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The Nature, Performance, Economic Impact and Regulation of Hedge Funds

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The Nature, Performance, Economic Impact and Regulation of Hedge Funds

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Abstract: We analyse the nature, economic performance, impact and regulation of hedge funds. Following a historical excursion, we discuss extant views on the aforementioned issues. We then propose that extant mainstream scholarship is mostly microeconomic/finance-based and fails to adequately account for wider political economy-related issues that are critical for a more comprehensive account of the role, impact and regulatory issues pertaining to hedge funds. We discuss some heterodox views and concerns and identify opportunities for further research.

Key words: hedge funds, performance, economic impact, regulation

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Contents

1.Introduction: History and nature of hedge funds

It is widely held in the academic literature that the first hedge fund was created by Alfred W. Jones in 1949, who aimed to achieve absolute returns regardless of market swings (Stulz, 2007). His underlying philosophy, conceived during his time researching and writing a 1948 article for Fortune Magazine[1] on the trends in investing and forecasting, was that within the efficient market hypothesis there exists at any given time considerable pockets of inefficiency that could be profitably exploited without incurring unacceptable risks. In effect, his investment approach consisted of hedging his long stock options by shorting other stocks[2] to protect against market volatility. At the same time, he remarkably introduced three other pioneering strategies, which would become basic characteristics of the classic hedge fund[3].

His fund came to sudden public attention in 1966 when Fortune Magazine wrote an article on his fund's success titled "The Jones' that nobody can keep up with"[4]. The article apart from describing the aforementioned investment strategies, disclosed that his fund had outperformed the best performing mutual fund that year by a staggering 44% and the best 5-year performing mutual fund by 85%. Indeed, Jones' fund provided the inspiration and blueprint for a number of legendary investors, such as George Soros and Warren

[1] See Jones, A. W., "Fashions in Forecasting". Fortune Magazine in March 1949 issue.

[2] Hedging refers to the risk management strategy of offsetting potential losses from market movements in commodities, currency or securities. Shorting or short selling is the practice of selling some kind of financial instrument that is not currently owned and repurchasing in the future. For example, if there is a price drop, the short seller will profit as the cost of repurchasing will be less than the initial acquisition. Longing or long selling is when an investor buys a stock and holds it with an expectation that the price of the stock will increase.

[3] Along with longing and shorting stocks, Alfred W. Jones used:

i. Leverage in order to enhance his fund's potential return
ii. Structured his fund as a limited partnership with under 99 investors to avoid the US Investment Act of 1940
iii. Linked the fund manager's compensation directly to the fund's profit (Longo, 2013).

[4] See Loomis, C. J., "*The Jones Nobody Can Keep Up With*". *Fortune* in April *1966* issue.

Buffet, and of course, offered the possibility for wealthy individuals to realise higher returns through their investments. Hence, by 1968, there were almost 200 hedge funds (Longo, 2013). From then on and until the turn of the 21st century, assets managed by hedge funds rose to phenomenal sums. In 1990, less than $50 billion was managed by hedge funds, minuscule in global terms; by 2007, that sum reached nearly $1, 9 trillion and by the fourth quarter of 2014 total assets under management reached almost $3 trillion (Barclay Hedge database, 2014). At the same time, the number of funds increased from 610 in 1990 to more than 10,000 in 2013 (Hedge Fund Industry Report, 2013).

There is no widely held definition for the term "hedge fund" and the term itself is used to group together a number of different types of vehicles that share some similar features. An overarching definition that may be used is that a hedge fund is "any pooled investment vehicle that is privately organised, administered by professional investment managers, and not widely available to the public" (President's Working, 1999: 1). The ambiguity of this definition gives a glimpse on how much variety there is in the "hedge fund" industry, however there are a few common characteristics that all hedge funds share. Firstly, it is usually the case that these funds are organised as limited partnerships or limited liability companies in order to give the hedge fund manager full control in his investment strategies (Tiffith, 2007) Secondly, the investors of the fund are organised as limited partners and are attained only through private offerings. Thirdly, as recent media stories have highlighted, hedge fund managers often charge a management fee (2% of fund profit) and performance fee (20% of fund profit) (Ibid). As a result, one hedge fund manager in 2005, Boone Pickens of BP Capital Commodity Fund, was compensated with $1.4 billion (Anderson, 2006). A last common characteristic that hedge funds share is a lock in period that could be up to two years; this period restricts investors from taking out their money from the fund and allows the fund manager to buy and keep illiquid assets without them being forced to sell at short notice (Sami, 2009).

There are four main types of hedge funds, which are distinguished on the basis of the investment strategy they use, as follows; macro, event-driven, long-short equity and

relative value or market neutral.. The Tremont Asset Flows Report in 2008 (Second Quarter, 2008) estimated that from all hedge fund trading, 31% were long-short equity based, 15% weres event-driven, 10% were macro and 5% were, relative value.e 18% were multi-strategy (Stulz, 2007).

- *Macro*: A macro-focused hedge fund makes leveraged bets on anticipated price movements in stock and bond markets, interest rates, foreign exchange, and physical commodities. A macro strategy also takes positions in financial derivatives such as forwards, options, and swaps on assets such as stocks, bonds, commodities, loans, and real estate, and on indexes that are focused on interest rates, stock and bond markets, exchange rates, and instruments that relate to inflation. A macro-focused fund considers economic forecasts, analysis about global flow of funds, interest rate trends, political changes, and relations between governments, individual countries, political and economic policies, and other broad systemic considerations.

- *Event-driven:* Event-driven strategies focus on significant transactional events such as M&A transactions, bankruptcy reorganizations, recapitalizations, and other specific corporate events that create pricing inefficiencies. Activist shareholders take minority equity or equity derivative positions in a company and then try to influence the company's senior management and board to consider initiatives that the activist considers important in order to enhance shareholder value. Activist investors often attempt to influence other major investors to support their recommendation to the company, which sometimes leads to a change in the management composition of the company. There are three popular sub categories under the event-driven strategy: risk arbitrage, distressed or high yield securities and 'Regulation D' (Getmansky et al, 2004).

