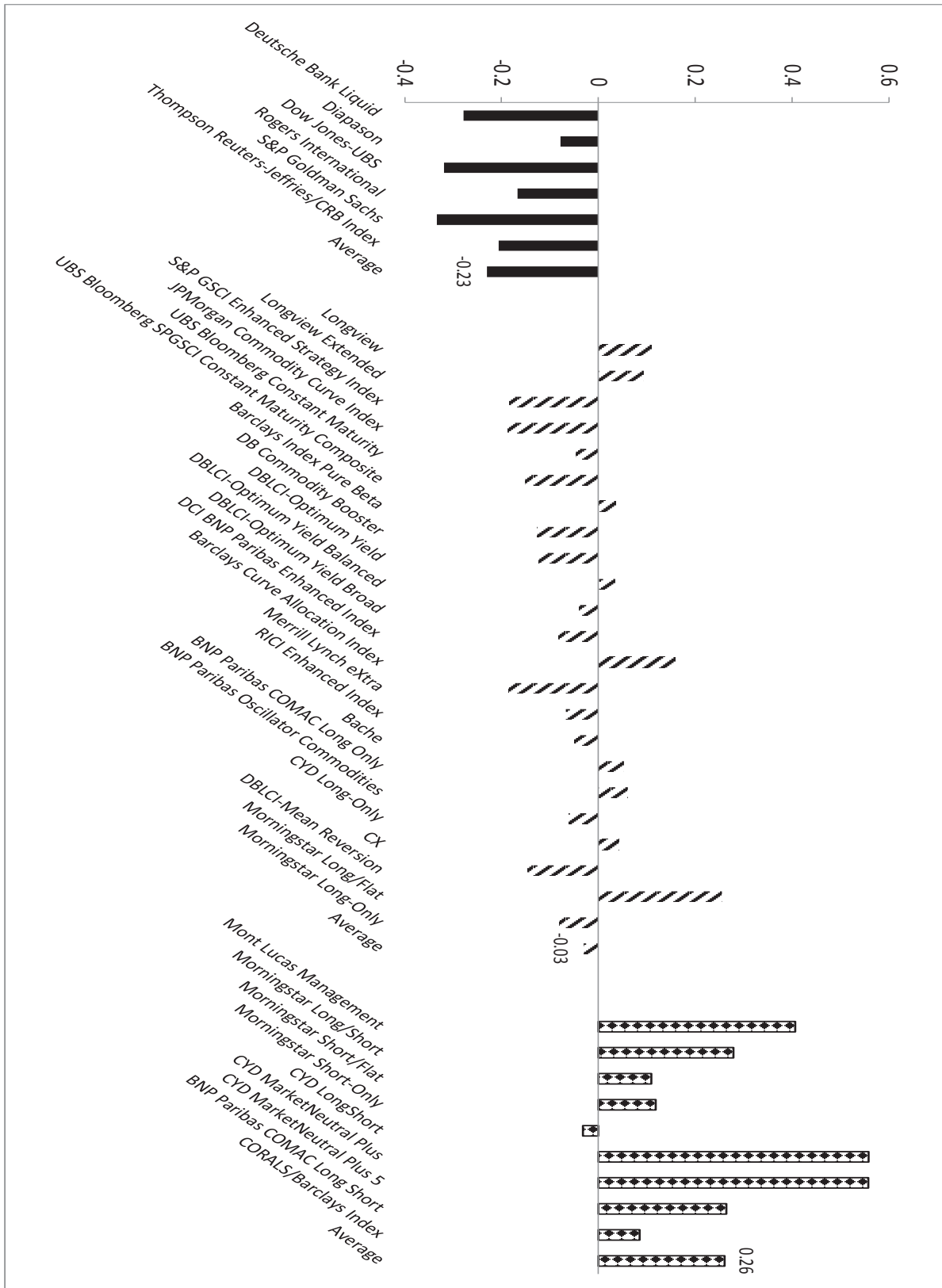
Exhibit 4 presents summary statistics for third generation indices in Panel A, alongside with the average performance of first, second, and third generation indices in Panel B. Over the period May, 31 2008 - April, 30 2012 that is common to all three generations, the third generation indices stand out as offering the highest mean excess returns (at 3.02% on average versus -5.92% and -0.93% for the first and second generations, respectively). There is no clear tendency for one strategy to

Main Strategy		Annualized Mean Excess Returns	Annualized Standard Deviation	Sharpe Ratio	Skewness	Excess Kurtosis
<b>Panel A: Third-generation: Individual performance</b>						
Mont Lucas Management Commodity Index	Momentum	0.0731 (0.81)	0.1797	0.4067	0.9186 (2.60)	5.3399 (7.55)
Morningstar Long/Short Commodity Index	Momentum	0.0397 (0.56)	0.1423	0.2791	-0.4445 (-1.26)	0.9958 (1.41)
Morningstar Short/Flat Commodity Index	Momentum	0.0090 (0.22)	0.0819	0.1095	1.4523 (4.11)	4.6297 (6.55)
Morningstar Short-Only Commodity Index	Momentum	0.0261 (0.24)	0.2206	0.1185	0.9387 (2.65)	1.8896 (2.67)
CYD Long Short	Term structure	-0.0026 (-0.06)	0.0817	-0.0318	0.2115 (0.60)	-0.2041 (-0.29)
CYD Market Neutral Plus	Market neutral	0.0137 (1.12)	0.0245	0.5583	0.1413 (0.40)	0.4795 (0.68)
CYD Market Neutral Plus 5	Market neutral	0.0343 (1.12)	0.0615	0.5576	0.1614 (0.46)	0.4732 (0.67)
BNP Paribas COMAC Long Short	Fundamental/Rule-based	0.0644 (0.53)	0.2436	0.2644	-0.1148 (-0.32)	-0.4176 (-0.59)
CORALS/Barclays Index	Fundamental/Rule-based	0.0141 (0.17)	0.1658	0.0853	-0.8577 (-2.43)	0.6344 (0.90)
<b>Panel B: Averages</b>						
First generation		-0.0592	0.2646	-0.2303	-0.4991	2.1937
Second generation		-0.0093	0.2252	-0.0298	-0.7888	1.6053
Third generation		0.0302	0.1335	0.2609	0.2674	1.5356

(t-statistic in parentheses)

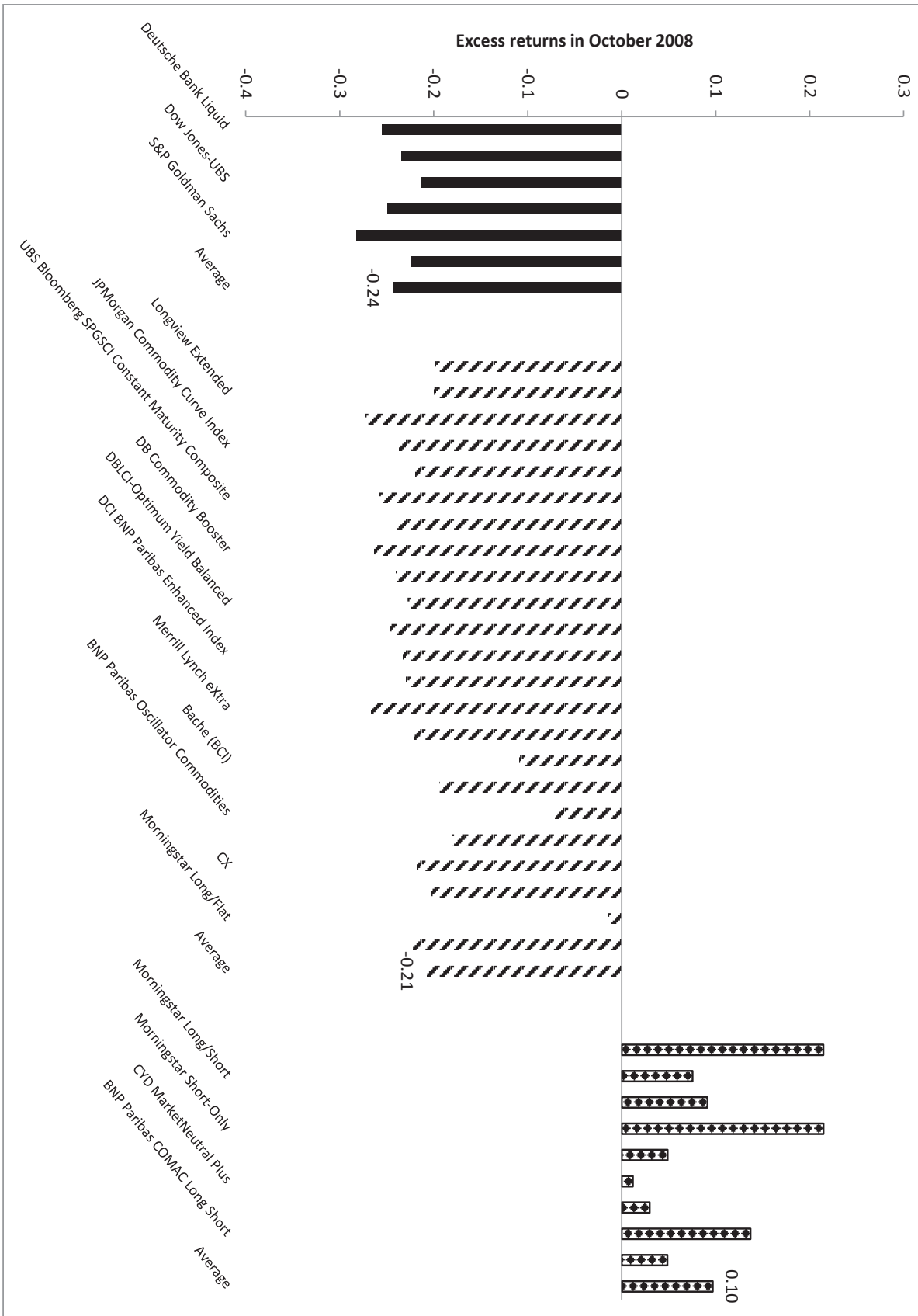
**Exhibit 4:** Performance of third generation indices over the period May 31, 2008 - April 30, 2012

Source: Bloomberg and Author's Calculations



**Exhibit 5:** Sharpe ratios of first (solid line), second (diagonal line), and third (diamonds) generation indices (May 31, 2008 - April 30, 2012)

Source: Bloomberg and Author's Calculations



**Exhibit 6:** Mean excess returns of first (solid line), second (diagonal line), and third (diamonds) generation indices in October 2008 or following the debacle of Lehman Brothers  
 Source: Bloomberg and Author's Calculations

outperform the other ones. This suggests that the signal used is no guarantee of outperformance and that other parameters such as index constituents, rebalancing frequency, diversification constraints, or weighting scheme are likely to impact performance too.

Irrespective of the risk measures considered, the third generation indices stand out as being less risky, since they have noticeably smaller volatility, higher skewness, and lower excess kurtosis - all three characteristics are welcome features to risk-averse investors. Most noticeably, the long-short indices present volatilities that are on average 50% (59%) less than those of second (first) generations. This is to be expected, as the indices are often fully-collateralized (i.e., unlevered), with the shorts (longs) providing a partial hedge against the risk that the longs (shorts) may depreciate (appreciate) in value, thereby reducing overall volatility. As a result and as pictured in Exhibit 5 the Sharpe ratios of third generation indices (in green) at an average of 0.26 clearly stand out as being much higher than those of first generations (at -0.23 on average in blue) and second generations (at -0.03 on average in red).

The benefits of third generation indices are particularly clear in Exhibit 6, where we plot the excess returns of the different indices sorted per generation in October 2008, or right after the debacle of Lehman Brothers (dated September, 15 2008). Both first and second generation indices (as modelled in blue and red, respectively) performed poorly in this severely volatile market condition. However, the third generation long-short commodity indices performed exceptionally well, benefiting fully from contango and market downturn through the shorts, thereby increasing performance and maintaining low overall volatility. This result confirms the results presented in Miffre [2011], which highlight the outperformance of long-short (over long-only) commodity strategies, such as those implemented by CTAs in periods of high volatility in equity markets. Altogether, Exhibits 4, 5, and 6 suggest that third generation commodity indices could become serious contenders to CTAs that merely replicate strategies based on momentum and term structure.

## 5. Conclusions

The rising interest of institutional investors for commodities since the early 2000s prompted remarkable financial engineering in the commodity index space that is now in its third generation. This article reviewed

this evolution and provided an assessment of index performance. Given recent proliferation of indices, it has become increasingly puzzling for investors to choose a specific index.

We conclude that the second generation indices are superior to their first generation counterparts. This improvement comes from their systematic attempt to minimize the harmful impact of negative roll yield (or contango) on performance, or from their use of active long-only signals based on momentum or roll-yields. Yet, second generation indices suffer from two major drawbacks. First, many of them hold distant contracts that are less liquid and thus are costly to trade; second, and most importantly, as they are long-only, they cannot fully benefit from the price depreciation associated with contango. We propose as an interesting alternative the third generation indices that accurately take into account the fundamentals of commodity futures markets by going long backwardated assets and short contangoed ones, simultaneously reducing overall volatility. In their design, they are closer to actively managed commodity trading strategies than they are to first or second generation indices. Besides, they offer good performance in periods of market downturn, good diversification to equity investors, high liquidity and full transparency at a low cost. As such, they might become serious contenders to commodity trading advisors that merely replicate strategies based on momentum or term structure.

Second and third generation indices regrettably only started trading recently, thus the live dataset that may be used to appraise their performance might be too small to draw clear inferences. It will be interesting to revisit the evidence once more data is made available.

## Endnotes

1. Recently however the diversification benefits of commodities have been put into question. Not only Daskalaki and Skiadopoulos [2011] question whether commodities should at all be part of optimally diversified portfolios but also the correlations between stock and commodity returns has been shown to have risen dramatically since the debacle of Lehman Brothers (see for example, Büyükkşahin and Robe [2010], Miffre [2011], Tang and Xiong [2011]).

2. Because of its early inception date (February 2003), DBLCI is often considered as a first generation index

(Akey [2005]). As it holds distant metals and agricultural contracts and thus performs well in contangoed markets, it could equally well be treated as second generation.

3. As the term structure of commodity futures prices tends to be less steep in the mid to far end, the cost of rolling in contangoed markets is then reduced.

4. Other examples include Credit Suisse (Goldman Sachs) which designs an index based on the views of Glencore (Clive Capital). These indices are not included as their return history is too short.

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# The Hidden Costs of Liquidity: How Alternatives Can Reward Long-Term Investors

**Brody J. Browe, CAIA**  
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## 1. Introduction

*“...serious investors benefit by avoiding overpriced liquid securities and by embracing less liquid alternatives.”*

— David Swensen  
Chief Investment Officer,  
Yale University Endowment<sup>1</sup>

The term “liquidity” refers to the ease with which an asset can be converted into cash. Assets or securities that can be easily bought and sold, such as bonds, public stocks, and U.S. Treasuries, are considered liquid. Those that are more difficult to buy and sell, such as real estate, private debt, and private equity, are said to be illiquid. Given investors’ natural bias for cash, most investors gravitate toward owning liquid assets. **But at what cost?**

## 2. Less Liquidity, More Potential Return

The financial crisis and persistent market volatility have intensified investor bias toward liquid securities. Unfortunately for investors, this increased demand has coincided with deteriorating yields for highly liquid assets in the public markets. Generally speaking, yields in more liquid assets have been decreasing due to a shortage of supply, while yields in less liquid parts of the market have been increasing due to a lack of demand. The result has been an increase in the illiquidity premium — that is, the difference in yield between liquid and less liquid securities. The mismatch between the demand for and supply of liquid securities creates an opportunity for those willing to employ a long-term alternative

investment strategy.

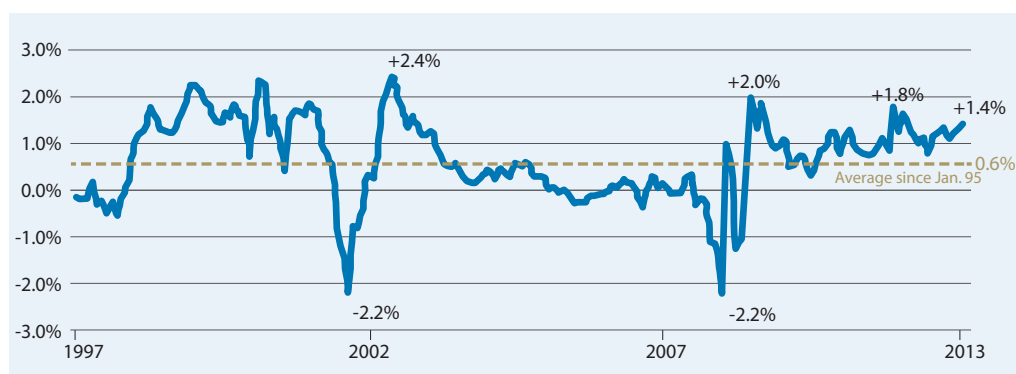
As investors’ demand for liquidity has increased, so too has the relative cost of owning a fully liquid portfolio. The result is that the illiquidity premium is well above its historical average. The chart in Exhibit 1 illustrates the illiquidity premium in the high yield bond market from 1997–2012.<sup>2</sup>

*What the data tells us:* The yield premium for less liquid high yield bonds in December 2012 was 1.4%, considerably higher than the long-term average of 0.6%. Moreover, since the overall yield in high yield bonds has decreased so dramatically, with the Barclays High Yield Index ending 2012 at 6.1%, the spread differential due to liquidity represents a substantial component of an investor’s total return.