- ***Long-short equity:*** A hedge fund manager that focuses on equity long/short investing starts with a fundamental analysis of individual companies, combined with research on risks and opportunities particular to a company's industry, country of incorporation, competitors, and the overall macroeconomic environment in which the company operates. Managers consider ways to reduce volatility by either diversifying or hedging positions across industries and regions and hedging non-diversifiable market risk. However, the overall risk in this strategy is determined by whether a manager is attempting to prioritize returns (by having more concentration and leverage) or low risk (by creating lower volatility through diversification, lower leverage, and hedging). The core rationale of a long/short strategy is to shift principal risk from market risk to manager risk, which requires skilled stock selection.

Relative value or market neutral

These hedge funds seek returns based on changes in the relative value of two or more financial instruments. These funds are also called 'market neutral' as the fund takes on short and long matched equity positions, simultaneously (Stowell, 2010).Certain hedge funds use very specific approaches to investment based on the aforementioned strategies:

- Convertible arbitrage: this approach is identified by investing in the convertible securities of a company. This involves longing the convertible bond and shorting the common stock of the same company in order to generate returns from the short sale of the stock and the fixed income security, whilst at the same time protecting the investor from market movement risk (Getmansky et al, 2004).

- Dedicated shortseller: these types of funds maintain a net short exposure instead of a pure short exposure. To be classified as such a fund, the short bias of the manager's portfolio always has to be greater than zero.

- Managed Futures: managers in this fund, also referred to as Commodity Trading Advisors, invest globally in listed financial futures markets and currency markets. These managers can be generally split into systematic or discretionary. The later use a judgemental approach, whilst systematic traders use price and market specific information for their decisions (Getmansky et al, 2004).

- Emerging Markets: this involves equity or fixed income investments in emerging markets around the world. Since in many emerging markets, short selling is prohibited, this strategy employs a long only strategy.

- Fixed income arbitrage: this approach seeks to profit from price differences between related interest rate securities. This complex approach is usually US based and includes: interest rate swap arbitrage, forward yield curve arbitrage and mortgage-backed securities arbitrage (ibid).

- Multi-strategy: these funds are categorised by their ability to utilise several traditional hedge fund strategies. These types of investments often also use unique strategies that make it particularly hard to place into any of the aforementioned approaches.

Another type of hedge fund is a fund of fund (FOF), which is an investment fund that invests in a portfolio of other hedge funds, rather than investing directly into one. A FOF attempts to provide a broad exposure to the hedge fund industry. The Tremont TASS (Europe) Limited, a London based research company focused on alternative investments, reported that in 2003 the total assets under management of hedge funds amounted to 330 billion US dollars, where about a quarter of the total capital pool were owned by fund of funds. Even though, the assets under FOF management has decreased remarkably since then, these funds still are an important part of the hedge fund industry (Preqin, 2014). In addition, FOFs typically charge a management fee of 1% to 1.5% of the assets under

management and also receive performance fees that range from 10% to 20%. As a result, if a fund of funds invests in a number of hedge funds that charge 2% and 20% fees on average, then total management and performance fees paid by fund of fund investors could be about 3.25% and 35%, respectively (Davies et al, 2011). In addition, a FOF also charges or, could be argued to pass on to the investor, all the fees charged by the respective hedge fund in the form of "after-fee returns" (Brown et al, 2004).

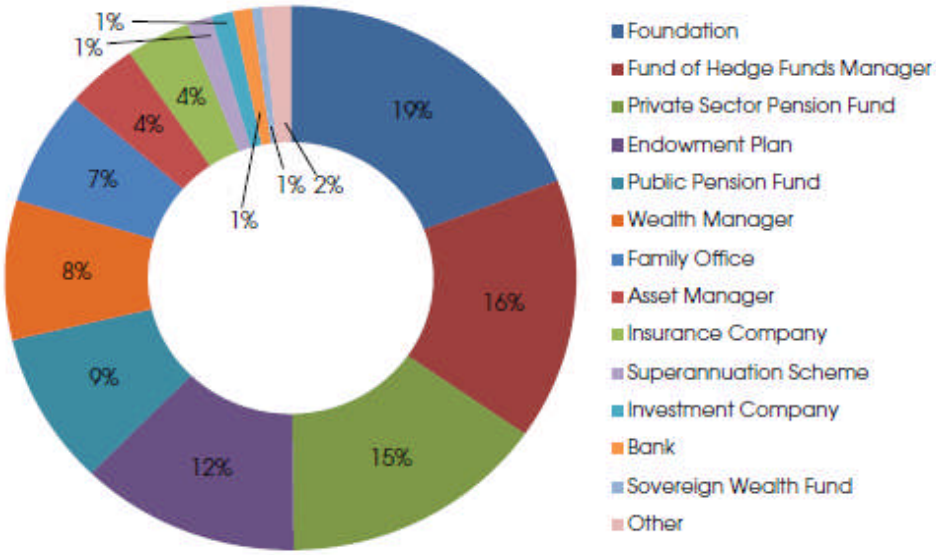
Hence, for some investors, these fees could outweigh the benefits of investing in hedge funds and in fact, in some cases total fees from a fund of fund may exceed the total return of the fund (Brown et al, 2004). However, many investors who may not qualify to invest in hedge funds because either they have insufficient capital to invest, or are not recognized as qualified investors in the United States by the SEC, may decide to invest in a fund of funds as it is the only vehicle through which they can invest in hedge funds. In addition, since many funds of funds have investments in 10 or more different hedge funds, they may provide more diversification than some investors might ever achieve (Stowell, 2010). However, even though a fund of funds is 'linked' to hedge funds, Liang (2004) reports that a fund of funds often underperforms in relation to hedge funds because of their double fee structure (after-fee returns) and most importantly, due to insufficient diversification. The later is due to the fact that although, a fund of funds does invest on average in 13 hedge funds (ibid), Park and Staum (1998) argue that for a well diversified fund of funds, that number is not enough.

Another typical investment strategy of hedge funds is to create leverage in order to increase the size of their investment portfolio and increase returns (Stulz, 2007). For example, if a hedge fund received $100 million from investors, the fund might purchase securities worth $400 million by borrowing $300 million from banks, using the $400 million of purchased securities as collateral against the $300 million loan; this is called a margin loan (Stowell, 2010). Another form of leverage used by hedge funds is created through repurchase agreements, where a hedge fund agrees to sell a security to another party for a

predetermined price and then buy the security back at a higher price on a specified date in the future. In addition, leverage is provided by selling securities short and using the proceeds to purchase other securities and through derivatives contracts that enable hedge funds to create exposure to an asset without using as much capital as would be required by buying the asset directly (Stowell, 2010).

Regarding their investors, these individuals or institutions have to meet requirements set out by the Securities and Exchange Commission (SEC) in the US; however, they generally must be knowledgeable in what they are investing in and able to manage a considerable capital loss. Moreover, the investors must be experienced because hedge funds are unregulated (Stulz, 2007) and the number of the investors that a hedge fund could have is limited (Wymeersch, 2010). High-net-worth individuals used to make up the largest share of hedge fund investors, holding more than half of all hedge fund assets through 2000. While this investor class has doubled in number and assets over the past decade, its share of all hedge fund assets declined to 30% during 2008 (Stowell, 2010). Most other investor classes have grown at a faster pace during this period: institutional investors such as pension funds, insurance companies, endowments, and foundations now account for 38% of hedge fund assets (up from just 25% in 1997). High-net-worth individuals, family offices, and institutional investors also invest in hedge funds through funds-of-funds, which accounted for 32% of FOF assets during 2008 (more than double its 1997 share of 14%).

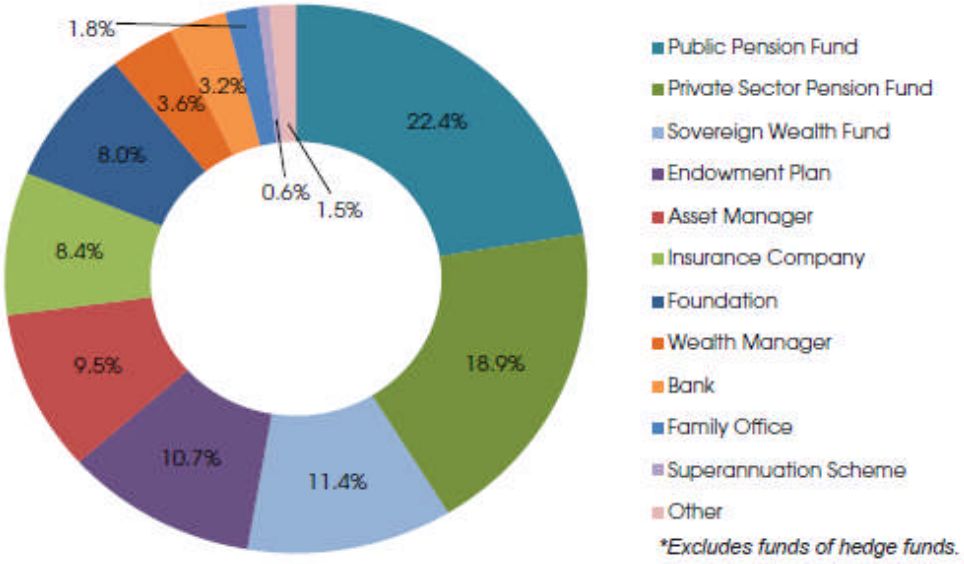
Diagram A: Hedge fund investor type breakdown in 2013



Source: Preqin, 2014

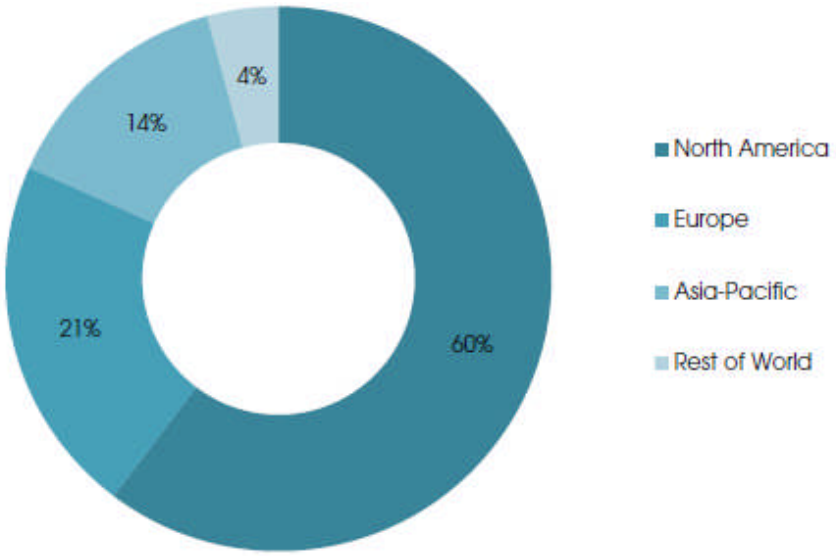
As the above diagram from Preqin illustrates, institutional investors represent more than 50% of the investor type, well ahead of high-net-worth individuals. Also, note that FOFs represent 16% according to this report, down from 25% in 2003, as we had mentioned earlier. Diagram B, below, interestingly shows that public pension funds represent almost a quarter of total capital invested in hedge funds by institutional investors, even though they represented only 9% in terms of the total numbers of investors.