## 3. Illiquidity Premiums in the Senior Secured Loan Market

The illiquidity premium phenomenon extends beyond the high yield bond market. Senior secured loans, also known as bank loans, are a \$1.2 trillion asset class that provides a form of debt financing to corporate borrowers. Although senior secured loans are used as a financing option by many public companies, they are more commonly found in the capital structures of private companies that lack access to public markets.

Exhibit 2 examines the spread differential between syndicated middle market senior secured loans (defined as loans to issuers with less than \$50 million in EBITDA<sup>3</sup>)



**Exhibit 1:** Spread Differential Between Liquid and Illiquid High Yield Bonds (1997-2012)

Source: Barclays Research, January 2, 2013.

and syndicated loans to large corporate borrowers (issuers with more than \$50 million in EBITDA<sup>4</sup>).

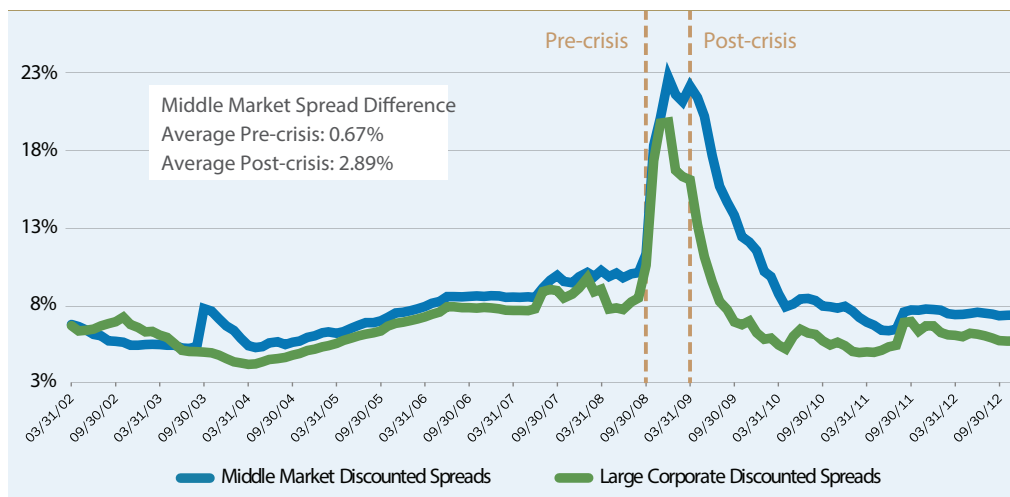
*What the data tells us:* Prior to the financial crisis in 2008, syndicated loans to middle market borrowers offered higher yields than syndicated loans to large corporate borrowers by an average of 0.67%. Since the financial crisis, the spread differential has grown to an average of 2.89%.

The primary driver behind the middle market yield premium is liquidity. In response to regulatory changes, such as those required under Basel III and Dodd-Frank, large banks have generally refocused their strategies to dedicate capital to only their largest and most profitable clients. Left behind are the private, middle market companies that historically relied on bank loan financing as their primary source of funding. To entice new lenders to fill this funding void, middle market borrowers have been forced to pay higher interest rates than larger corporate borrowers of similar credit quality. The high-

er yields available in the less liquid parts of the senior secured loan market create an opportunity for those willing to accept less liquidity in return for better risk-adjusted returns.

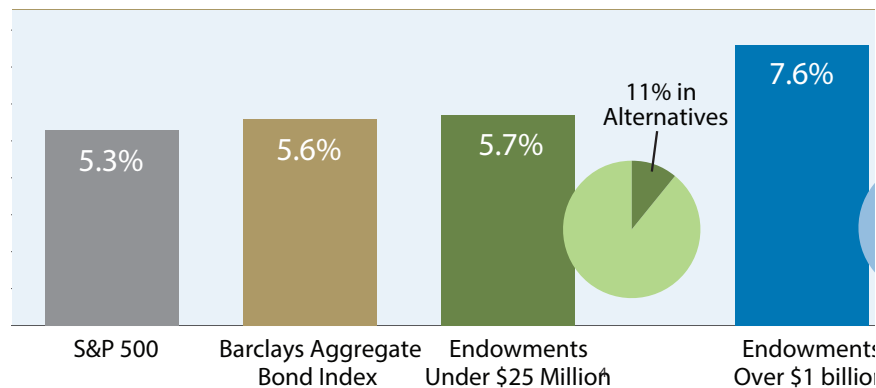
#### 4. Why Endowments Invest in Alternatives

Alternative investments are often defined by what they are not—a traditional investment in publicly traded stocks or bonds. Alternatives can include both non-traditional assets, such as real estate, private equity, or art, as well as non-traditional strategies, such as investing in illiquid securities. While individual investors have only recently begun to allocate a portion of their portfolios to alternative investments, institutional investors and endowments have been using alternatives for years. As of June 30, 2012, the average endowment allocated 54% of its total portfolio to alternative strategies.<sup>5</sup> Yale’s endowment, widely considered the pioneer in alternative investing, allocates nearly 65% of its portfolio to less liquid investments.<sup>6</sup>



**Exhibit 2:** Middle Market Loan Premium (March 2002-December 2012)

Source: S&P/LCD, monthly data as of December 31, 2012.



**Exhibit 3:** Average 10-Year Net Returns (June 2002-June 2012)

Source: 2012 NACUBO-Commonfund Study of Endowments.

The basic premise behind endowments' relatively high and growing allocation to alternatives is their pursuit of enhanced risk-adjusted returns and their belief that illiquid securities can provide higher yields and less correlation to traditional markets. Exhibit 3 compares 10-year investment returns for endowments against the S&P 500 and an investment grade bond index.

*What the data tells us:* Large endowments, which have over a 60% allocation to alternative investments, significantly outperformed both public equities and investment grade bonds over the past 10 years.

Two factors may explain the performance gap between endowments and traditional investments:

**The alternatives effect.** It is clear from the data that alternatives play some role in long-term investment returns. By harvesting the yield premium on illiquid assets, endowments are typically able to construct a higher yielding portfolio with less correlation to the broader markets.

**The quality of the manager.** Illiquid securities by their nature are more difficult to evaluate than publicly traded securities. Skilled managers that are adept at taking advantage of pricing inefficiencies in illiquid securities will have a greater impact on returns than skilled managers operating in the public markets, where price inefficiencies are fewer in number and generally offer less return potential.<sup>7</sup>

## 5. Where Alternatives Fit for Individuals

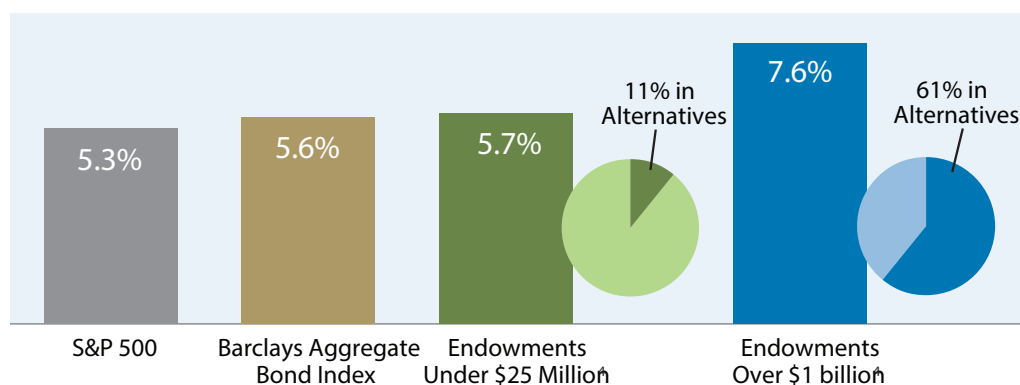
Alternative investments are a clear driver of endowment performance. And while the investment horizon of the

average individual is generally shorter than the average endowment, individual investors may still benefit from an allocation to long-term investments.

Today individuals have access to alternatives through mutual funds, closed-end funds, and business development companies (BDCs), among others. Each investment structure comes with its own benefits, risks, costs, and liquidity.

Among the most common investment vehicles for individual investors are traditional open-end mutual funds, which are typically low in cost and allow investors to redeem capital on a daily basis. One result of daily liquidity, however, is that mutual fund managers are forced to manage without a permanent capital base: when investors withdraw capital, a manager may be forced to sell assets, and when investors purchase fund units, the manager may be forced to buy assets regardless of his or her opinion on relative value. If investors withdrew funds only when securities prices were high and invested only when securities prices were low, the job of a mutual fund portfolio manager would be relatively easy. In general, the opposite is true. On average, investors tend to sell losing positions and add to positions that have already appreciated in value. Exhibit 4 demonstrates this behavior by comparing the senior secured loan mutual fund flows to the price of the Credit Suisse Leveraged Loan Index in 2011.<sup>8</sup>

*What the data tells us:* During the market volatility of 2011, loan mutual fund investors consistently withdrew funds during periods of market stress and invested additional capital during periods of market strength, negatively impacting investor returns.



### Exhibit 4: Loan Mutual Fund Flows vs. Credit Suisse Leveraged Loan Index in 2011

Source: Mutual fund flows from S&P/LCD, loan index is Credit Suisse Leveraged Loan Index. Data from January 2011– December 2011.

The difference between investors' realized and potential returns illustrates the performance gap between short-term and long-term investment strategies. Portfolio managers are keenly aware of the risks posed to long-term investment strategies from clients managing to short-term trends, and portfolio managers are often deterred from making long-term investment decisions out of fear of experiencing short-term underperformance and capital withdrawals.<sup>9</sup> The more liquidity investors have in their investment portfolio, the more likely they are to be focused on short-term performance, and the greater the challenge of portfolio managers to maintain a long-term investment strategy.

## 6. Options for the Long-Term Investor

Closed-end funds have access to permanent capital, thereby allowing their managers to pursue less liquid opportunities. Matching long-term investor capital with a long-term investment vehicle is critical to the success of an alternative investment strategy. The historical challenge with closed-end funds for the individual investor has been the volatility associated with their listed shares—closed-end fund shares often exhibit a high correlation to public market indices. Given that one of the objectives of an illiquid alternative investment strategy is to exhibit a low correlation to public markets, the volatility in listed closed-end fund returns can nullify the benefit of an illiquid alternative investment strategy. Unlisted closed-end funds and BDCs are increasing in popularity due in part to their ability to preserve the attributes of a fund's underlying assets and still provide a permanent capital base. In an unlisted closed-end fund, or non-traded fund, there is typically no secondary trading market for the fund's shares—individuals wishing to exit their investment can generally only do so through a limited tender offer process. By matching long-term capital with long-term strategies, portfolio managers of unlisted investment vehicles may have the flexibility to seek the higher returns available in the illiquid parts of the market and potentially improve risk-adjusted returns. As with any investment, unlisted funds and BDCs have risks, including limited liquidity, potential loss of principal, and portfolio volatility. Investors should consult their financial advisors to understand these risks and how such investments might fit into their investment strategies.

## 7. Summary

The illiquidity premium has grown. Since the financial crisis, macroeconomic uncertainty and public market

volatility have increased investors' demand for liquid securities. At the same time, secondary market liquidity has deteriorated as many banks and broker dealers have deleveraged their balance sheets and reduced risk. The result has been the widening of the yield premium available to investors in less liquid securities.

Endowments favor alternatives for better risk-adjusted returns. Alternative investments are designed to provide access to non-traditional assets and strategies, one of which is investing in less liquid securities. Endowments and institutional investors have been using alternative investment strategies for years as a way to diversify their investment portfolios and capture the yield premium available in illiquid securities. A key to success for these managers has been to match their long-term investment strategy with long-term investor capital.

Unlisted closed-end funds and BDCs make illiquid alternatives accessible. With the unlisted closed-end fund structure, the interests of managers and investors are aligned: managers can invest in less liquid alternatives to drive returns, and investors can execute a long-term investment strategy without being subject to the daily share price volatility associated with the public markets. Investors should consult a financial advisor if they are interested in learning more about unlisted alternative investments.

## Endnotes

1. Swensen, *Pioneering Portfolio Management*.
2. Barclays Research, January 2, 2013. Liquid Index (GO-GO Index) contains bonds with more than \$500 million in par that were issued less than 18 months prior to January 2, 2013. Illiquid Index (SLO-GO Index) contains bonds with less than \$250 million in par that were issued more than 18 months prior to January 2, 2013. The difference in yield is calculated using the option adjusted spread (OAS) differential.
3. EBITDA is earnings before interest, taxes, depreciation and amortization, a cash flow proxy commonly used in corporate finance.
4. S&P/LCD, monthly data as of December 31, 2012.
5. 2012 NACUBO-Commonfund Study of Endowments.

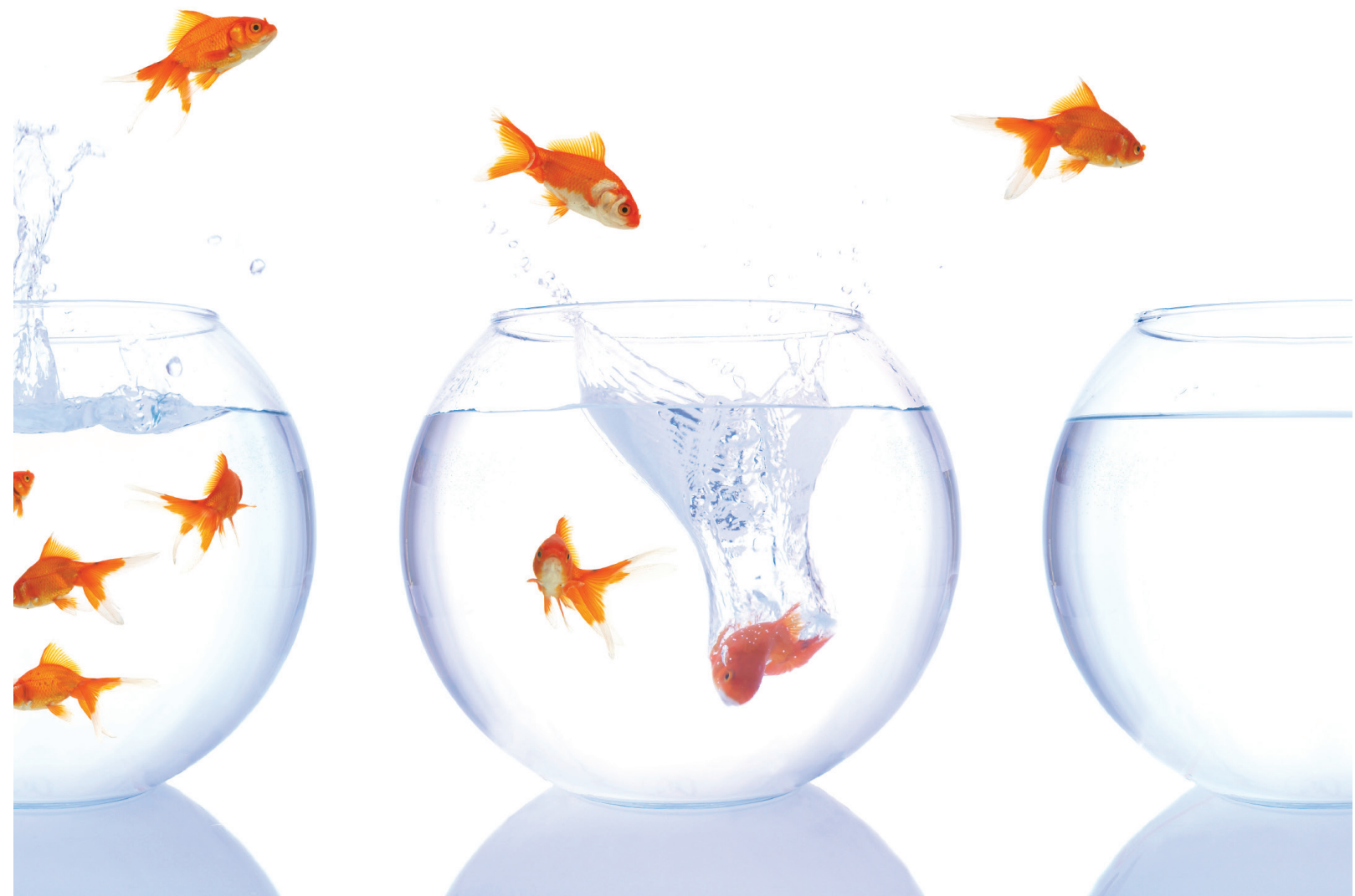
6. As of June 30, 2012. Investments include allocations to Natural Resources, Private Equity, and Real Estate.
7. The Yale University Investments Office 2012 Endowment Update.
8. Mutual fund flows from S&P/LCD, loan index is Credit Suisse Leveraged Loan Index. Data from January 2011– December 2011.
9. Stein, Why are Most Funds Open-End? Competition and the Limits of Arbitrage. *The Quarterly Journal of Economics* (2005) 120(1), 247-272.

### Author Bio



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is a leading manager of alternative investment funds designed to enhance investors' portfolios by providing access to asset classes, strategies, and asset managers that typically have been available to only the largest institutional investors. The firm's funds offer "endowment-style" investment strategies that help construct diversified portfolios and manage risk. Franklin Square strives not only to maximize investment returns but also to set the industry standard for best practices by focusing on transparency, investor protection, and education for investment professionals and their clients.



# Alternatives Reality

**Verne Sedlacek**

President and Chief Executive Officer at Commonfund



## 1. Introduction

This paper provides both a retrospective of the last two decades of growth in alternatives to assess the extent to which alternatives have “worked” and offers a perspective on the role and relative importance of alternatives going forward.

Alternatives have now become the traditional. It is interesting to note that while 30 years ago alternatives were in fact “alternatives,” they have now become mainstream. The latest NACUBO–Commonfund Study of Endowments (NCSE) reports that more than half of all assets held by university endowments are in a broad array of strategies that we refer to as alternatives. And while the magnitude of allocations to alternatives among endowments and foundations remains skewed to the largest pools, institutions of all sizes have increased allocations and in the last decade allocations are increasing dramatically among other institutional pools, most notably pension funds. What has not changed is the wide dispersion of returns in alternative investments, making manager access and selection key determinants of success.

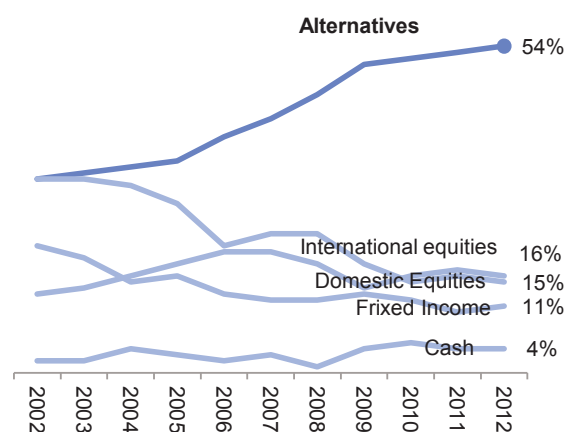
What has propelled and continues to drive this growth in alternatives? Alternative investment strategies are included in a portfolio to enhance returns, to reduce risk or both. They are fundamental to the structure of the so-called “endowment model” of investing which concludes that long term asset pools (whether endowments, foundations, long-term reserves, or pension funds) can outperform investors with shorter term time horizons by providing capital to less efficient, more complicated,

and illiquid sectors of the capital markets.

Today, investment committees, governing boards, and investment staff of institutional investors that have established portfolios of alternative strategies are critically assessing whether alternatives still make sense. Two questions are most commonly asked: (1) do alternatives provide better risk-adjusted performance than traditional long-only equities and bonds; and (2) are alternatives effective portfolio diversifiers? A related question that committees are posing concerns the high fees typically associated with alternatives: do the portfolio benefits justify the high fees?

A recent article in *The New York Times* authored by James Stewart (10/12/2012) added fuel to the debate, as it argued that alternatives have in fact detracted from returns, concluding that a simple 60/40 passively managed equity and fixed income portfolio outperforms the endowment model.

Our analysis concludes that alternatives have, in general, contributed significantly to portfolio performance over the last twenty years – either by providing better returns or reducing volatility. More important, we conclude that thoughtfully constructed portfolios that include allocations to alternative investment strategies are well positioned to continue to outperform the “traditional” 60/40 benchmark. But, simply allocating 20, 30, 40 percent or more to alternatives does not ensure success. Talent is key and for investors unable to gain access to top-tier investment managers, caveat emptor!



**Exhibit 1: Asset Allocation**  
Source: NCSE, 2011

For the purpose of this discussion, we will focus on three specific types of investments that make up a majority of the alternative allocations among university endowments: private equity, venture capital, and hedge funds (because their investment structures are similar, we use the term “private capital” to include both private equity and venture capital).

Exhibit 1 demonstrates the growth of alternatives from the NACUBO–Commonfund Study of Endowments (NCSE) over the last 10 years. Exhibit 2 is the breakdown of the alternatives category from the NCSE as of June 30, 2012.

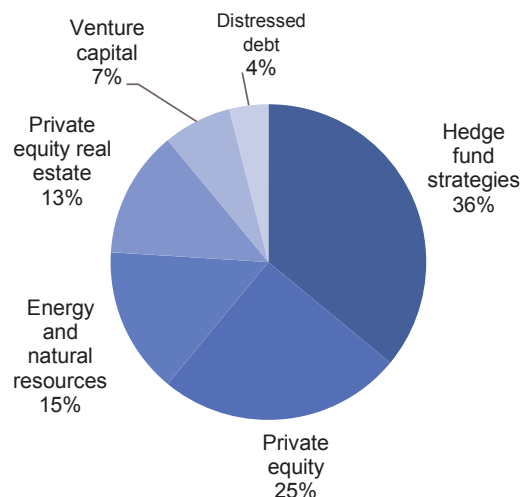
## 2. The Early Years – Building the Foundation for Change

If we jump in our time machine and go back to the late 1960s, what we find is that most long-term, mission-based asset pools were primarily invested in fixed income instruments. While some institutions allocated small amounts to equities, equities were generally viewed as too risky for endowments and foundations. This approach all changed with the ground breaking work done by the Ford Foundation with the publication in 1969 of “The Law and Lore of Endowment Funds,” which addressed the legal principles governing endowments and recommended changes in approaches. A second report, “Managing Educational Endowments,” analyzed investment performance and recommended changes in the ways endowments managed their assets. Commonfund was founded with a grant from the Ford Foundation, commencing operations in July 1971, and the seeds were sown for the broad growth of the en-

dowment model, and ultimately, the development and growth of allocations to alternative assets.

Over the intervening years, endowments dramatically increased allocations to equities and decreased allocations to fixed income strategies. Unfortunately, the immediate benefit of strong investment performance from this shift was elusive: the decade from 1972 and 1982 offered little to investors – the Dow Jones Industrial Average went from 800 to 860, but bond performance was far worse with U.S. 10-year Treasury Yields rising from 6.2 percent to 13 percent. During this period most investors maintained a simple asset allocation between equities and fixed income. For instance, Harvard University’s asset allocation was 65 percent equities as represented by the S&P 500 and 35 percent bonds as represented by the Lehman Bond index.

During this period we also experienced the nascent growth of both private capital and hedge fund investing. While the origins of private capital and hedge funds can go back well before the 1970s, much of their modern structure that remains with us today was created at that time. (While we look to the late 70s and early 80s as early history of private capital investing, the concept dates back to the post-Civil War era but was largely the purview of industrialists and investment banks.) The early tenants on Sand Hill Road in Menlo Park, California, an address often viewed as the epicenter of the venture capital industry, set up shop in the early 1970s. More than 100 hedge funds were also in existence at this time as well, expanding from simply long/short strategies to strategies with increasing use of leverage. How-



**Exhibit 2: Alternatives By Strategy**

Source: NCSE, 2012

ever, challenging equity markets and the bear market of 1973-74 kept many institutional investors on the sidelines.

In the late 1970s, Harvard began investing modestly in private capital limited partnerships and also allocated to a small number of co-investments (direct investments made into companies generally alongside an existing private capital manager). At the time, this type of private investing was largely confined to high-net-worth individuals (referred to as “the deals business”) so these early partnerships offered Harvard and a small group of other institutional investors an opportunity to place capital where capital was lacking. In addition, Harvard began to engage in arbitrage activities that were primarily the purview of the early hedge funds and investment banks (referred to as “side games”). Obviously things have changed radically since those early years. Private capital enjoyed a boom from the early 1980s for the next decade, propelled by leveraged buyouts (more than 2,000 LBOs were consummated over the period), and a proliferation of new venture capital firms looking for the next Apple computer. Hedge funds came of age in the mid-80s, with the great success of firms such as Julian Robertson’s Tiger Fund, and investors flocked to the industry, with thousands of hedge funds being formed. Since then, we have seen subsequent periods of booms and busts across venture capital, private equity, and hedge fund industries, few as memorable as the Internet IPO boom and subsequent dot-com bust. Remember the Super Bowl in January 2000 when 19 Internet start-ups featured Super Bowl ads – the Pets.com sock puppet should have been a clue!

Notwithstanding this period of investment success and failure, asset growth among educational endowments and other perpetual pools over the period from the adoption of the endowment model to the present time has been nothing short of remarkable, providing resources for the nonprofit community to fulfill their missions at levels not possible in the decades before. Total inflation-adjusted endowments held by U.S. colleges and universities grew from just over \$100 billion in 1989 to more than \$400 billion in 2008. So the question, how important have alternatives been to this growth?

### 3. Defining Alternatives

While we tend to lump a broad range of alternatives into a “bucket” alongside an equities bucket and fixed

income bucket, alternatives are not an asset class. Rather they are an amalgamation of investment strategies that are included in a portfolio for specific purposes: (1) growth; (2) deflation hedge; (3) inflation hedge; and (4) diversification/uncorrelated alpha. Some alternatives are truly risk assets that are in portfolios to generate growth via underlying equity exposure, such as venture capital, private equity, distressed debt, and long short equity hedge funds. Other alternatives may have higher correlations to fixed income and thus can be more deflationary hedges. Still other alternatives such as commodities, real estate, and natural resources are largely uncorrelated (over market cycles) with equities and fixed income and instead constitute the real assets allocation in a portfolio as inflation hedges. Left over among alternative strategies are those – largely certain hedge fund strategies – that have no market exposure and exist solely as portfolio diversifiers and sources of uncorrelated sources of alpha, such as global macro strategies and market neutral hedge strategies.

With the exception of commodities (which can be indexed), all of these strategies are highly dependent on manager skill and are less liquid than most publicly-traded equities and fixed income markets. Hedge funds will have lock-up provisions that in general range from one quarter to one or two years, while private equity and venture capital programs are usually 10-12 year or longer partnerships.

A simple way to look at these groups is as follows:

- Venture Capital and Private Equity – designed to provide enhanced returns relative to public equity markets at the “cost” of liquidity
- Hedge funds – designed to dampen portfolio volatility, protect against market declines, and provide uncorrelated return streams over market cycles

Each of these strategies are now reviewed below in greater detail focusing on their historical development in the context of how they can impact portfolios now and going forward.

### 4. Private Equity

In the nascent days of private equity, long-term institutional investors used a number of reasons to justify allocations to these strategies, including:

- Greater alignment of interests between investors and the users of capital
- Capital scarcity

- Market inefficiencies
- The use of leverage to boost returns
- Diversification benefits
- The existence of an “illiquidity premium”

#### *Greater alignment of interests*

From the outset, the private equity governance model provides for a clearer alignment of interest between the investor, the board, and the management relative to publicly-held firms. The boards of private equity-backed companies usually include representatives of General Partners who represent the interests of investors. Further, management typically owns a significant portion of the equity interest aligning them directly in the outcomes. Quite simply, if the company does well everyone does well. In addition, the carried interest earned by the General Partners on realized gains provides significant incentive for capital gains. Since the boards consist primarily of direct investors in the company, the oversight by these boards can be more active in contrast to a public company. This includes more meetings per year, richer content per meeting, greater involvement outside of board meetings, and active ownership if the company should be performing better.

#### *Capital scarcity*

While there have been well-chronicled periods of capital overhang in private equity markets during boom periods, the early formation of private equity markets was characterized by a dearth of capital versus the public market. Certainly, as long-term investors it is always better to go where capital is in short supply. Entities that need capital are more likely to pay up for that capital with a willingness to sell at lower prices. Harkening back to 1980, the amount of capital raised by private equity partnerships was less than 0.05 percent of the stock market capitalization. That was truly a buyers’ market.

#### *Market inefficiencies*

The private market in its formative years was much more opaque than the public market. Companies didn’t necessarily publish financial statements, so the ability to find investments was much more difficult and required more effort, expense, and expertise. The resultant private market inefficiencies afforded the opportunity for astute investors to find and negotiate good opportunities.

#### *Leverage*

Another driver of growth in private equity in the for-

mative years was the use of leverage to boost returns. Particularly in the early years of private equity investing, companies could be purchased for little cash and a lot of liens. The leveraged buyout market (LBO) developed alongside the market for “junk bonds”, which rose to prominence in the 1980s. Leveraging equity investments at acquisition provided for an asymmetric return pattern. Win and a huge multiple went to the equity holder; lose and the debt holders take the lion’s share of the losses.

#### *Diversification*

A fifth reason for the early growth in private equity was that it was considered by most to be a diversifying asset that had low correlation to public equities and fixed income. As we discuss later, such diversifying benefits don’t really exist today, as in times of stress equities tend to move in lockstep whether in public markets, private markets, U.S., or international markets.

#### *Illiquidity premium*

There exists – at least in theory – a natural illiquidity premium in private equity investing. In other words, because private investments cannot be easily liquidated they should offer investors a higher return than similar investments in a liquid (public) market. We have seen this premium historically in less liquid public markets such as small cap and emerging markets, and it exists in private markets as well.

The early days of private equity investing were also marked by very limited competition for investor capital. The fees earned by such firms in the face of little competition were lucrative indeed – and remarkably have changed little today even in the face of dramatic industry growth. The 2 and 20 fee structure (representing a two percent management fee and 20 percent carried interest on profits) was the rule. In addition, in the early days the General Partners took an additional investment banking fee that was charged to the investee company. There were also some firms that for return purposes treated each investment on a standalone basis and therefore did not net losers against the winners for the carried interest calculation.

## **5. Private Equity Today**

That was then and this is now. Did private equity fulfill its promise, how has it changed in the last three decades, and what does it look like going forward? Let’s go through some of the reasons we looked at private

capital 30 years ago and see if the properties still hold.

### *Greater alignment of interests*

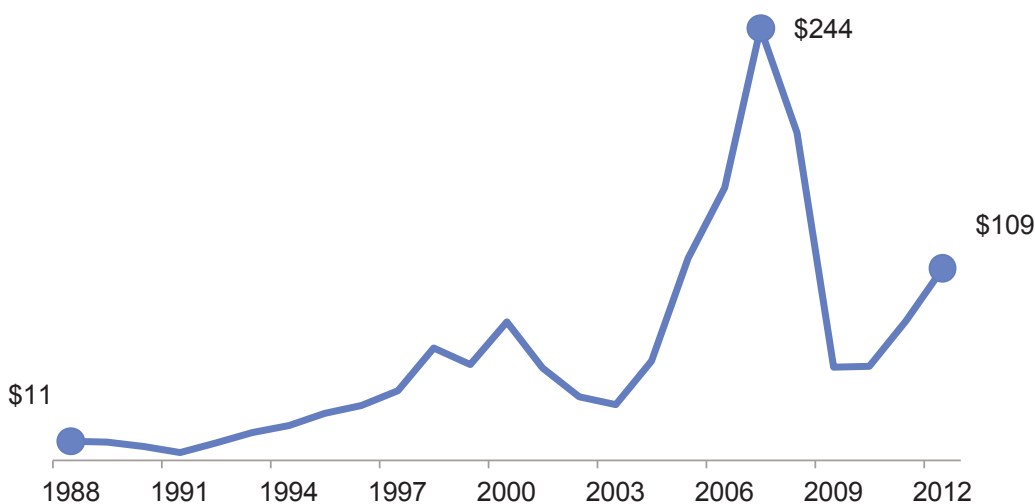
First, the alignment of interest has not changed. The private equity governance model for investors, the board, and management has not changed. The private equity investors who are looking for the returns still sit on boards and tightly oversee the management teams that normally have significant equity holdings. The private equity firm General Partners still closely monitor the company, change management when needed, and provide guidance and assistance to management. This model has and should continue to be part of the value proposition for this investment strategy.

### *Capital scarcity*

Second, there has been a significant amount of private equity raised over the last decade. Where in the very early days the investor base was limited to a narrow range of high-net-worth investors and a few endowments, the investor base today has expanded substantially with almost every type of long-term investor dipping their toes or their whole feet into the private equity waters. The question is: has this destroyed the dearth of capital argument? The answer is yes and no. There has been a lot of capital raised and Exhibit 3 looks at the commitment to private equity over the last 24 years. We have moved from very small numbers in the early 80s to annual capital raises of over \$100 billion today. How-

ever, when this market size is viewed as a percentage of the market capitalization of the public equity markets, the relative size of private equity remains small and not much different than the mid-80s. So while there is significantly more money in the space, it is still relatively small at less than 0.4 percent of public stock market capitalization even after a huge uptick in fundraising at the end of the boom in 2007. Capital remains relatively scarce, but certainly not at the levels of the very early days of institutional movement into this space.

The other relevant factor regarding the scarcity of capital argument is the amount of “overhang,” defined as the committed but uninvested capital. Exhibit 4 is a graphical representation of this overhang. What is quite apparent from this graph is that the largest percentage of the overhang remains in the very large buyout funds. These are funds that raised a large amount of capital, and by and large require transactions of significant size. The ratio of committed to uninvested capital among smaller funds which tend to invest in smaller and mid-sized companies is relatively in line with historical norms. While it is possible that the mega funds may move down market and reduce the scarcity factor that still largely exists in the middle market, most large buyout firms are not organized in a way that supports a large number of smaller transactions.



**Exhibit 3:** U.S. Private Equity Fundraising (Billions)

Source: Thomson One.com Private Equity. Data includes all U.S.-based funds with strategies marked as “buyouts”, “turnaround/distressed debt”, “generalist”, and “other private equity/special situations.” Data as of 12/31/12.

### Market inefficiencies

The opaque nature of privately-held companies has not changed much in the last 30 years. However, there could be some changes in the offing that may provide new capital and more information to a broader base of investors. The concept of crowd funding has been discussed for several years and would allow the Internet to provide investment opportunities to investors outside of the General Partner universe.

The JOBS Act allows for small companies to potentially raise investment through the Internet, although the SEC and CFTC continue to work on the detailed regulations of how this would work. As such, it is unlikely this change to the regulatory environment will have much impact in the next several years.