Diagram B: Institutional investor capital in hedge funds by investor type



Source: Preqin, 2014

Diagram C: Hedge fund managers by location



Source: Preqin, 2014

In terms of geographical distribution, as Diagram C illustrates, North America has the most developed hedge fund industry and contains 60% of total hedge fund managers.

21% of hedge fund managers are located in Europe, with the UK, and specifically in London City, representing a significant location for hedge fund managers, as it controls 440 billion dollars worth of assets of the total 560 billion dollars of the European continent. The Asia-Pacific region, which represents 14% of total hedge fund managers, has their hubs in Singapore, Hong Kong or Australia. Not surprisingly, North America, dominates the total hedge fund assets under management with 1,923 billion dollars. Europe comes in a far second with 560 billion dollars, whilst Asia only manages 112 billion dollars. However, it is the US that is home to the most important share of total industry assets with 1,893 billion dollars; the 2014 Preqin Global Hedge Fund Report explains that North America experienced the largest rise in total assets in 2013, adding 300 billion dollars.

As a result, North America now represents 72% of total global hedge fund assets (Preqin, 2014). In the US, hedge fund activity is concentrated into three regions; New York manages 42% of US hedge fund assets, whilst the remaining 28% is mostly managed in Connecticut and Boston. We can summarise on the whole however, that roughly 75-80% of all global hedge fund assets are based into two main regions, the greater London region and the area from New York over Connecticut to Boston (Fichtner, 2014). Another important aspect of the hedge fund industry is the legal domicile of hedge funds. The majority of these hedge funds are located in legal jurisdictions that offer lax regulation and lower tax, known as Offshore Centers. Fichtner (2014) argues that 52% of total assets invested in these off-shore centers in 2010, took place in the Cayman Islands. The US state of Delaware comes second with 22% of assets, with the British Virgin Islands, Jersey and Bermuda following with 11%, 5% and 4%, respectively (Jaecklin et al., 2011).

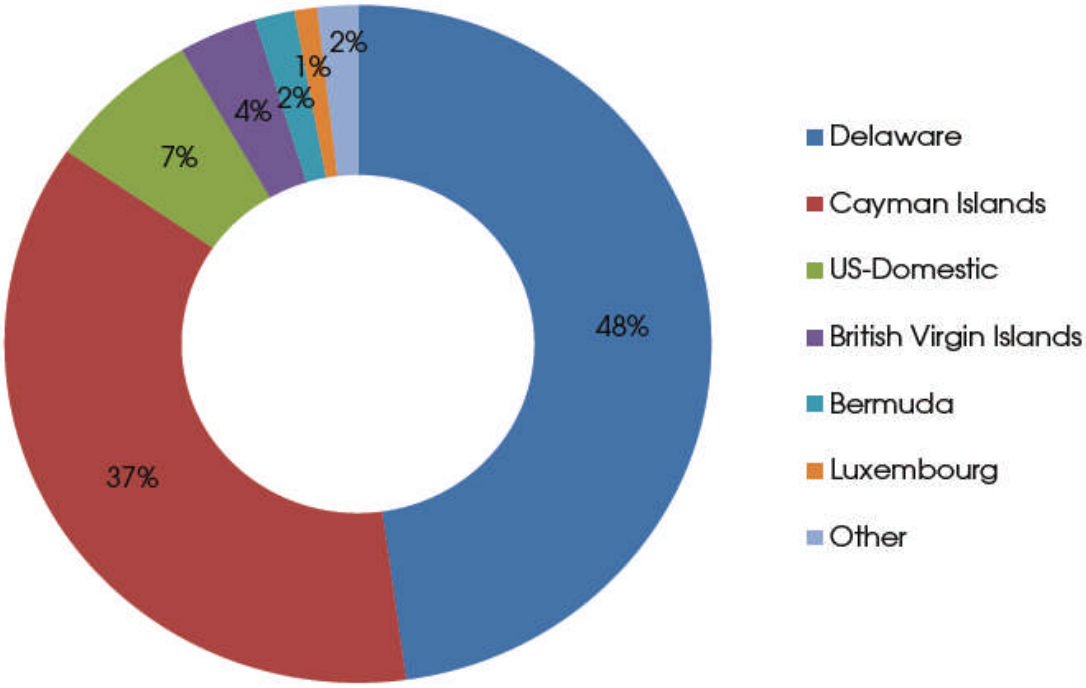
An important distinction that needs to be discussed is the difference between the structure and properties of onshore and offshore hedge funds. It is should be noted that the assets under management of off shore hedge funds registered in regions of lax regulation and low tax, such as the Cayman Islands or British Virgin Islands known as Off Shore Centers, grew at a larger pace than onshore funds from 1994 to 2010 at a rate of 18.2% against 12.3% per year. In addition, from managing 53% of all hedge funds assets in 1994,

off shore hedge funds as of 2010 managed 72% of total assets (Preqin, 2014). This growth can be contributed to the enlarged flow of investments from institutional investors, as previously discussed, as onshore hedge funds are used mainly by taxable US individuals, whilst offshore funds are used by non-US persons and non-taxable US institutional investors. In addition, offshore funds are not constrained by national regulatory forces, allowing for unspecified investor flows. Palan (1998) gives a good overarching definition of offshore:

'Offshore consists of a set of juridical realms marking differential degrees of intensity, by which states apply regulations, including taxation. Offshore is legal enclaves distinguished from their "on-shore" brethren, not necessarily because of their location, but because they define a territory or a realm of activities in which states choose to withhold some or all of their regulations and taxation. In that sense, offshore signals a profound fissure in the life of the state system: it denotes nothing less than the bifurcation of the juridical space of sovereignty into mutually dependent relative spaces' (Palan, 1998: 635).