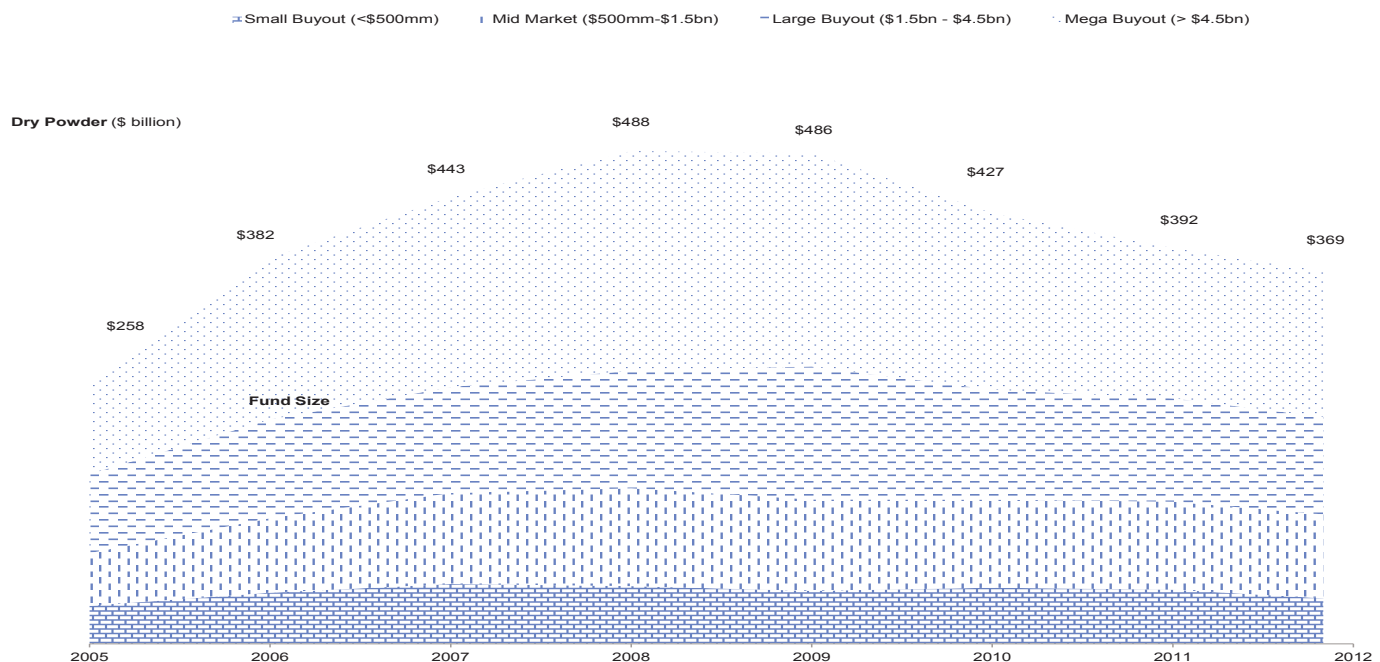
There was a similar debate several years ago with respect to angel funding and venture capital (would it displace or disrupt that space?), which ended up having little impact as the overall capital available was (and is) too small to have any discernible impact on returns for the industry as a whole.

### Leverage

In the early days of private equity investing, leverage

was a critical part of the calculation. In fact, we referred to private equity strategies then more often as Leveraged Buyouts (LBOs) than private equity. LBOs are still executed by private capital firms, but their importance has diminished. Today, leverage has become less important, and instead, the two other main drivers to returns, multiple expansion and growth, have become more important in the underlying earnings of the investment. In the 1980s, more than half of the change in values was the result of the use of leverage. In the go-go nineties, the greatest contributor to returns came from multiple expansion. The decade of 2000 – 2009 was more evenly balanced between multiple expansion and the growth of earnings. As we look forward to the 2010s, we believe that the lion's share of returns will come from operational improvement driving growth in earnings. This changes the way we think about investments today. In the 1980s, managers that added value focused more on financial engineering; today it is about finding managers that can have a positive impact on improving operations and earnings at the company level.

This ability to change the course for a portfolio company is, in our view, the biggest determinant of what separates top managers from median managers.



**Exhibit 4: Overhang of Uninvested Capital**  
Source: Preqin, as of October 2012

Represents year-end totals, as well as total as of October 2012. There can be no assurance that these historical patterns will continue. Past performance does not guarantee future results.

### Diversification

The promise of diversification benefits from private equity investing that propelled some of its growth over the last 30 years has changed. Historically, at least some of the apparent lack of correlation of returns came from the way the General Partners marked their positions to market. Generally, losing positions were written down when the market or operating results were poor and winners were not marked until there was an event like a new round of financing or a sale of the company for price discovery.

This has changed over the years. New accounting pronouncements (ASC 820 and AU-2009-2012) and pressure from institutional limited partners have forced private equity funds to value based on a number of factors. As a result, the volatility of private equity as well as the correlation to public equity has increased. Exhibit 5 shows that the correlation to public markets has increased over time. It should, however, be noted that this increase is really a change in the way the partnerships are marked versus a real change in the fundamentals.

### Illiquidity premium

There has been much written about the illiquidity premium (also called time frame arbitrage) over the last several years, with no real consensus. We believe that this premium has existed and added to returns, but we need to think about the premium in several dimensions:

First, investors simply demand higher rates of return for illiquid investments.

Second, the optionality that private equity firms have to invest capital when valuations are cheap and sell when investment markets are at higher prices enables investors to realize the illiquidity premium

Third, and related to the point above, active management is an important aspect of creating value (justifying the illiquidity premium), and skill matters. Simply buying all illiquid investments available at the current market will not necessarily provide good returns.

And fourth, what portion of the illiquidity premium that gets paid away to the General Partner in fees.

In trying to quantify the illiquidity premium, the challenge is always to have an “apples to apples” comparison. Most of the reporting done in this area looks at survey results for private equity funds, which can be flawed because of issues surrounding survivorship bias and challenges inherent in relevant comparisons to public markets. What these surveys do show is the wide dispersion of results, with the top quartile doing quite well and the bottom quartile doing very poorly (again, skill matters!). Top quartile 10-year returns of private capital using Thompson Reuters data is almost 40 percent higher than the bottom quartile.



**Exhibit 5:** Private and Public Equity Market Correlations

Source: Thomson Reuters, 2012

A new study, however, sheds light on the private equity premium. A recent working paper by Harris, Jenkinson, and Kaplan entitled “Private Equity Performance: What Do We Know?” describes one of the most comprehensive analyses of the private equity premium done to date. The study utilized Burgiss data for vintage years 1984 through 2008 with performance through March 2011. The data covers approximately 200 institutional investors with 600 fund investments. Burgiss data was used because it has a large sample set that minimizes potential survivorship bias and permits the use of individual cash flows in the analysis. In order to bridge the gap between dollar-weighted (used in private markets) and time-weighted (used in public markets) return comparisons, the study calculated Public Market Equivalents (PMEs). The PME is calculated by looking at each cash flow into a private capital fund and assumes that the equivalent dollars are invested in the public market; at the same time outflows are discounted using the public market return. At the end of the period, the analysis compares the total value of the private equity investment with the value of the public market equivalent. If the value is greater than 1.0, private equity did better; if it is less than 1.0, public markets outperformed the private investment.

The results of the study show that the average ratio of private equity to PME ranged between 1.20 and 1.27, depending on vintage year. This means that at the end of the life of the fund or the end of the study period, private equity returns would have resulted in 20 to 27 percent more dollars compared to public markets over the time period measured. This translates into more than 3 percent per year – the equivalent of what we believe to be the illiquidity premium over public markets. The PME for the top quartile group of funds was double the median at 1.42.

Another source of data on returns can be found in the NACUBO–Commonfund Study of Endowments. This annual survey of approximately 850 colleges and universities asks the returns of each asset class for the last fiscal year. By performing a straight compounded average of these annual returns for specific asset classes over the last ten years, we can see how that asset class has performed.

Universities, as early adopters to private equity investing, have on average the most mature portfolios of any institutional investor groups. The compounded average

takes into account those universities that are fully invested, as well as those with less mature programs, and average returns for the private equity asset class should give us a fair representation of what has been experienced by a large investor base. Study returns are time-weighted and take into account all the costs associated with the investments, including manager fees and J-curves. (We believe the compounded time-weighted returns are a decent approximation of dollar-weighted returns, given the overall size and cash flow stability of the population set.)

The time-weighted return as calculated for private equity was 8.4 percent per year over the ten years ended June 30, 2012 versus 5.3 percent for the S&P 500 over the same time period. This is consistent with the 3+ percent per year illiquidity premium outlined in the Kaplan study. Interestingly, the larger universities (over \$1 billion), which have a much higher allocation and presumably more mature programs, did much better than the average (11 percent versus 8.4 percent).

So what does all this mean? The illiquidity premium has been alive and well over the last ten years, even though there has been a lot of capital raised. When the average is able to add 3+ percent returns per year over ten years net of fees, it does make a substantial difference to a long-term pool of assets. The active management portion of the return (the alpha generated by manager expertise as approximated in returns for top quartile managers) may be as high as another three percent per year on top of the illiquidity premium in private equity. Yet many still ask, is a 3 percent premium enough for the additional risk? In many ways the answer is easy. If a long-term investor does not need the liquidity, any premium is worth taking. There is, however, an opportunity cost to any illiquid investment of simply not being able to use such capital in the short term to rebalance – that is buying assets that are down and selling assets that are up. We estimate this cost to be approximately 30 basis points per year. So, as long as you are not forced to be a seller of illiquid assets in periods of stress, the cost of illiquidity is basically the give-up associated with not being able to rebalance the portfolio for the illiquid piece. You should rebalance the liquid portion of the portfolio at least quarterly and look at the entire portfolio including the illiquid investments over a three year period.

So where does all that leave us after 30 years?



Today private equity is a global investment business. Substantial assets have been raised to invest in Europe and more recently in the emerging markets. The techniques of U.S. private equity have been transported outside the U.S. and that has allowed many of the same attributes to prevail in Europe, other developed countries, and the emerging markets.

Fees have changed slightly for the better. No longer do most managers set fees on individual investments; capital gains are generally offset by losses before carried interest is paid. There has also been a movement on investment banking fees where normally between half and all of these fees are shared with the limited partners. Other terms such as cash flow waterfalls, key person provisions, indemnities, clawbacks, investment vehicles, and other terms are subject to negotiation.

Private equity remains a compelling and viable method of gaining exposure to future economic growth in the vast sphere of private companies (generally over 95 percent of all companies in a developed economy are private). However, it does not come cheaply, even as competition for investor capital has grown given the extensive costs associated with buying and selling companies. Not only has the number of firms gone from a handful to thousands, but an investor can build a portfolio to cover the globe or just a single country thus placing an even greater premium on thoughtful and careful selection.

We do believe that the illiquidity premium (broadly defined and after fees) has existed at about 3 percent and will continue to provide returns in excess of the public

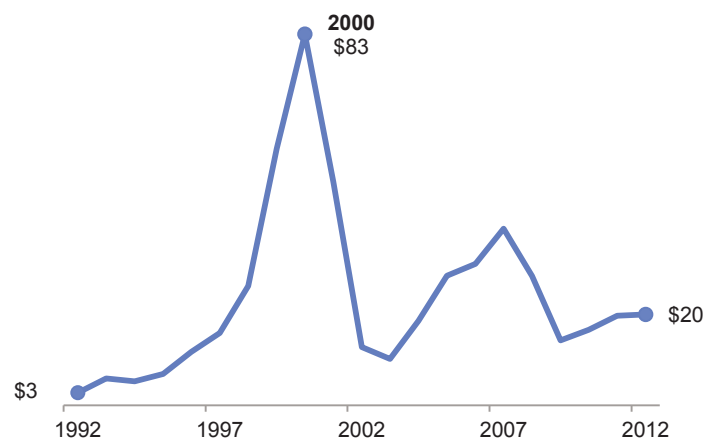
market even for the average managers. However, getting close to first quartile returns will continue to add significant value above the average manager, and conversely, bottom quartile firms may struggle to consistently outperform public markets.

In the U.S., we believe the value today is in the middle market opportunities where there is less capital available in comparison to mega and large buyouts. Operating improvements rather than financial engineering will provide the largest returns looking forward. Outside of the U.S., we think the growth in emerging market economies, where private equity is still in a nascent state, will offer attractive returns, particularly in sectors not represented in narrow public markets. For investors capable of allocating to illiquid strategies, some of the institutional equity exposure should be gained in the private markets.

## 6. Venture Capital

Venture capital investing has generally been viewed as distinct from private equity, even though the strategies share a number of common attributes. Most notably, the differences which distinguish venture capital and private equity are the sources of return and payout pattern. A look back at the history of venture capital investing and how it has evolved to today is informative. Like private equity, in the nascent days of venture investing there were a number of reasons for long-term institutional investors to allocate capital to these strategies over traditional public market equities:

- Greater alignment of interests between investors and the users of capital



**Exhibit 6:** Venture Capital Commitment Decline Over Last Decade

Source: Venture Source, 2012

- The ability to generate “innovation alpha” by investing in disruptive technologies not available in public markets
- Payoff structure of home runs over strikeouts
- Diversification benefits
- The existence of an “illiquidity premium”

#### *Alignment of interests*

Similar to private equity, the venture capital governance model provides for a clearer alignment of interest between the founder/entrepreneur and investors (General Partners) over publicly-held firms. Venture firms, in addition to providing financial capital, also provide management and operational infrastructure and advice to business owners and serial entrepreneurs to aid in the ability to generate growth, and importantly to generate profitability.

#### *Innovation Alpha and Disruptive Technologies*

The opportunity to invest in early stage companies with disruptive technologies and business models offers the potential for outsized returns. Based on history, venture returns are highly correlated to macro changes in technology. The first wave was in the semi-conductor and computing area; the second wave was in the personal computer and networking equipment areas; the third wave was in the Internet. The latest wave has finally come with the advent of mobile communication, social media, cloud computing, and big data. These transformational technologies have provided good returns when the transformation begins, but like all of these disruptive technology changes, they tend to end with significant overcapacity, a few winners, and many losers. The key to success is to find those firms which can identify the top opportunities and entrepreneurs to build a company around the disruptive technology.

#### *Payoff Structure*

Venture capital has a different payout pattern than private equity and this has contributed to the growth in venture commitments over the last three decades. Specifically, while private equity looks to get good positive returns on a large number of its portfolio investments, venture capital investors historically play for the home run. They tend to make a large number of investments across a number of companies, and they know that a majority will likely lose money. If all works the way it should, these losses will be offset by a few home runs, where the returns will be many multiple times the initial investment. Home run returns are often achieved

through a public offering.

#### *Diversification benefits*

Also similar to private equity, the promise of venture capital in the early years was that it provided portfolio diversification benefits compared to public equity markets. And, the pricing of venture portfolios in which “losers” were written off and “winners” marked to market only on an event (e.g. new financing, exit), contributed to the perceived diversification benefit.

#### *Illiquidity premium*

Again, the argument for an illiquidity premium exists in that investors are going into a company privately and exiting at public market prices.

### **7. Venture Capital Today**

We have concluded that private equity has, in fact, delivered on its promise. The conclusion for venture capital is more nuanced, driven in part from the historic high level of venture fund raising in the late 1990s and the resultant dot-com crash in 2000. This equivalent of the Dutch tulip bubble of the 17th century may not be seen again, but it left an indelible mark on the venture industry. So where do we go from here and how have venture markets reacted since the dot-com bubble burst?

Venture capital principles remain unchanged, but we believe fundamentally that one cannot scale innovation beyond its natural limits and, as such, providing more capital lowers returns. Today, a relatively small universe of venture capital managers capture the lion’s share of the gains. Hence, strong performance is possible while index returns suffer.

#### *Alignment of interests*

The alignment of interest has not changed. However, reality has set in and the importance of operating results and profitability has returned to venture managers, as has the relevance of fund sizes to investment performance. Bigger is not better in venture capital. Not surprisingly, there was a significant amount of money raised for venture investing in the late nineties and early 2000s on the back of the four most dangerous words in investing: “this time it’s different”. (I remember going to a private capital conference in 2000 in which the speaker from a prominent venture firm stated that he saw no reason why they couldn’t return 100 percent IRRs every year, forever.) If ever a statement has signaled the top of a cycle, this one did. As a result of the large amount of

money raised, with a portion raised by marginal firms, there was a significant capital overhang in the 2000s. This certainly contributed to poor returns of the last decade. As you can see from Exhibit 6, the dollars going into venture have gone down as the performance of this investment class has been disappointing.

#### *Innovation Alpha and Disruptive Technologies*

Notwithstanding the “lost decade” of venture investing from 2000-2008, investors should not write off the idea of investments in start-up and early stage companies. Venture returns will continue to be driven by technology. All you have to do is look at the returns associated with the combination of mobile computing and changes in social interactions defined as “social media.” Even with the high profile challenges with the public offering of Facebook, the funds that made investments in this, as well as other social media firms such as LinkedIn, showed outstanding returns. It is hard to predict today what future disruptive technologies might be, but one thing is certain: we are not done with exponential change. Mobile computing is really at the beginning phases, the Cloud will spawn new companies that take advantage of the computing power that is almost free, not to mention robotics, the driverless car, and nanotechnology.

#### *Payoff Structure*

A key question is whether the “home run/strike out” payoff patterns have changed, and if so, they will become more favorable for investors. In the halcyon days of investing in venture, typified by vintage years 1994 and 1995, the number of investments among top-tier managers that were home runs (defined as multiples of invested capital, e.g. 3x to 10x and 10x or better) were at least 30 percent during those two vintage years, while the invested dollars with a loss were in the 40 percent range. As the managers entered the bubble phase and the subsequent crash we saw the number of losses as a percentage of invested assets increase dramatically, while the triples and home runs (3x or better) decreased to 15 percent or less, with almost no exits at higher than 10x. With that change in mind, it is no wonder that the first ten years of the new millennium were basically a lost decade for venture capital. It should be noted that the more recent years still contain many unrealized investments and the ultimate multiple may yet increase when those investments are realized.

Managers obviously learned some lessons from the

bubble and crash. The amount of invested capital that lost money fell to about one-half of the venture peak levels. It appears from the data that the industry may be evolving from a strike-out/home run approach to one in which there are more singles and doubles with a smaller percentage of strike-outs and home runs. This payoff structure is closer to what we have seen in the private equity business, although the promise of the home run is still what drives many venture capitalists and those institutional investors that continue to commit to this strategy.

#### *Diversification benefits*

The diversification benefits of venture investing, particularly in periods of capital market stress, no longer exist. So while innovation occurs across all market cycles, and is not correlated to equity markets, exit strategies (e.g. IPOs) exhibit high correlations to public equity markets. As equity exposure, venture capital returns thus typically move in lockstep with public markets. Exhibit 5 shows that the correlation to public markets has increased over time. (It should, however, be noted that as with private equity, this increase is really a change in the way the partnerships are marked as opposed to a real change in the fundamentals.)

#### *Illiquidity premium*

Harris, Jenkinson, and Kaplan also looked at historical performance of venture capital returns on a PME basis and the results are not as compelling as private equity over the same 20 year period. Clearly venture returns over the past two decades have been very volatile, reflecting a tale of two decades. Again using Burgiss data, while the average PME was 1.36 versus the S&P 500 over the 25 vintage year period beginning in 1984, the 1990s had a PME of 1.99 and the 2000s through vintage year 2008 with performance through March 2011 had a PME relative to the S&P 500 of only 0.91. In other words, an investor would have been better off investing in the liquid stock market than the average venture manager from 2000 – 2008. (Note: top performing managers did well even in this difficult period.) The decade from 1990 – 1999 was driven by the Internet bubble. This led to more money being raised which led to disappointing returns from 2000 – 2008.

The NACUBO–Commonfund Study of Endowments (NCSE), which had a time-weighted return of 5.76 percent for the ten years ended June 30, 2012 compared to an S&P 500 return of 5.33 percent, is consistent with the

Kaplan analysis. Just as evident in the Burgiss data, a substantial driver of these 10-year returns is a large loss in 2003 relative to the S&P 500, reflecting the big write-downs in 2003 at the tail end of the Internet bubble.

Where does all of this leave us as it relates to venture investment? First, we do not believe that we will see another bubble like the one that we experienced in the late nineties in our lifetime. So as we look forward, in this area, we should expect returns that are comparable to what we will see in private equity. Not the nineties, but not the 2000s either.

One word of caution, however; the difference between the return of the top quartile managers and the average manager is larger in venture than in any other asset grouping. So allocating capital to the best managers is a necessary condition to succeed. This is further supported by the work performed by Harris, Jenkinson, and Kaplan as it relates to persistence. Panel A looks at

the PME of all venture capital funds ranked by quartile. The vertical axis represents the quartile ranking of the previous fund, one through four. The horizontal axis is the ranking of the next funds. The PME included for those funds in each quartile is the column on the right. So funds which were in the first quartile have their next fund registered in the first quartile 49 percent of the time and those funds which are in the fourth quartile have their next fund in the fourth quartile 45 percent of the time. The PME of the first quartile versus the fourth quartile is a whopping 2.85 versus 0.69. (Contrast this to the PME for private equity, where the PME difference between first and fourth quartiles is 0.25) This persistence of the best managers was consistent in the period before 2000 and well as the most recent decade.

Finally, in assessing where venture goes from here, as with private equity, we should not forget about the changes that are going on in the emerging markets. In

Panel A: Buyout Fund PMEs					Panel B: Venture Capital Fund PMEs			
Vintage year	Funds	Average	Median	Weighted average	Funds	Average	Median	Weighted average
1984	2	0.87	0.87	1.09	18	0.70	0.63	0.69
1985	1	0.91	0.91	0.91	20	0.71	0.70	0.73
1986	5	1.00	1.11	1.11	12	0.75	0.73	0.80
1987	7	1.25	1.21	1.20	17	1.18	1.09	1.29
1988	7	0.98	0.80	1.13	16	1.18	1.31	1.44
1989	8	1.26	1.28	1.22	18	1.34	0.95	1.52
1990	2	1.57	1.57	2.34	13	1.50	1.18	1.66
1991	4	1.23	1.23	1.32	6	1.37	1.26	1.35
1992	5	0.79	0.87	0.89	17	1.27	0.94	1.34
1993	11	1.35	1.11	1.24	13	2.79	1.54	2.74
1994	13	1.48	1.34	1.75	20	2.40	1.43	2.86
1995	17	1.34	1.00	1.20	18	2.16	1.48	2.09
1996	9	1.13	1.01	0.90	20	3.79	1.75	4.17
1997	30	1.23	1.16	1.30	33	2.43	1.45	2.65
1998	38	1.35	1.32	1.21	46	1.43	0.93	1.48
1999	28	1.19	1.06	1.27	65	0.76	0.65	0.90
2000	39	1.42	1.39	1.47	80	0.79	0.77	0.85
2001	26	1.31	1.43	1.38	48	0.80	0.71	0.84
2002	21	1.42	1.47	1.53	18	0.82	0.79	0.88
2003	13	1.75	1.56	1.58	25	0.88	0.90	0.99
2004	46	1.40	1.35	1.51	32	0.90	0.85	0.96
2005	57	1.20	1.19	1.23	48	1.27	0.95	1.23
2006	67	1.03	0.97	0.99	62	0.93	0.85	0.97
2007	74	1.03	1.03	1.02	65	0.97	0.96	0.99
2008	68	0.91	0.88	0.90	45	0.84	0.81	0.84
<b>Average</b>	<b>598</b>	<b>1.22</b>	<b>1.16</b>	<b>1.27</b>	<b>775</b>	<b>1.36</b>	<b>1.02</b>	<b>1.45</b>
<i>Average 2000s</i>	<i>411</i>	<i>1.27</i>	<i>1.25</i>	<i>1.29</i>	<i>423</i>	<i>0.91</i>	<i>0.84</i>	<i>0.95</i>
<i>Average 1990s</i>	<i>157</i>	<i>1.27</i>	<i>1.17</i>	<i>1.34</i>	<i>251</i>	<i>1.99</i>	<i>1.26</i>	<i>2.12</i>
<i>Average 1980s</i>	<i>30</i>	<i>1.04</i>	<i>1.03</i>	<i>1.11</i>	<i>101</i>	<i>0.98</i>	<i>0.90</i>	<i>1.08</i>

This table shows the average Public Market Equivalent (PME) ratios by vintage year, comparing private equity returns to equivalent timed investments in the S&P 500 using the Burgiss data. Vintage years are defined by the date of the first investment by a fund. Weighted averages use the capital committed to the funds as weights. Only funds with a North American geographical focus are included.

### Exhibit 7: Private Equity Fund Public Market Equivalent Ratios

Source: Robert S. Harris, Tim Jenkinson, Steven N. Kaplan. "Private Equity Performance: What Do We Know?," April 2013.

China and India, we have found terrific opportunities that have in many cases resulted in excellent returns. An interesting fact also highlights that innovation and disruptive technology are not the sole purview of Sand Hill Road in Menlo Park. Today, immigrants make up 40 percent of STEM (Science, Technology, Engineering and Math) students in Master's and Ph.D. programs. The sheer number has ballooned to 205,600 students as of 2011, according to Immigration and Customs Enforcement records, and with tighter immigration laws in the U.S., many of these non-U.S. students are returning to their home countries to be the entrepreneurs of the 21st century. Whether it is the U.S., Europe, China, or India, the most important factor determining success in venture capital is access to the best and most persistent managers.

## 8. Hedge Funds

Hedge funds are among the most enigmatic and mysterious of all of the strategies in the alternative bucket. It is also the asset grouping that has the highest allocation among alternatives in the nonprofit sector; and for the largest colleges and universities, allocations to hedge funds are higher than they are to U.S. equities at 19 percent versus 15 percent, respectively. For institutional investors, hedge funds came to the fore in the early 2000s when the Internet bubble burst. In that period, hedge funds were flat to up a little when the equity markets were down 20+ percent. It was at that point that hedge fund asset growth really took off.

Today, hedge fund assets under management are at an all-time high, yet net inflows have fallen to 2-3 percent annually from 11 percent pre-2008. Fewer funds are being launched and two-thirds of the industry is now concentrated with managers with more than \$5 billion in assets under management. Clearly, hedge funds are a maturing industry, but does that mean they are no longer a good investment?

A recent Bloomberg Businessweek article, replete with provocative cover art and headline "Hedge Funds are For Suckers", combined with recent weak industry performance relative to equity markets since the financial market crisis and high profile investigations by the SEC and others – have all served to fuel the debate on the value and role of hedge fund strategies in institutional portfolios.

As we have for private equity and venture capital, let's

look back on the factors that helped propel growth in hedge fund strategies among institutional investors. These have included:

- Diversification benefits
- Capital scarcity and unconstrained mandates
- Manager skill and "alpha"
- The use of leverage to boost returns

### *Diversification*

The first hedge funds were, indeed, designed to hedge. At least two centuries ago, millers and grain merchants on the agricultural commodities exchanges in Europe took long and short positions in different but related agricultural markets to protect themselves from sudden adverse moves in the prices of wheat, oats, and other grains in which they dealt. Over time, these principles began to be applied to trading in equities, bonds, currencies, and other financial instruments. The creation of the first modern hedge fund is often attributed to Alfred Winslow Jones, a former *Fortune* magazine writer. To reduce the effect of stock market fluctuations on his fund's valuation, he both bought stocks and sold stocks short.

### *Unconstrained mandates*

In large part due to the unregulated nature of hedge funds, hedge fund managers had tremendous investment flexibility. When we go back to the beginnings of hedge fund investing by nonprofits in the early eighties, the concept was quite simple. There were clearly opportunities to go beyond the pale of the traditional long-only investor. For the right and skillful manager the ability to go long or short, to be unconstrained around investments, to look for opportunities wherever they may be, to leverage and take a longer term time frame and not be forced into the consultant style boxes created large advantages for those investors who truly had skills. In addition, the alignment of incentives was a very appealing concept. The manager did not get rich unless the client did well. In the olden days, hedge funds were relatively small with focused teams led by an investment guru. Over time, this siren's song of this structure was just too compelling for investment professionals and institutions to ignore. If you were a good long-only investor or worked with a bank's capital, how could you not want to escape the bounds of style bucket transparency, high levels of compliance, and oversight to a land where none of those things existed and you could work for 2 percent base fees (versus fractions of a percent) and 20 percent of the profit? For investors, achieving uncon-

strained, low volatility, low correlation high returns was almost too good to be true.

### Manager Alpha

Much of hedge fund investing in the early days was based on exploiting market inefficiencies; that is, having better information, tools, or models that could take advantage of mispricings. Hedge funds have historically been a “skill” game where investors paid up for superior investment talent with the expectation of outsized returns compared to traditional long-only strategies.

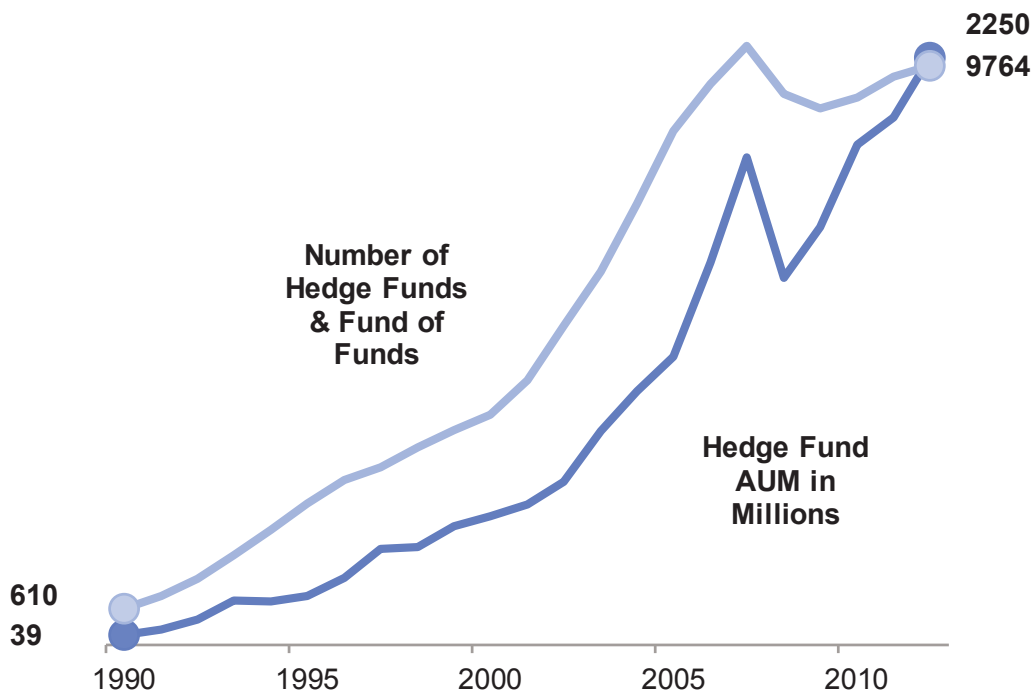
### Leverage

Given the flexibility underlying hedge fund strategies, the ability to use leverage was viewed as another tool to enhance performance. Even in the early days of Alfred Winslow Jones, he employed leverage, borrowing money to invest in the portfolio and thereby increasing his long exposure. Certainly, among the most notable uses of leverage was Long-Term Capital Management, which used aggressive trading strategies to exploit minute pricing anomalies – then used high levels of leverage to generate high profits, only to collapse during a market flight to liquidity.

## 9. Hedge Funds Today

So what has changed in this category over the last two decades, and how should we think about hedge funds in the future? There is probably not an area of investing that has had more growth in the last twenty years. The industry has gone from a small group of gurus working with a limited amount of assets with small focused staffs, to a huge industry with more than 10,000 hedge funds with nearly \$2.3 trillion under management. (See Exhibit 8.) There are now almost twice as many equity analysts working for hedge funds as for long-only managers. Successful guru-centric organizations have become mega firms with multi-strategy approaches and hundreds of employees running billions of dollars. We have also moved to a number of style boxes that define the underlying strategy focus. The current breakdown of the assets allocated to these style boxes are outlined in Exhibit 9. If hedge funds can generate good non-correlated returns (even after fees) doesn't it make sense to allocate capital to this area? In short, have hedge funds lived up to their promise? Let's review the case against the drivers of growth two decades ago.

### Diversification



**Exhibit 8:** Hedge Funds Growth (1990-2012)

Source: HFRI

The growth and maturation of the hedge fund industry has led to a blurring of the diversification benefits in large part because many so-called hedge fund strategies over the two decades have been nothing more than high priced beta exposures. As evidence, aggregate hedge fund correlations (as measured by the HFRI Fund Weighted Composite) relative to the S&P 500 index have risen steadily from about 40 percent to more than 70 percent.

However, a universe-wide look at correlations reasserts that the risk and return properties of a hedge fund allocation are not simply a function of the broad equity market. As the total number of funds has risen within the HFRI universe, so too has the number of funds that are highly correlated to broad equity markets. However, there has been a greater increase in the number of managers with less than 10 percent of their return explained by the S&P 500 Index than any other group. This tells us that diversification still lives, but the devil is in the details for investors who seek to construct portfolios.

The benefit of diversification is also evident in the measure of downside protection and the power of compounding demonstrated in Exhibit 10 on the next page.

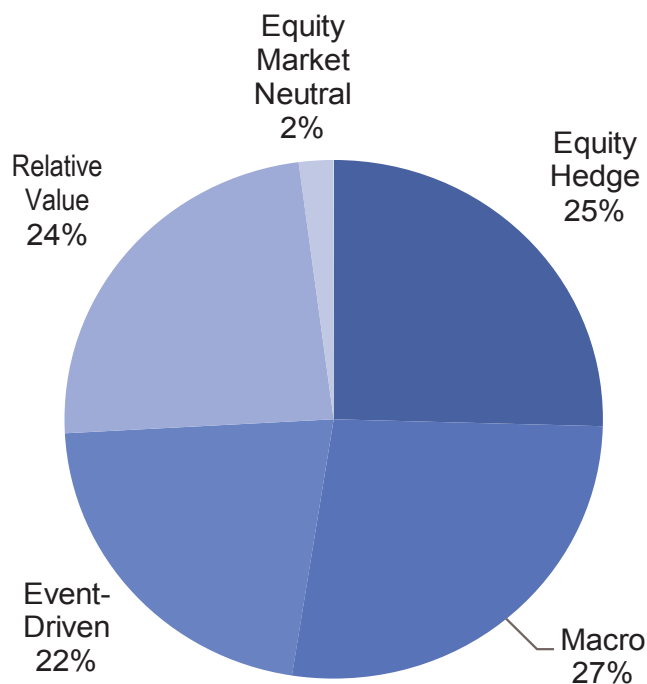
The exhibit illustrates that over the time frame from 2003 until 2013 the HFRI index has outperformed both stocks and bonds, with much of the relative return benefit coming in that very difficult early 2000s period.

The downside protection benefit came during those periods where it was needed most in fiscal 2008 and 2009 where the average hedge funds used by colleges and universities returned 3 percent and negative 12 percent versus the S&P 500 which was down 10.2 percent and 25.5 percent in those two years. For the ten years ended June 30, 2012, the compounded return of the hedge fund portion of the average college and university was 5.48 percent net of fees. This was 15 basis points higher than the S&P 500 return for the same period. However, the key statistic may be that the annualized standard deviation was less than half of the S&P 500 at 7.6 percent versus 16.7 percent for the equity market index.

#### *Capital Scarcity and Unconstrained Mandates*

The starting point in thinking about hedge funds has to be the significant increase in the dollars being allocated to these strategies, increasing by about five times over the last decade.