In summary, it is usually the case that onshore hedge funds service taxable US individuals, whilst off shore funds are mainly used by non-taxable US institutional investors. The explanation behind this choice for US institutional investors lies in the fact that because US companies are subject to income tax on investment income and business income, US institutional investors will choose to invest in non-US corporations, which are not required to file for income tax in their domiciling country, hence shielding themselves from taxation if they receive investment and trading income only. On the other hand, a taxable US investor will prefer to invest in US registered hedge funds as they can take advantage of the capital gains treatment. In general, a hedge fund manager will provide both an offshore vehicle and an onshore vehicle to service the needs of his clients.

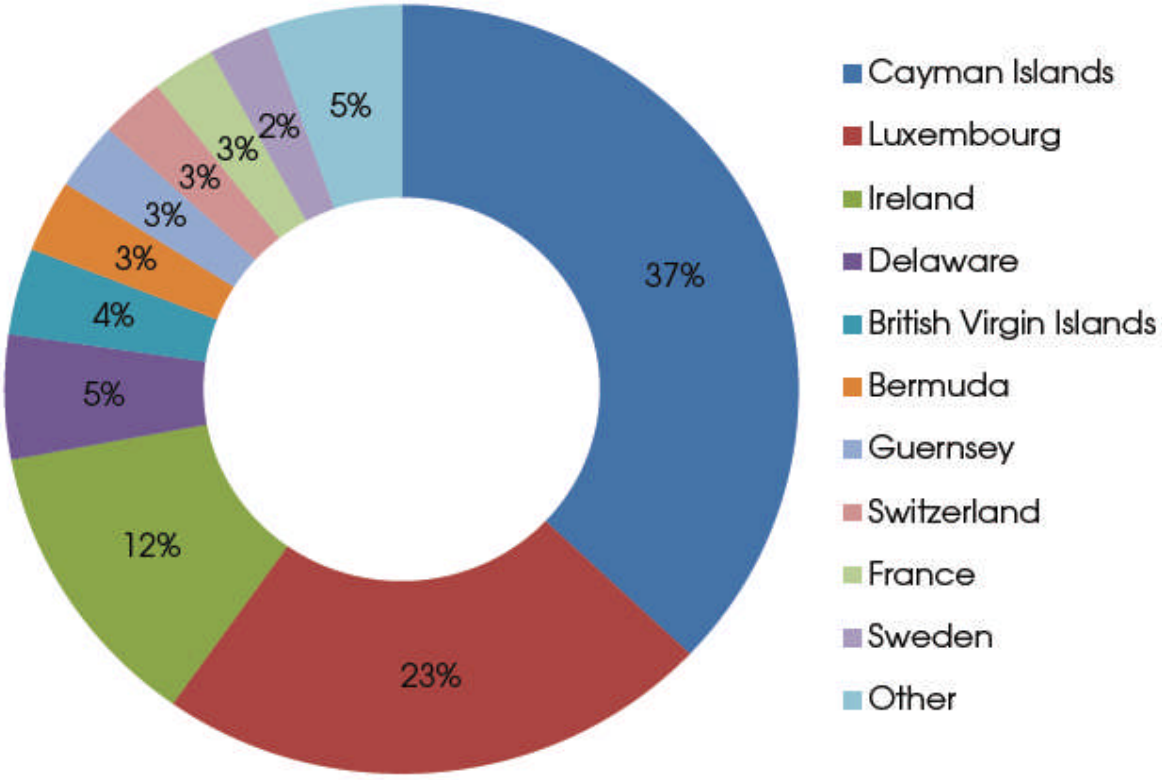
Diagram D: Composition of off shore centers used by North American hedge funds



Source: Preqin, 2014

As shown by Diagram D above, the geographical composition of off shore regions used by North American hedge funds is mainly split between the US state of Delaware and the Cayman Islands. Whilst European based hedge funds mainly use the Cayman Islands, Luxembourg or Ireland, as shown in Diagram E below. Even though off shore centers are often accused of lax regulation, they do offer strong anti-money laundering regimes and cooperate with international regulatory authorities such as the OECD and IMF, in order to adopt international regulatory frameworks. Furthermore, these regions are part of multiple global treaties that combat bank secrecy and in agreement with countries, including the UK and US, to facilitate the exchange of information relating to taxation issues.

Diagram E: Composition of off shore centers used by European based hedge funds



Source: Preqin, 2014

For the purpose of this paper it is useful to highlight the similarities of hedge funds and private equity. Both are private pools of capital that generate high management fees and high performance fees based on the fund's profits and both are lightly regulated. However, hedge funds generally invest in relatively liquid assets, and purchase minority positions in company stocks and bonds and in many other assets (taking both long and short positions for many investments). Most hedge funds attempt to find trades that are almost arbitrage opportunities, pricing mistakes in the markets that can produce low, risk profits. Once hedge funds have identified an asset that is mispriced, they device hedges for their position, so that the fund will benefit from the correction of the mispricing but be affected by little else (Stulz, 2007). Private equity funds, by contrast, typically purchase entire companies, creating a less liquid investment that is often held for 3 to 7 years. Although there is an intention to create liquidity after this period, since exit events often

include an IPO (where only a portion of the investment is sold) or an M&A sale (where the consideration could be in shares of another company rather than cash), liquidity is not assured even then (Ordowell, 2010).

2. Structure and performance

During 2008, the 100 largest hedge funds controlled 74% of all hedge fund assets (this means that approximately 1.5% of funds controlled 74% of assets). Over 75% of all hedge fund assets are held by U.S.-based funds, and over 15% of assets are held by European-based funds. Hedge fund revenue is highly concentrated in the top 205 funds. At the end of 2006, it was estimated that within a global hedge fund revenue pool of $33 billion, the top 205 hedge funds received $24.4 billion, or 74% of total revenue (Stowell, 2010).

In addition, hedge funds had over $1.9 trillion in investor capital at the end of 2007. When including leverage obtained through debt and derivative positions, total hedge fund investable assets were estimated to be $6.5 trillion, which is a 3.4 times implied leverage ratio. This amount was slightly less than one third of the total investments controlled by insurance companies and slightly more than one-fourth of the investments held by pension funds. In the aftermath of the 2007–2008 credit crisis, however, hedge fund leverage decreased significantly to an estimated two times investor capital by the first quarter of 2009 (Stowell, 2010).

Hedge funds grew at a remarkable rate between 1990 and 2007, from 530 funds with under $39 billion in assets to more than 7,600 funds with assets of almost $1.9 trillion. This growth resulted from the following developments:

1. **Diversification**

Investors were looking for portfolio diversification beyond long-only investment funds. Hedge funds provided this portfolio diversification to investors through exposure to a broader range of assets and risks.

2. **Absolute returns**

Investors found the absolute return focus of hedge funds appealing. Most traditional investment fund managers try to beat market averages such as the S&P 500 Index, claiming excellent management skills if their fund outperforms the relevant index. However, if the index return is negative, the outcome would be inferior to a hedge fund that achieves an absolute return (meaning a return greater than 0%). Of course, notwithstanding the absolute return focus, some hedge funds have in fact achieved negative returns.

3. **Increased institutional investing**

After seeing several university endowments such as Yale's endowment achieve spectacular returns from investing up to 50% of their entire portfolio in alternative assets such as hedge funds, private equity, real estate, and commodities (achieving an average annual return of over 23% between 2001 and 2007), many large institutional investors such as pension funds and petrodollar funds (as well as other university endowment funds) substantially increased their exposure to hedge funds.

4. **Favourable market environment**

This period was characterized by a very benign market environment. Since hedge funds rely on leverage to augment returns, low interest rates, the availability of credit, flexibility in credit terms, strong equity market performance, and accommodating tax and regulatory conditions fuelled the hedge fund boom.

5. **Human capital growth**

Some of the best financial and investing talent in the world moved into the hedge fund arena. Hedge funds were able to draw talent from investment banks and asset managers because of very high compensation and the opportunity to be more independent. During 2006, 26 hedge fund managers earned more than $130 million, including James Simons,

founder of Renaissance Technologies, who earned an estimated $1.5 billion. This amount was topped during 2007 and 2008, when John Paulson, President of Paulson & Co., was estimated to have earned over $3.7 billion, after directing his firm to take bearish positions in mortgage-backed securities.

6. **Financial innovation**.

Hedge funds' ability to execute increasingly complex and high-volume trading strategies has been made possible by product and technology innovations in the financial market and by reductions in transaction costs. Electronic trading platforms for futures and swaps and direct market access tools allowed hedge funds to profitably trade a broad range of financial assets, while at the same time managing their risk more effectively.

Following the 2008 financial crisis, in 2009, hedge funds began to recover some of the losses they experienced in 2008, and industry average returns were 9.5% at the end of June (compared to flat performance during this period by the S&P 500 index). Almost all major fund strategies were up for the 6-month period, with some of the worst-performing strategies in 2008 exhibiting strong recoveries. For example, emerging markets down by 37% in 2008, was up 20% at the end of June 2009. Similarly, convertible arbitrage, down over 33% in 2008, was up 29% during the first half of 2009. During the second quarter of 2009, hedge fund assets increased for the first time since the industry's peak in mid-2008. The increase was driven entirely by investment gains, as investors redeemed $43 billion during the quarter. Industry assets increased modestly from $1.41 trillion at December 31, 2008, to $1.43 trillion at June 30, 2008. Fund closings and consolidations continued in 2009, however. The estimated total number of hedge funds (including fund of funds) decreased during both first and second quarter 2009 to reach 8,923 funds by the end of June (Stowell, 2010)

As regards their performance, academic literature on the performance on hedge funds does not provide a clear answer as to whether hedge funds outperform the market. Moreover, there are a number of challenges facing researchers wanting to explore this

issue. Firstly, due to hedge fund's unregulated nature, unbiased data is hard to retrieve since only a small number of hedge funds disclose their performance voluntarily. This problem is referred to as the survivorship bias and refers to how the data available to researchers might be skewed since only well performing hedge funds have the incentive to voluntarily declare their earnings. Therefore, the data available will be missing those hedge funds that have been shut down or liquidated (Ackerman, McEnally and Ravenscraft, 1999).The range of estimates of these biases is big, from roughly less than 100 basis points per year (Ackerman, McEnally, and Ravenscraft, 1999) to more than 400 basis points at the high end (Malkiel and Saha, 2005).

A second challenge in calculating a hedge fund's performance is the difficulty in adjusting the performance to market exposures. For example, if a hedge fund has a similar performance to the S&P 500 index in returns and volatility, then it could be said that the investor could have just invested in an indexed mutual fund with lower fees whilst receiving the same return. However, due to the multiple strategies a hedge fund can use, such as going short/long or make use of derivatives, the fund's exposure to the market varies over time, making it difficult to calculate these exposures over a short period of time (Fung, Hsieh, Naik and Ramadorai, 2005). In addition, techniques that work well to assess risk exposures for mutual funds do not work so well when applied to hedge funds. An equity mutual fund's return is typically best viewed as the return of a basket of stocks, plus some component that is unique to the fund. A hedge fund's return, in contrast, is best viewed as a basket of derivatives – and often rather exotic derivatives with nonlinear payoffs (for discussion and references, see Fung, Hsieh, Naik and Ramadorai, 2005).

According to Stulz, a third difficulty in valuing hedge fund returns is that the past performance of a specific hedge fund might give a very particular view of its risk. Hedge funds may have strategies that yield payoffs similar to those of a company which sells earthquake insurance; most of the time the insurance company makes no payouts on its insurance policies and has a nice profit, but from time to time disaster comes and the insurance company makes large losses that may exceed its accumulative profits from good times. Though investors in an insurance company know that it sells earthquake insurance,

investors in hedge funds may find it impossible to assess that the hedge fund takes the risk of large losses before these losses have materialized. The general argument is that looking at past performance does not guarantee constant future return because it may seem that a hedge fund has low volatility but at the same time there is a high probability the fund may lose all its assets at once (Stulz, 2007).