This cash flow has transformed small shops with con-



**Exhibit 9: Strategy Allocation**

Source: HFRI

concentrated intellectual capital into behemoths with tens of billions of dollars to deploy. If there are only so many mispriced positions in the market, the amount of capital chasing these mispricings should quickly identify and close any discrepancies. This would support the argument that future long-term returns among hedge funds will not be worth the fees they charge. Further, with industry consolidation, many of the funds have become large businesses and the near-death experience that hit the industry in 2008 and 2009 has management teams more highly focused on maintaining the business than generating high rates of risk-adjusted returns. Looking to the future, finding managers that are not too small to support the infrastructure necessary under Dodd-Frank, but not too big to be able to find opportunities where size does not overwhelm mispricing, becomes the critical task.

### Manager Alpha

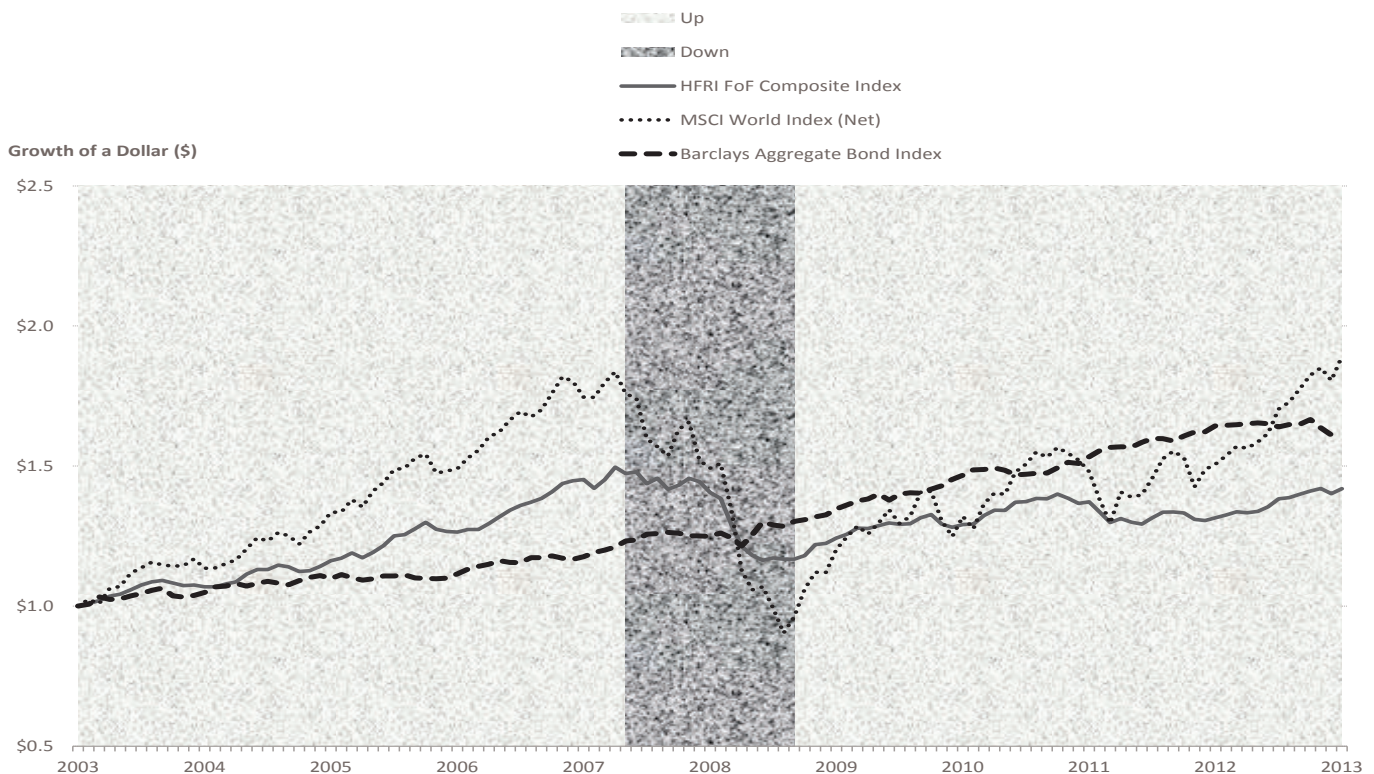
Related to the point regarding the risk of too much capital chasing too little opportunity is the question of whether or not skill still matters, and whether top-tier hedge fund managers are still capable of generating consistent alpha (and not beta cloaked as alpha). In a 2011 study by Ibbotson, Chen, and Zhu published by

the CFA Institute, the authors concluded that hedge funds generated 300 basis points of alpha per annum in the period from 1995 – 2009. This study represented an update to the 1999 study by Brown, Goetzmann, and Ibbotson which found statistically significant alphas in the hedge fund industry from 1989 – 2009. The 2011 study also concluded over the 15 year period that each of nine underlying hedge fund strategies contributed positive annual alpha.

The expectation of double-digit returns from the hedge funds with very little downside risk is a thing of the past. It is a manager skill game that should provide returns that are over the bond rate, but below the equity markets. The good news is that they still should provide downside protection in difficult market environments and compound at a rate of return even after fees that is in line with the equity markets. As to individual managers and strategies, the effective use of this becomes paramount. Being able to shift between the various style buckets based on market conditions should enhance returns over the benchmarks.

### Leverage

A recent headwind to hedge fund performance is the



**Exhibit 10: The Power of Compounding**  
Source: HFRI



very low interest rate environment. Hedge funds earn interest (rebates) on short positions and pay interest on margin amounts. Since many long/short hedge funds today do not add a lot of leverage, the interest on the shorts serves as a value enhancer to the return. With interest rebates near zero and in some cases having to pay interest, the shorts will reduce the overall returns of the funds. Normalized interest rates will likely reduce this headwind in the years to come.

Nevertheless, hedge funds have largely delivered on the promise of diversification, downside protection, and the resulting benefits of positive compounding over the last two decades, the period of the financial market crisis included. However, the industry is in the midst of significant regulatory change, and the last four years since the financial market crisis (coinciding with the fifth strongest U.S. equity bull market in history) has given pause to some investors who (unrealistically) expected hedge fund strategies to keep up more effectively.

The impact of Dodd-Frank remains unclear, but could actually be a net positive. The Volcker rule – a section of the Dodd-Frank Act – and other capital-focused regulation has taken the banks out of the hedge fund business, both in terms of sponsorship and trading bank capital with a hedge fund approach. In days past, banks and investment banks used a significant amount of their own capital to perform hedge fund-like activities. The trades may have been done in trading books assisting with customer flows or in standalone trading strategies. Today many if not all of these activities have been curtailed, partly because these companies are now public and subject to earnings disappointment and more recently Dodd-Frank and Basel III regulations since the crisis. It is difficult to estimate how much bank and investment bank capital has left the market as a result of this major change in the regulatory environment.

The second tail wind is the cost of transacting in public markets. The transition over the years to electronic trading platforms has significantly reduced the cost of trading in the public exchanges around the world. This has led to higher volatility in the markets. However, with banks leaving market-making activities in some of the less liquid markets (the OTC bond and derivative markets), the cost may increase going forward. The addition of a liquid ETF market has made the ability to hedge a lot easier and cheaper. This development means that short positions can be taken much more cheaply

and with great cost efficiency.

## 10. Summary

Historically, alternative investment strategies have delivered on their promise. Private equity and venture capital have provided returns well above public market equities. Hedge funds have provided alpha across market cycles and have protected in down markets. This performance has held true on a net of fees basis.

However, these statements are not without qualifiers. Most important, investment talent is key, as median performance is less likely to provide consistent outperformance relative to traditional long-only strategies. Deploying capital with top-tier investment managers in private equity and venture capital and across hedge fund strategies is necessary in order to achieve attractive risk adjusted returns.

What does the future hold for alternatives? We believe that the fundamental principles and drivers of investment performance that have propelled returns for alternatives over the last two decades are largely unchanged. While it is true that there is more capital in these strategies and there are many more managers, allocations to these strategies as a percentage of global equity market capitalization remains relatively small. One truism of the past is even more pronounced today: an “index-like” approach to alternative investment strategies will certainly be disappointing.

Perpetual and other long-term asset pools such as endowments and foundations and pension funds have not been able to maintain purchasing power over the last generation by simply allocating to a basic mix of passively managed equities and bonds. Active management of long-only strategies will only bridge part of the gap. We believe that significant allocations to alternative strategies – thoughtfully constructed, with top-tier managers – are necessary to preserve intergenerational equity and thus fulfill the long-term missions and obligations of institutional investors.

The “right” allocation to alternative strategies, often a function of the level of illiquidity an institution can maintain, is among the most important decisions facing governing boards and investment committees today.



### **Author Bio**

**Verne Sedlacek** joined Commonfund in 2002 as Executive Vice President and Chief Operating Officer and was appointed President and CEO July 1, 2003. In addition, he serves as a member of the Commonfund Group Investment Policy Committee. Prior to Commonfund, Mr. Sedlacek was President and COO of John W. Henry & Company, Inc., President and Director of Westport Capital Management Corporation and Global Capital Management Limited since 1998. Previously he served as Executive Vice President and Chief Financial Officer for the Harvard Management Company, where he was responsible for managing the areas of personnel, budgets, systems, performance, analysis, contract, credit, compliance, custody, operations, cash management, securities lending, and market risk evaluation for the then approximately \$14 billion University Fund. He also has served on many not-for-profit and for-profit boards. Mr. Sedlacek currently serves on the boards of the Association of Governing Boards of Universities and Colleges, the NYSE Pension Managers Advisory Board and is a member of the Samsung Global Investment Advisory Council (SGIAC). He earned an A.B. in Economics from Princeton University and was certified as a CPA by the State of New York in 1978.



# Why Venture Capital Will Not Be Crowded Out By Crowdfunding

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## 1. Introduction

As the recovery period from one of the worst recessions in our history continues, life for fledgling and even experienced entrepreneurs has been tough.<sup>1</sup> Indeed, President Obama remarked “credit’s been tight, and no matter how good their ideas are, if an entrepreneur can’t get a loan from a bank or backing from investors, it’s almost impossible to get their business off the ground.”<sup>2</sup> In response to the ever-present need for business funding, and in an attempt to stimulate the economy and job growth, Obama signed the Jumpstart Our Business Startups Act (“JOBS Act”) into law on April 5, 2012.<sup>3</sup> Among other things, the JOBS Act increases a business’s access to capital by enabling them to sell securities to both accredited and non-accredited investors without completing the full disclosure requirements typically required for public offerings.<sup>4</sup> More specifically, Title III of the Act, which is likely to go into effect in 2014<sup>5</sup>, presents the option for an issuer, (the company), to use the Internet to access capital from public investors (the “crowd”) at much lower costs than in a registered offering and with fewer regulatory burdens than in an exempt unregistered offering. This concept, which has been termed “crowdfunding”, refers to the practice of using the Internet to raise capital by way of small investments from a large number of investors.<sup>6</sup> Allowing non-accredited investors to invest in private, startup companies will not only challenge 80 years of securities doctrine, dating all the way back to the Securities Act of 1933 (“Securities Act”),<sup>7</sup> but it will also change the investment landscape for startup companies.

In fact, the landscape may change so dramatically that one of the most prominent venture capitalists, Fred Wilson, suggested that venture capital could be swept away altogether by a flood of crowdfunding money that will be unleashed by the JOBS Act.<sup>8</sup> According to his line of thought, if each family or individual invests 1% of their assets in crowdfunding, it will equate to around \$300 billion, which is 10 times greater than the \$30 billion that VC funds have deployed per year, on average, over the past few years.<sup>9</sup> The logic follows that since the \$300 billion in crowdfunding, which has been said to be a conservative measure in other pundits’ views,<sup>10</sup> will dwarf the amount that venture capitalists put into the system, then their role as aggregators of cash will be minimized, leading to less utility and an overall decrease in their value.<sup>11</sup> Wilson also noted the concerns that too much money may be going into closed-end funds and that other ways of funding new companies are outper-

forming investments made by VCs.<sup>12</sup> The genesis of crowdfunding as an option for entrepreneurs who are looking to raise capital will have a significant effect on the VC industry. The converse is true as well, in that traditional means of financing, specifically VC funding, will have an effect on crowdfunding. Beyond the impact that crowdfunding and traditional VC funding will have on each other lie many other perils for companies looking to crowdfunding as means of financing and for investors seeking to invest through crowdfunding portals.

The goals of this paper are: 1) to explain and analyze the relationships and overall dynamics that will exist between crowdfunding and VCs; 2) to elucidate why investors should avoid or, at the very least, be wary of investing money through the crowdfunding medium; and 3) to elaborate on the reasons that crowdfunding should only be used as a last resort for budding entrepreneurs. Part 2 of this paper will highlight the different methods startups have used to obtain capital prior to the enactment of the JOBS Act, and the crowdfunding provision. VC funding will be the main focus here. The relationship between the inability to access capital and the failure rate of a startup will be analyzed. This Part will also examine the high failure rate of startups with an emphasis on VC’s expectations and strategies. Part 2 will conclude by citing the reasons that the demand for financing from startup companies is not being met. Part 3 of this paper will inspect and scrutinize the JOBS Act with a specific focus on Title III: Public Securities Crowd Investing. This Part will spell out how non-accredited investors will be able to participate in investing in startups, including the investment amount limitations and required company disclosures that will be provided to investors. Finally, an in-depth analysis will be conducted and viewed from the investor’s perspective and the company’s perspective in highlighting potential complications that may arise through participation in crowdfunding activities. In the context of investors, the focus will be on fraud and the risks associated with not having appropriate VC protections. Shifting to the lens and perspective of the company, the focus will be on the negative consequences of resorting to crowdfunding; namely the deterrence of potential funding from VCs in the future.

Part 4 of this paper reaffirms the notion that crowdfunding and VCs can, and will, coexist. This part will propose some practical solutions that properly balance

the JOBS Act's goal of increasing access to capital for startups and the SEC's objective of protecting investors, especially non-accredited investors, from fraud, malfeasance, and other unintended consequences.

## 2. Startup Financing

### A. Overview

It is estimated that around two million new businesses are formed each year, of which around 550,000+ are considered "startups."<sup>13</sup> To understand the different financing rounds, or funding stages, that a startup company proceeds through, it is best to think of the new venture on a timeline. On the far left is when the idea of the business was conceived, and the business model was created. The company then moves from left to right as the idea gains credibility and forward momentum.<sup>14</sup> Throughout this process, ideally the company is hitting the milestones previously put in place by investors like VCs and angels, resulting in the new rounds of funding along the way. These funding rounds are known as the seed round, Series A round, Series B round, Series C round and so on, with the goal if an eventual exit for the investors, which generally means either an IPO or an acquisition.<sup>15</sup>

Traditionally, nascent companies are initially funded through credit cards and savings ("bootstrapping"), and then the entrepreneur may reach out to friends and family.<sup>16</sup> This effort may cover up to about \$250,000, and then the startup will look elsewhere for funding.<sup>17</sup> Angels, who are high net worth, accredited investors seeking high returns through private placements in startup companies, may be approached at this point. Angels are typically looking to invest an amount ranging from \$10,000 to \$1,000,000.<sup>18</sup> Angels are normally seeking high growth potential companies and often focus solely on particular industries where they have particular expertise or at least familiarity.<sup>19</sup> Assuming that the company is fortunate enough to receive angel funding,<sup>20</sup> once that amount has been exhausted, the startup will typically turn to VC firms for further funding. Although this process may sound simple, in practice, obtaining the necessary funding at the different stages of development can be so difficult that many businesses fail due to lack of money.<sup>21</sup>

### B. Lack of Funding and the Funding Gap

It is well known that small businesses often face an uphill battle when attempting to raise money through both traditional and alternative funding sources, such

as bank loans, angel investors, and VC firms.<sup>22</sup> Following the 2007 financial crisis, conditions worsened. Startups seldom have adequate cash flow or collateral to qualify for bank loans in normal economic times, let alone post-recessionary times that are affected by tighter underwriting standards imposed by banks.<sup>23</sup> Estimates suggest that there is a \$60 billion shortfall in the supply of early-stage private equity financing each year in relation to total demand.<sup>24</sup> A joint report by PriceWaterhouseCoopers and the National Venture Capital Association (NVCA) shows that from 2009 to the present, VCs have invested the least amount of money in early stage deals and have also invested in the smallest number of early stage deals compared to the other stages of portfolio company growth.<sup>25</sup> To provide context, in 2012 VCs invested in 3,826 deals in total, of which only 876 were early stage investments (22.8%). In contrast, in 2001 VCs invested in 4,590 deals in total, of which 1,321 were early stage investments (28.8%).<sup>26</sup> Just over a decade ago, the chance of obtaining VC funding was more likely than it is now, especially at the earlier stages of development. Nevertheless, procuring VC investment has never been an easy feat. In fact, it has been said that for every 30-40 investment proposals that slide across the desk at a VC firm, only one will be invested in.<sup>27</sup> So, the question becomes: if startups have a dire need for funding at an early stage of development, then why are VCs failing to meet this demand?

### C. Venture Capital Funding

VCs are very selective and offer only limited assistance to startups; investing on average less than a quarter of their total investments in early-stage companies.<sup>28</sup> This can be attributed to two main reasons. First, VCs mainly seek to invest greater sums of money – on average between \$2 million and \$10 million – than startups require.<sup>29</sup> Second, VCs have a preference for investing in less risky companies – those having already endured the initial startup phase to advance with proven track records and clearer exit prospects.<sup>30</sup> In 2012, the median U.S. fund size was \$150 million, which was a 12% increase from the median size of \$134.5 million in 2011.<sup>31</sup> Normally, VC funds, despite getting hundreds or even thousands of investment proposals, invest in 10-12 portfolio companies.<sup>32</sup> The general partner, or VC firm, is responsible for sourcing, evaluating, and negotiating the terms of the investments that are made in the startup companies.<sup>33</sup> Therefore, the ability of investment funds to invest is constrained by the ability, expertise, and experience of their managers.