The fourth difficulty in calculating hedge fund returns – Stulz indicates - involves problems of valuation. Computing the return of a mutual fund invested in US stocks is straightforward. The fund can calculate the value of its portfolio per day by using the closing prices of the stocks. Investors can buy off shares at that value. In contrast, hedge funds often hold securities that are not traded on exchanges. For instance, many derivatives are traded over-the-counter. For securities not traded on an exchange, no closing price exists. A hedge fund may need to rely on theoretical models to assess the value of some securities, or rely on quoted prices rather than actual transaction prices. In an efficient market, one would not expect the return of a fund during one month to have information for the return of the fund over the next month. In general, mutual fund returns are not serially correlated but hedge fund returns are. There can be significant reasons for hedge fund returns to be serially correlated, for example serial correlation can arise when hedge fund managers can present returns in a way that provides a picture of low risk and consistent performance (Stulz,2007).

With these challenges in mind, researchers nevertheless have sought to evaluate a hedge funds performance by trying to estimate its "alpha". "Alpha" is the performance which cannot be explained by beta risk, the latter being the exposure risk from market movements. In simple words, a hedge fund manager is required to use her skills to generate alpha returns without taking beta risk. For example, a hedge that fund moves symmetrically with the stock market is said to have a beta of 1 with respect to the market. So the fund needs to compensate its investors for the risk taken by earning at least the same return as the stock market. If the fund has an annual alpha of 5%, this indicates that the fund earns 5% more than the risk free rate after taking into account the compensation

paid to the fund manager (Stulz, 2007). The main debate in the literature focuses on the size of the average alpha and the persistence of alpha, if the latter holds then hedge funds are expected to have positive alphas based on their past returns.

A study conducted from Ibbotsen and Chen (2005) examined the performance of hedge funds from 1999 to 2004 using a sample of 3,538 funds. The authors found that the average return of hedge funds was 9.1% after fees and 12.8% before fees. Moreover, they found that from this 9.1% return, 5.4 % was generated by beta risk and 3.7% from alpha. This estimate of alpha return is particularly high when compared to mutual fund's -3.2 % alpha return over a 9 year period from 1982 to 1991 (Malkiel, 1995). Kosowki, Naik and Teo (2005) however, did not find such significant alpha returns from all hedge funds. Their study used a larger database from 1994 to 2002 and found that even though the average alpha amounted to 0.42% per month, this alpha was statistically insignificant. However, top performing hedge funds generated a highly significant alpha averaging between 1 and 1.25 per month. In an attempt to avoid the biases presented in by hedge fund data, Fung, Hsieh, Naik and Ramadorai (2006) examined the performance of funds of funds. They examined three different time periods: 1995 to 1999, 1998 to 2000 and 2000 to 2004. Their findings indicated that the average fund of funds had a significant positive alpha only in the 1998 to 2000 time period. Moreover, they concluded that only around 20% of funds have skilled managers who are able to attain positive and significant alpha.

Going on to the issue of performance persistence, the work of Jagannathan, Malakhov and Novikov (2006) concluded that nearly half of the positive performance of hedge funds over a 3 year period persists for 3 more years. So, if a fund generates 2% alpha during a three year period, it is expected to have 1% alpha for the next three years; on the whole the authors indicate that investing in high alpha funds is highly profitable.

The academic literature is in line with the above findings; if a hedge fund is picked on random, its alpha is expected to be insignificantly positive after fees. However, even this performance is better than mutual funds', not to mention that there is an important percentage of hedge funds that generate significant positive alpha. Evidence shows that past performance may persist if a good hedge fund is chosen. Nonetheless, it is much more

difficult to evaluate a hedge funds performance hence these results should be treated with caution.

3. Benefits and challenges to the financial system

Hedge funds are argued to provide liquidity to the financial system. They are more active than other investors, buying and selling in total more assets than other investment funds and are able to enter riskier secondary markets that otherwise would not receive sufficient financing for them to perform (Gibson, 2000). Moreover, by playing the role of the arbitrager (i.e. trading against the market) by using short sells, hedge funds are able to reduce price differences in financial markets, pushing markets to their fundamental values, which improves pricing and forces the market to be more effective (Sami, 2009). In addition, using a variety of investment strategies available to them, hedge funds provide investors with diversification opportunities, lowering the investor's risk to market exposures (Gibson, 2000).

Moreover, hedge funds are said to often provide benefits to the national securities markets, help maintain market efficiency, facilitate capital formation and provide liquidity to the national securities markets. For example, many hedge funds seek investment opportunities from undervalued securities, which can help move the actual price of such securities closer to their true values. In addition, hedge funds often make the securities markets more liquid through their significant participation in the buying and selling of securities. They are also purchasers of several types of derivatives, which can help other counterparties to reduce their own risks. Moreover, hedge funds are said to provide investors with a unique risk management opportunity to guarantee positive returns irrespective of market conditions. Sophisticated investors have consistently taken advantage of this opportunity, which is largely unavailable in other investment vehicles (Martin, 2012).

Research on hedge funds has focused on various aspects of the potential portfolio benefits of including them in allocations. One way to understand the various reasons hedge funds may be useful is via the following four possibilities, and they each bear upon their current and future relevance to investors (Geczy, 2010).

- "Vanilla" risk premia: Hedge funds provide exposure to systematic risks.
- "Alpha:" Hedge fund managers identify mispriced securities or invest with less constraint than managers of non-private funds. Transactions costs and fees stay low enough to retain the resulting benefit.
- "Exotic Beta:" Hedge funds take risks that may be viewed as systematic and capture risk premia otherwise unavailable to investors in traditional or more constrained investors.
- Market, Benchmark, or Factor Timing: The ability ex ante to alter risk, factor or benchmark exposures (U.S. equity market beta, say) actively as the investment opportunity set changes and premia rise or fall.