## Resource-Constraint

The general partner is actively involved in the management and strategy of their portfolio companies. VCs with a \$100 million fund simply cannot properly monitor and manage 100 investments of \$1 million, even if they were all splendid opportunities.<sup>34</sup> Performing due diligence on the investment opportunities is a time consuming task due to the uncertainty involved with their business model. In addition, much of their time and attention is spent on prior investments already made in the attempt to minimize the risk of failure. The VC fund is therefore resource-constrained with regard to human capital,<sup>35</sup> and this is one of the major reasons that VCs fail to meet the demand for financing of startup companies.

## Counter To VC Model

Another key reason that VCs do not meet the demands of startups seeking financing relates to their high risk of failure and the limited partners' expectations in terms of return on investment.<sup>36</sup> The NVCA estimates that 40% of portfolio companies fail, 40% of portfolio companies return moderate amounts of capital, and only 20% (or fewer) produce high returns.<sup>37</sup> In another study conducted by Shikhar Ghosh, Senior Lecturer at Harvard Business School, no matter how "failure" is defined, the statistics are still discouraging.<sup>38</sup> Ghosh states that the failure rate is much higher than the industry may report, with as many as three-quarters of venture-backed firms in the U.S. not even returning investors' capital.<sup>39</sup> Consequently, VCs have to hit home runs if they want to give their limited partners a respectable return on their investment.<sup>40</sup> Since the vast majority of portfolio companies do not provide adequate returns, the fund is dependent on at least one of the portfolio companies to "knock it out of the ballpark" with a 10x, 20x, or even 30x multiple of their investment, to make up for the underachievers in the portfolio.<sup>41</sup> Coupled with the pressure to deliver returns to limited partners in a timely manner, VCs target startups with the ability to grow really big rapidly.<sup>42</sup> This requires the ability to scale hastily and capture the market while delivering a high margin, which is only feasible for certain types of companies within particular industries such as: technology, healthcare, energy, and life sciences.<sup>43</sup> As a result, many startups outside of those industries may go unfunded, because being profitable is not enough. For example, even though a 10% return would be a great return for a retail investor investing in common investment products, 10% is not a very good return for a portfolio com-

pany. In sum, the selectivity and the stringent investment criteria VCs call for limits the universe of startup companies that can be candidates for VC funding.

## Geographic Limitations

In addition to the inability of VCs to properly evaluate and monitor numerous portfolios and the need to invest in specific kinds of business models that have the ability to be "home runs", simple logistics also play a role in VCs failing to meet the high demand for financing by startups.<sup>45</sup> As mentioned earlier, VCs tend to be actively involved in the portfolio companies, meaning they have significant participation in and oversight of each portfolio company.<sup>46</sup> Accordingly, VC investment is inherently a local, or at most, a regional activity.<sup>47</sup> Data from 2010 and the first half of 2011 reveals that the top five regions for VC investment accounted for roughly 76% of the total VC investments made.<sup>48</sup> More specifically, the data shows that approximately 39% of total VC funding by region was invested in Silicon Valley.<sup>49</sup> Thus startups located in less prominent areas go unfunded.<sup>50</sup> Lack of funding often precipitates the high failure rate among startup companies. With this in mind, the JOBS Act was created to help alleviate this problem.

## 3. Crowdfunding

### A. Overview

The concept of crowdfunding, or collecting small amounts from the general public in support of a larger goal (e.g. a politician collecting small donation amounts from general public to win an election), is nothing new; however Internet-based crowdfunding is relatively new.<sup>51</sup> Crowdfunding originated in the United States as a "donation" model in which people provided money to fund different projects without expecting to receive an ownership interest or profit in return.<sup>52</sup> There are different types or uses of crowdfunding that can be categorized by distinguishing what the investor is promised in return for their contributions: 1) donation model; 2) reward model; 3) pre-purchase model;<sup>53</sup> 4) lending model (peer-to-peer lending); and 5) equity model.<sup>54</sup> The first four types of crowdfunding have been legally put into practice in the past; however the fifth type, the equity model, is what Title III of the Jobs Act enables. The equity model differs from the other types, because here the contributor of funds expects to receive a share of the profits or return of the business they are helping to fund; this causing the transaction to be deemed a sale of securities and therefore subject to federal securities laws.<sup>55</sup> Unless an exemption applies, a sale of securi-

ties needs to be registered with the SEC, which can be extremely burdensome and costly for an entrepreneur.

Title III of the JOBS Act, the Capital Raising Online While Deterring Fraud and Unethical Non-Disclosure Act of 2012, termed the “Regulation Crowdfunding,” increases a business’s access to capital by allowing them to sell securities without registering or completing the complete disclosure requirements ordinarily mandated for public offerings. The goal of the Regulation Crowdfunding is to give businesses (typically smaller ones) greater access to capital by making securities offerings conducted over the Internet to the public at significantly reduced costs by avoiding many of the SEC registration requirements.

### How Does It Work?

Under the Regulation Crowdfunding, a company will be able to raise up to \$1 million over a twelve-month period. Crowdfunding websites will display business plans/funding requests on their site and anyone will be able to view them and decide whether to invest or not. Individual investors will be limited to contributing: i) the greater of \$2,000 or 5% of annual income or net worth if either annual income or net worth is less than \$100,000; or ii) 10% of annual income or net worth, not to exceed \$100,000, if either annual income or net worth is more than \$100,000. The transaction is required to be done through a “broker” or “funding portal” that must comply with certain disclosure requirements. This intermediary (broker or funding portal) is responsible for making disclosures “related to risks and other investor education materials” in which the SEC determines is appropriate. The Regulation Crowdfunding also encompasses other rules and requirements such as provisions that the company will disclose how the funds will be used, will be audited if it raises \$500,000+ within the 12-month period, will agree to a broad-based background check conducted by the intermediary, and others stipulations intended to preclude fraud and protect investors.

Crowdfunding could very well mark a “revolution in how the general public allocate[s] capital,” or at a minimum it may democratize the process of deciding how and whose ideas are financed. In fact, the impetus for passing Title III was as one senator noted, “[the] enormous potential [of crowdfunding investment] to bring more Americans than ever into the exciting process of powering up startups and expanding small businesses.”

Copious examples of non-equity based, large, successful crowdfunded projects exist such as the “Pebble” proposal in which over \$10 million was raised in just thirty-six days to fund a highly customizable wristwatch that works in unison with a smart-phone. Crowdfunding has the potential to provide startups with access to a completely new class of potential investors and thus to new sources of capital. It has been successful in the past under the non-equity based categories and it has been publicly endorsed and even signed into law, so what are the downsides to crowdfunding?

## B. Problems With Crowdfunding

### *Investor Perspective*

#### i. Fraud

To achieve the goal of increasing a small businesses’ access to capital, the Regulation Crowdfunding decreases the number of regulatory hoops that parties must jump through in order to participate in an exempted crowdfunded offering.<sup>66</sup> With less regulation under the crowdfunding exemption, for potential investors, there is a greater risk of fraud. One of the main reasons that security regulations exist is to prevent fraudulent dealings by issuers.<sup>67</sup> In the past, unregistered securities have been offered to accredited individuals because either: i) their wealth allows them to tolerate the risk of loss; or ii) their financial sophistication aids them in better comprehending the risks affiliated with such investments.<sup>68</sup> The primary issue with offering securities to the general public is that most individuals are non-accredited and therefore in need of the protections provided by state and federal securities laws. Various studies and tests have shown that the general public is largely financially illiterate.<sup>69</sup> The unsophisticated investor will have a much more difficult time understanding the risks associated with crowdfund investing.<sup>70</sup> Moreover, issuer disclosures are usually distributed to investors in a very dense form containing financial verbiage that is unfamiliar and unintelligible to the average small investor.<sup>71</sup> As noted by two law professors recently, disclosures are often too long and complex, and when an ordinary investor is inundated with them, they lack the necessary skills to identify and fully comprehend what the information means and how to use it effectively.<sup>72</sup>

The second dominant reason that crowdfunding may lead to more investment fraud stems from the idea that the Internet and fraud go hand-in-hand.<sup>73</sup> Most people are familiar with the concept of cybercrime, or fraud conducted over the Internet; yet people may not real-

ize that a considerable amounts of securities fraud has been conducted over the Internet in the recent past.<sup>75</sup> In 1992, in a very similar manner to the JOBS Act, and with the similar purpose to facilitate capital raising for small businesses, the SEC sought to reduce the burdens of registration under the Securities Act. The SEC revised the rule 504 exemption under Regulation D to allow a non-reporting company to generally solicit and advertise their offering of securities.<sup>76</sup> Soon thereafter, numerous cases of security fraud were brought forth.<sup>77</sup> Specifically, “pump and dump” schemes occurred in which an unscrupulous promoter would: 1) purchase a very low priced, thinly capitalized, and relatively unknown stock, known as a “microcap” stock; such stocks were often not covered by professional analysts; 2) endorse and stimulate buying activity around the stock, using the Internet to reach the public; and then 3) sell the stock at an artificially inflated price, which is caused by the momentum built from using the Internet to garner interest from the public in the first place.<sup>78</sup> The promotional materials frequently were comprised of misrepresentations of the microcap stock and price would often crash once the promoter dumped his or her position, leaving the investors with practically nothing.<sup>79</sup> The scheme was made possible due to the SEC’s decision to eliminate the restriction on general solicitation and advertisement.<sup>80</sup> This phenomenon serves as a reminder that some fraudulent activities in financial markets that are closely connected to the Internet.

One final view on why crowdfunding may lead to trouble for investors revolves around the disincentive investors will have in bringing a cause of action forward. Due to the limits, or cap, on what an individual investor can invest in the aggregate over a twelve-month period (greater of \$2,000 or 5% if annual income and net worth are less than \$100,000; up to 10%, not to exceed \$100,000, if annual income or net worth are greater than \$100,000), it does not make economic sense for an investor to sue for damages.<sup>81</sup> It is not practical for an investor to sue, even though a private right of action is enumerated in the Regulation Crowdfunding. The most an investor will be able to contribute towards a crowd-funded venture is between \$10,000 and \$100,000, and often investors will have contributed even less (closer to the \$2,000 mark), therefore it is unlikely investors will have sufficient damages to warrant bearing the costs associated with litigation (a private suit brought by an individual could be cost-prohibitive).<sup>82</sup> Moreover, even a successful lawsuit might not results in the recovery of

losses “since it is possible that the crowdfunding issuers are ‘uncollectible.’”<sup>83</sup> A class action lawsuit may not be a viable alternative, given that the total offering amount for a crowdfund exemption is capped at \$1 million.<sup>84</sup> The economic impracticality of this situation may be viewed from an attorney’s perspective as well. Typically, an attorney litigating this type of matter would be working on a contingent fee basis (normally 20-30% of the award, if the suit is successful), which would not be worthwhile for the attorney to undertake.<sup>85</sup> Given the small, investment amounts and the attorney’s fees associated with litigation, it is clearly unappealing and economically impractical to imagine recourse through the court system.

In conclusion, the problem of fraud is derived from the fact that the company (entrepreneur) has all of the power. As one professor explains, “[i]nvestors have little information about what is to come and little control over what the entrepreneur does. This presents the entrepreneurs with opportunities for self-dealing, excessive compensation, misuse of corporate opportunities, and dilution of investors’ interests...”<sup>86</sup> This scenario lends itself to fraud and investors need to be cautious in making their investments through the Regulation Crowdfunding.

ii. Horizontal Risks and the Absence of VC Protections  
Assuming the investor makes a sound investment into a successful startup company through a crowdfunding opportunity, and the company conducts itself in a legitimate manner, the investor still may not realize an above-average financial return (high risk-high return concept) due to the absence of investor protections against horizontal risk. The concept of horizontal risks relates to the fact that promising investment opportunities in startups appeal to competing investors, who are often sophisticated VC’s.<sup>87</sup> Without adequate protections similar to those available to VCs, an early-stage crowdfunding investment, even in a successful startup company, can result in significantly lower financial returns.<sup>88</sup>

The concept of horizontal risks was depicted in The Social Network, when Eduardo Saverin’s ownership stake was diluted from his original 30 percent stake down to less than 1 percent when Facebook obtained VC financing. In that case, other pre-existing ownership interests, including Mark Zuckerberg’s stake were, at most, minimally diluted.<sup>90</sup> Saverin’s failure to negotiate the



essential investor protections led to this substantial dilution. Similarly to Saverin's situation, individual crowdfunding investors will not be in a position to negotiate the kinds of protections that VCs demand.<sup>91</sup> Professor Bradford explains the dilemma by arguing that most crowdfunding investors will not have the knowledge or experience necessary to understand the role of control rights or protective covenants. Furthermore, even if a crowdfunding investor grasps the importance of such protections, it is uncertain how he or she would negotiate for the protection. "The small amount invested by each crowdfund investor and the remote, impersonal nature of crowdfunding preclude any meaningful negotiation."<sup>92</sup> The overarching concept of the VC being in a position of power, seeking control of the startup, and diluting prior investors in the process is not novel, nor is it exclusive to crowdfund investors.<sup>93</sup> In fact, the problem known as minority shareholder oppression has existed for years and is specifically referred to by different names, including squeeze-outs, freeze-outs, or washouts.<sup>94</sup> In substance, these are all VC "tools" that can take advantage of pre-existing early-stage investors by reducing the value of their shares by very significant amounts.<sup>95</sup>

Clearly, crowdfund investors should proceed with caution. As painful as it would be for a crowdfund investor to contribute capital to a mismanaged, failed, or fraudulent startup company, it would be even more unfortunate for the investor to invest in a startup that ultimately becomes a tremendous success and yet fails to earn an adequate return for him or herself, while the later stage VCs profit immensely.<sup>96</sup>

#### Company Perspective

Companies seeking investments from crowdfund investors should also be aware of potential problems. The use of crowdfunding can result in a situation where VCs will be deterred from investing in future rounds of financing for a number of reasons.<sup>97</sup> Crowdfunding creates a capital structure that is unappealing to VCs. VCs have little interest in competing with masses of retail investors, because they do not want to deal with the inconveniences that may arise from having numerous shareholders; major concerns include potential corporate actions that would trigger voting requirements and approval.<sup>98</sup> A large, diverse shareholder base could very well lead to a logistical nightmare. In addition, deals with many small and unsophisticated shareholders can introduce an increased likelihood of lawsuits and liabilities

for VCs down the road; a risk exposure that VCs would certainly seek to avoid.<sup>99</sup>

Beyond discouraging later investors, like VCs, from investing due to such risks, the use of crowdfunding in the first place may create an unintended signaling problem.<sup>100</sup> One viewpoint might be that only the riskiest companies will be the ones seeking crowdfunding, because the entrepreneur's family, friends, and business associates denied them.<sup>101</sup> In other words, crowdfunding may be seen as a last resort, or a sign that the venture is even riskier than the typical startup. It has been argued that this is the overarching problem of crowdfunding; there is a dangerous mismatch occurring, because "the process introduces only the riskiest of startup ventures to the investors least able financially to absorb loss."<sup>102</sup>

#### 4. Conclusion

In the early days, VCs were seen as great investors and job creators. More recently, reports have criticized VCs as providing lower than expected returns while being much too dominant and severe in their deal terms and demands.<sup>103</sup> Despite the criticisms, VCs are experienced investors and often become value-added partners in the development of their portfolio companies. VCs provide substantial amounts of funding, invest in multiple rounds of investment, participate in active management of the company, and make introductions that help lead to more business or funding over time.<sup>104</sup> Due to the advantages of association with high quality VCs, crowdfunding will not replace VCs in the case of startups that fit the proper investment profile. However, as the anecdotal evidence shows, VCs turn down up to 99% of the business plans that are submitted to them, which attests to the point that crowdfunding and traditional VCs will coexist. VCs target particular kinds of companies, which leave companies outside of that specification in desperate need of funding from an alternative source like crowdfunding. Some observers have predicted that crowdfunding investors and VCs may end up investing in the same kinds of companies.<sup>105</sup> The argument is that the online portals, or crowdfunding websites, are accessible by VCs too, so they will have the opportunity to analyze companies they might have missed initially.<sup>106</sup> Moreover, the online portals may even serve as validation, giving companies who have obtained funding from the crowd more credibility and allure in the eyes of VCs.<sup>107</sup> Since the interactions are likely to be dynamic, what can be done to protect the

various parties involved?

## Solutions

The SEC will undoubtedly play a key role in curbing fraud in the crowdfunding realm.<sup>108</sup> The SEC is tasked with creating rules and requiring certain disclosures; their task is complex due to the inherent conflict in allowing companies to access capital more easily and cheaply from a broader range of investors, while also protecting those investors effectively.<sup>109</sup> If the SEC introduced too many complicated rules in the course of enabling crowdfunding, then it would have defeated the purpose of Title III of the JOBS Act. Suggestions that might have served to complicate the process included creating a “semi-accredited” investor class to ensure that investors are sophisticated enough to understand the risks and low probability of success of their investments. While the SEC struck a balance between freedom to explore this new form of investment and adequate protection for the participants, the true test lies in how the online portals conduct their operations.

Online portals must be thorough in their reviews, background checks, and other due diligence performed on the businesses seeking to be listed on their website for crowdfunding purposes. Idea stage companies, without any true direction or management experience are simply too risky. Some of the websites have thus far been disciplined in turning down companies not deemed to be worthy of investment.<sup>111</sup> The more reputable and trustworthy these third-party intermediaries are, the less likely that fraud will occur.<sup>112</sup> Taking the concept one step further, online portals could implement a feedback rating system in which issuers build a reputation similar to sellers on eBay, allowing for would-be investors to avoid issuers with negative reviews/feedback.<sup>113</sup> This will help to impede fraud, yet it will not be a solution for the more subtle horizontal risks.

Without sufficient protections, crowdfund investors will be at risk of dilution from both price-based and share-based actions by VCs.<sup>114</sup> Price-based dilution occurs when shares are issued at subsequent round at a lower price per share than what the existing investors paid (a “down-round”).<sup>115</sup> Without price-based anti-dilution protection, crowdfunders could see the value of their existing investment be reduced to a nominal value following subsequent rounds of financing. Share-based dilution occurs when the company issues additional shares of common stock, which makes the convertible

preferred stock held by crowdfund investors much less valuable.<sup>116</sup>

Fortunately, there are anti-dilution protections available and commonly negotiated for, in addition to other types of protections such as tag-along rights and preemptive rights.<sup>117</sup> Including these contractual provisions as a default in contracts for crowdfund investors will go a long way in protecting them. If these provisions were included in standard contracts being negotiated with VCs, crowdfund investors would at least have the protections initially - whether they remained in the contract pursuant to the negotiation would be determined on a case by case basis. Even so, standard contracts with this boilerplate language would provide a better starting point in the negotiation for the crowdfund investor.

Along the same theme of investor awareness, another potential solution to horizontal risk would be an easy-to-read disclosure table.<sup>118</sup> The table would highlight what investor protections the particular investee/company was offering.<sup>119</sup> The table could appear on the website alongside the investor education materials that third-party intermediaries are required to supply. To be clear, the standard investor-friendly contracts and the disclosure table are merely suggestions that could mitigate, not eliminate, horizontal risks for crowdfund investors. In closing, crowdfunding will become a major financing source for startups, however investors and investees contemplating involvement should proceed carefully. Beyond the more obvious risk of fraud are more obscured horizontal risks, which are also value destroyers to a crowdfund investor. An investee must be careful not to fall into the trap of immediately using crowdfunding, because it may dissuade larger, later-stage investors like VCs from participating in follow-on rounds of funding.

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**Ryan Kantor** is a graduate of the Chicago-Kent College of Law with a concentration in business law. While at Chicago-Kent, Ryan was heavily involved in the entrepreneurial law clinic in which he performed research and legal services for startup companies.

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# **IR&M Momentum Monitor**

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# IR&M Momentum Monitor

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



## Price Momentum

## Earnings Momentum

Calendar Week:	Medium-term				Long-term				Medium-term				Long-term			
	30	31	32	33	30	31	32	33	30	31	32	33	30	31	32	33
<b>Equities by region</b>																
MSCI World	24	-1	-2	-3	102	103	104	105	31	32	33	34	77	78	79	80
Europe (STOXX 600)	-3	-4	-5	-6	103	104	105	106	11	12	13	14	4	5	6	7
MSCI Emerging Markets	18	19	20	21	13	14	15	16	1	2	3	4	10	11	12	13
MSCI Asia Pacific ex Japan	18	19	20	21	17	18	19	20	21	22	23	24	38	39	40	41
<b>Equities by country</b>																
USA (S&P 500)	15	16	-1	1	131	132	133	134	86	87	88	89	125	126	127	128
Canada (SPTSX 60)	54	55	56	57	48	49	50	51	19	20	21	22	15	16	17	18
Brazil (Bovespa)	18	19	20	21	10	11	12	13	-8	-9	-10	1	32	33	34	35
France (CAC 40)	-4	-5	-6	-7	102	103	104	105	-7	-8	-9	1	-149	-150	-151	-152
Germany (DAX 30)	-2	-3	-4	-5	104	105	106	107	25	26	27	28	66	67	68	69
Italy (FTSE MIB)	-3	-4	-5	-6	48	49	50	51	8	-1	-2	-3	4	5	6	7
Switzerland (SMI)	-3	-4	-5	-6	106	107	108	109	11	12	13	14	-27	-28	-29	-30
UK (FTSE100)	-3	-4	-5	-6	102	103	104	105	-18	1	2	3	-47	-48	-49	-50
Australia (S&P/ASX)	4	5	-1	1	100	101	102	103	-7	-8	-9	1	68	69	70	71
China (Shanghai Composite)	4	5	6	7	-29	-30	1	2	6	7	8	9	72	73	74	75
Hong Kong (Hang Seng)	11	12	13	14	4	5	6	7	10	11	12	13	1	2	3	4
India (Nifty)	22	23	24	25	40	41	42	43	23	24	25	26	36	37	38	39
Japan (Nikkei 225)	9	10	-1	1	2	3	4	5	37	38	39	40	74	75	76	77
South Korea (Kospi)	2	3	4	5	3	4	5	6	-29	-30	-31	-32	-60	-61	-62	-63
<b>Bonds</b>																
Barclays Global Aggregate	28	29	30	31	39	40	41	42	<b>Commentary</b> All stock markets remain in a long-term bull market. Market weakness is in Europe where medium-term momentum is negative. Earnings momentum for the MSCI World and S&P 500 has been positive for a while. Long-term momentum in bonds is positive. Long-term momentum in hedge funds has been positive for nearly two years, but is negative in the medium term. The USD has positive momentum. The Fed's balance sheet is expanding merrily.							
Barclays Global HY	46	-1	-2	-3	47	48	49	50								
Barclays Euro Aggregate	44	45	46	47	39	40	41	42								
Barclays Asia Pacific Aggregate	46	47	48	49	42	43	44	45								
Barclays Global Emerging Markets	25	26	27	28	33	34	35	36								
Barclays US Aggregate	29	30	31	32	28	29	30	31								
Barclays US Corporate HY	46	-1	-2	1	135	136	137	138								
<b>Hedge Funds</b>																
HFRX Global Hedge Funds	9	-1	-2	-3	100	101	102	103	<b>Tutorial</b> 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 a trial issue.							
HFRX Macro/CTA	9	10	-1	-2	2	3	4	5								
HFRX Equity Hedge	8	-1	-2	-3	100	101	102	103								
HFRX Event Driven	10	11	-1	-2	99	100	101	102								
HFRX Relative Value Arbitrage	-2	-3	-4	-5	37	38	39	40								
HFRX Fixed Income - Credit	108	-1	-2	-3	143	144	145	146								
<b>Commodities</b>																
Thomson Reuters/Jefferies CRB	-3	-4	-5	-6	23	24	25	26	<b>Purpose</b> 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.							
Gold (Comex)	6	-1	1	2	5	6	7	8								
Copper (Comex)	5	6	7	-1	-20	-21	-22	-23								
Oil (WTI)	-3	-4	-5	-6	16	17	18	19								
<b>FX</b>																
USD (trade-weighted, DXY)	10	11	12	13	2	3	4	5	(This section is part of the commentary and tutorial text above)							
EURUSD	-11	-12	-13	-14	-4	-5	-6	-7								
JPYUSD	6	-1	-2	-3	3	4	5	6								
<b>Central banks' balance sheets</b>																
Fed balance sheet	93	94	95	96	85	86	87	88	(This section is part of the commentary and tutorial text above)							
ECB balance sheet	-8	-9	-10	-11	-84	-85	-86	-87								
BoJ balance sheet	116	117	118	119	146	147	148	149								
BoE balance sheet	6	7	8	9	17	18	19	20								

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.





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# VC-PE Index: Where Does Private Equity Performance Stand at Year End 2013?

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Like every asset class, investor interest in private equity ebbs and flows. On an annual basis, private equity fundraising can range from \$300 billion (lean years) to \$500 billion (strong years). Private equity has seen an increased interest from investors over the last five years, as lower fixed income returns have sent investors on a hunt to meet return requirements.

At Bison, we provide investors with software analytics tools to help them better understand private equity performance and how to compare it to the public markets.

As part of our industry coverage, we monitor the investment activities of approximately 2,000 limited partners, including public and private pensions and private foundations. This universe of data includes detailed performance information on more than 3,500 unique funds. Given the increased focus on private equity, we wanted to provide a year-end snapshot of the private equity benchmarks over the last 15 years. We first look at private equity, as a whole, and then break out the benchmarks for buyout funds and venture capital funds.

Bison Global All PE TVPI Benchmark						Bison Global All PE IRR Benchmark					
Vintage Year	Max	1st Quartile	2nd Quartile	3rd Quartile	Min	Vintage Year	Max	1st Quartile	2nd Quartile	3rd Quartile	Min
1999	3.48x	1.71x	1.33x	0.84x	0.11x	1999	40.3%	12.2%	6.6%	-2.6%	-40.6%
2000	3.25x	1.86x	1.42x	0.99x	0.09x	2000	82.4%	17.3%	7.9%	0.6%	-93.6%
2001	4.94x	1.87x	1.52x	1.09x	0.01x	2001	94.5%	22.5%	9.6%	2.0%	-61.9%
2002	3.98x	1.95x	1.53x	1.15x	0.12x	2002	55.3%	20.4%	10.5%	1.5%	-31.3%
2003	4.32x	1.91x	1.56x	1.33x	0.01x	2003	59.8%	18.4%	10.1%	5.7%	-78.8%
2004	16.85x	1.71x	1.43x	1.23x	0.46x	2004	72.7%	12.3%	7.8%	3.9%	-16.8%
2005	4.81x	1.52x	1.35x	1.17x	0.08x	2005	144.0%	10.7%	7.4%	3.3%	-92.3%
2006	2.47x	1.52x	1.34x	1.17x	0.42x	2006	54.8%	11.4%	7.6%	3.9%	-21.2%
2007	5.79x	1.54x	1.35x	1.16x	0.25x	2007	61.3%	14.7%	9.4%	3.9%	-45.3%
2008	3.15x	1.47x	1.29x	1.12x	0.35x	2008	44.4%	15.8%	10.4%	4.6%	-22.5%
2009	2.06x	1.40x	1.29x	1.12x	0.80x	2009	56.5%	17.2%	12.2%	6.5%	-15.2%
2010	2.60x	1.38x	1.18x	1.07x	0.44x	2010	68.4%	18.2%	10.1%	2.4%	-39.8%
2011	2.18x	1.22x	1.09x	0.97x	0.08x	2011	77.9%	16.4%	7.7%	-1.8%	-55.3%
2012	2.47x	1.10x	1.01x	0.93x	0.46x	2012	102.1%	14.6%	5.4%	-4.6%	-42.6%
2013	1.43x	1.02x	0.96x	0.86x	0.49x	2013	57.3%	3.2%	-4.2%	-20.0%	-100.0%

Number of Funds in dataset: 1863

Data as of December 31, 2013

Number of Funds in dataset: 1773

## Exhibit 1: Global All Private Equity Benchmark

### Key takeaways:

\* Performance, on an IRR basis, appears to be returning to its pre-financial crisis levels.

\* Focusing on funds prior to 2011, IRRs for top quartile funds are now back in the high teens, which were last seen in 2003.

\* Fund performance for the 2005 – 2007 vintage years (the “bubble year funds”) will be the low point for the 2000s decade. We do not expect to see the benchmarks for these years change much going forward.

Bison Global Buyout TVPI Benchmark						Bison Global Buyout IRR Benchmark					
Vintage		1st	2nd	3rd		Vintage		1st	2nd	3rd	
Year	Max	Quartile	Quartile	Quartile	Min	Year	Max	Quartile	Quartile	Quartile	Min
1999	2.94x	2.12x	1.66x	1.36x	0.47x	1999	40.3%	19.1%	11.6%	6.2%	-23.7%
2000	3.25x	2.33x	1.97x	1.58x	0.35x	2000	82.4%	23.7%	17.7%	9.8%	-20.2%
2001	4.94x	2.42x	2.04x	1.69x	0.62x	2001	94.5%	32.7%	27.8%	16.6%	-9.5%
2002	3.19x	2.31x	1.90x	1.47x	0.81x	2002	54.9%	33.8%	16.8%	11.9%	-7.2%
2003	3.52x	2.02x	1.69x	1.58x	0.01x	2003	59.8%	30.0%	15.0%	12.1%	-48.1%
2004	3.86x	1.95x	1.65x	1.27x	0.67x	2004	58.5%	17.1%	10.0%	4.7%	-7.5%
2005	2.64x	1.53x	1.42x	1.15x	0.39x	2005	24.1%	10.8%	7.9%	3.2%	-17.9%
2006	2.47x	1.58x	1.42x	1.22x	0.42x	2006	33.3%	13.5%	8.2%	4.1%	-15.0%
2007	2.57x	1.56x	1.36x	1.22x	0.53x	2007	34.1%	15.5%	10.1%	6.8%	-12.1%
2008	2.63x	1.55x	1.26x	1.15x	0.43x	2008	44.4%	17.3%	11.4%	6.2%	-22.5%
2009	1.97x	1.43x	1.25x	1.08x	0.80x	2009	36.1%	20.2%	11.8%	4.3%	-15.2%
2010	1.80x	1.41x	1.18x	0.99x	0.44x	2010	47.1%	19.9%	10.8%	-2.0%	-39.8%
2011	2.18x	1.17x	1.09x	0.96x	0.64x	2011	77.9%	12.8%	5.5%	-1.6%	-41.6%
2012	2.01x	1.10x	1.01x	0.91x	0.46x	2012	64.9%	24.7%	6.5%	-7.1%	-42.3%
2013	1.43x	0.98x	0.92x	0.78x	0.59x	2013	57.3%	-3.6%	-18.0%	-28.2%	-100.0%

Number of Funds in dataset: 691

Number of Funds in dataset: 681

Data as of December 31, 2013

## Exhibit 2: Global Buyout Benchmark

### Key takeaways:

\* Top quartile buyout funds outperform the top quartile All PE benchmark.

\* From an IRR perspective, the 2009 and 2010 vintage years appear to have had strong performance so far. The LPs we track will not be big beneficiaries of this, because 2009 and 2010 were their least active investment (lowest commitment) years since 2004.

\* Despite 2005 – 2007 being the worst performing years, performance for these years is not as bad as many feared it would be back in 2008 and 2009.

Bison Global Venture Capital TVPI Benchmark						Bison Global Venture Capital IRR Benchmark					
Vintage		1st	2nd	3rd		Vintage		1st	2nd	3rd	
Year	Max	Quartile	Quartile	Quartile	Min	Year	Max	Quartile	Quartile	Quartile	Min
1999	2.12x	1.26x	0.82x	0.46x	0.11x	1999	18.4%	4.4%	-5.2%	-10.6%	-40.6%
2000	3.13x	1.26x	1.02x	0.70x	0.09x	2000	29.9%	4.3%	0.9%	-4.1%	-93.6%
2001	4.78x	1.50x	1.21x	0.85x	0.01x	2001	25.5%	7.0%	3.3%	-1.3%	-61.9%
2002	1.81x	1.53x	1.16x	0.77x	0.12x	2002	13.6%	8.0%	0.7%	-10.8%	-31.3%
2003	2.22x	1.71x	1.29x	0.93x	0.22x	2003	14.5%	9.4%	3.8%	-1.8%	-78.7%
2004	16.85x	1.52x	1.19x	0.88x	0.69x	2004	72.7%	7.4%	1.2%	-2.9%	-7.1%
2005	3.94x	1.56x	1.25x	0.99x	0.08x	2005	44.9%	11.2%	5.5%	-0.3%	-92.3%
2006	2.08x	1.50x	1.30x	1.04x	0.44x	2006	18.3%	10.8%	6.5%	0.8%	-20.7%
2007	5.79x	1.78x	1.42x	1.03x	0.28x	2007	61.3%	18.8%	9.4%	-0.5%	-45.3%
2008	3.02x	1.47x	1.29x	0.90x	0.35x	2008	41.2%	14.2%	8.1%	-3.0%	-21.4%
2009	2.06x	1.46x	1.31x	1.21x	0.96x	2009	32.5%	13.9%	11.4%	7.0%	-4.0%
2010	2.60x	1.49x	1.37x	1.15x	0.72x	2010	68.4%	25.6%	21.8%	10.1%	-8.8%
2011	1.49x	1.17x	1.08x	0.96x	0.84x	2011	28.7%	12.8%	9.2%	-3.2%	-10.9%
2012	1.44x	1.12x	1.03x	0.98x	0.93x	2012	34.2%	18.3%	8.1%	4.4%	-4.5%
2013	1.01x	0.98x	0.95x	0.90x	0.76x	2013	2.3%	0.0%	-4.7%	-7.0%	-8.4%

Number of Funds in dataset: 395

Number of Funds in dataset: 382

Data as of December 31, 2013

## Exhibit 3: Global Venture Capital Benchmark

### Key takeaways:

\* Venture capital performance, relative to buyouts, has shown signs of life since 2005. In three of the last five years of the 2000s, top quartile venture capital funds outperformed top quartile buyout funds from a TVPI standpoint.

\* 2007 stands out as the star of the last 15 years. This is most likely thanks to a number of the tech exits and IPOs that have grabbed headlines recently.

\* Still too early to tell if 2007's figures will be venture capital's "new normal" or whether this was just a blip on the radar.

## Final Thoughts

While still early, recent vintage years seem to indicate that private equity performance has bounced back closer to where it used to be. However, it will take a few years to see whether TVPI multiples will approach the 1.8x to 2.0x area that investors want to see from the asset class. In the meantime, investors still need to decide whether these returns provide enough of a premium compared to public markets to compensate for the risk and illiquidity associated with a 10-year fund life.

## Author Bios



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** 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.

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