Some hedge fund trends are more difficult to characterize. One of these is a continued overlap between private equity-oriented strategies like mezzanine and distressed financing, with many hedge funds titling strategies toward higher yield fixed-income exposures in 2009 (Wymeersch E. , 2010).

Hedge funds have been significant users of new products developed by investment banks and others that allow exposure to different asset classes more efficiently, at a lower cost, and with lower visibility. This has given rise to an increase in quantitative trading activities (using computers to analyze anomalous financial prices and then engaging in automated trading to exploit the anomalies) and more robust arbitrage trading activity (investing in two related financial instruments in an effort to exploit price inefficiencies). The newly created financial products are available on exchanges and in the over-the-counter (OTC) market. These products have given hedge funds the opportunity to acquire

consumer loans, mortgages, and credit card debt that were previously only held by banks. New products also include total return swaps, credit default swaps, and other synthetic products that create exposures to asset classes that were previously not accessible to hedge funds, as well as hedging vehicles that foster increasing risk taking. In addition, hedge funds have been the beneficiaries of significant improvement in reporting and risk management systems, which has enabled them to engage in ever more complex and robust trading activities. However, the complexities of many of these products has also led to some unanticipated risks, resulting in increased concerns among regulators and practitioners of the possibility for large losses (many of which have already occurred).

For the individual investor, an area of concern is the often stratospheric charged by hedge funds (Wymeersch E. , 2010). On the other hand, the price that the financial system pays in receiving this additional liquidity from hedge funds is an increase in systemic risk because of the high leverage employed by hedge funds. Systemic risk is associated to the "risk that a major market participant's losses in the financial markets may cause widespread loss to other firms in the market, or cause disruptions to other industries or to the entire worldwide financial system" (McClean, 2006: 22). In simpler terms, this means that a hedge fund's high use of leverage increases the possibility that the hedge fund's losses may be spread to the counter parties of the fund (the lenders), as well as other market players who are not associated with the hedge fund. An even worse scenario would be a complete collapse of the hedge fund, which could possibly lead to a "domino effect" of financial losses in the financial system based on the close inter-correlation between hedge funds, or their close relationship with few major institutions and an overreliance of these particular investments (Lo, 2010). A historical example is when the Federal Reserve Bank of New York with the support of a number of private banks rescued Long-Term Capital Fund in order to avoid a potential chain reaction of collapses from a possible bankruptcy of the fund (Sami, 2009). Moreover, inadequate levels of liquidity put hedge funds in a vulnerable position during financial pressure periods, as they lead hedge funds to either collateral increase or forced liquidation, both compromising their stability (Lo, 2010). Another risk linked with the leverage used by hedge funds is their inability to withstand a

serious negative external shock because they will be pressured by their lenders to reduce their exposures. This will force hedge funds to cash out exactly when the market is in decline, which may further push the market down. In addition, a hedge funds' use of derivatives contains further risks as it makes it possible for the fund to adopt larger positions for a small capital contribution, granting the fund manager added leverage, further increasing system risk in the financial system (Stulz, 2007).

A further risk associated with hedge funds is their high-volume and often correlated trading strategies which may lead to the issue of liquidity risk. Typically, hedge funds rely on their ability to move out of a position quickly; the problem arises when hedge funds have adopted a similar strategy (similar trades) and/or are using similar risk management models. In a potential external shock these funds will try to exit the market collectively and in doing so prices will overreact and liquidity will sharply fall (Ibid). It should be noted however, that although hedge funds have the potential to cause prices to overreact, past experience shows that they generally stabilize market; hedge funds were net buyers during the 1987 stock market crash (Presidential Task Force on Market Mechanism, 1998). However, when there is an opportunity to profit by causing volatility, they will not hesitate to leverage this, as exemplified by the famous $10 billion bet George Soros took against the British Pound, which forced the British currency out of its fixed exchange rate, making him $1 billion richer in the process..

A more recent cost of hedge funds, which has come to the academic attention, is the ability of activist hedge funds to pressure or block corporate takeovers. By using "empty votes", which is the practice of borrowing shares of a company's stock and holding more votes than the borrower's ownership interest allows, hedge funds have the ability to influence takeovers and shareholder elections (Hu & Black, 2006). Practically this procedure allows someone other than the true owner of this company's stock to vote during a takeover bid. This opportunity occurs when an investor lends the shares of this company to a hedge fund, in so doing also lending the right to vote of those shares. So, if a hedge fund has borrowed enough shares of stock it may use the voting rights of those shares to

encourage or block takeovers depending on which action is more profitable for the fund. The problem is that this allows hedge fund managers to vote shares of a company and at the same time short sell the shares. This enables fund managers to exploit the market by voting shares of borrowed stock in a way that will cause the stock's value to drop, allowing them to make a return with a short sell (Scannell, 2007).

A central concern of policymakers is hedge funds' "systemic risk" — the risk they pose to economic actors outside of the groups of hedge fund investors. Systemic risk arises because hedge fund losses can spread to third parties, such as banks and securities traders. Exposing third parties to hidden risks is a market failure to the extent that third parties are unable to act on such risks by, for example, requiring better credit terms with a bank acting as a hedge fund counterparty. Noting the substantial role that funds play in reducing some systemic risks (e.g., short-selling stock during price bubbles) cannot alleviate concerns about systemic risk generally, because the very same activities that reduce some risks may increase others. Systemic risk is hardly unique to hedge funds (e.g., risk to counterparties and price bubbles). All financial institutions carry a degree of this risk. The question for policymakers is whether hedge funds' systemic risk is socially undesirable and remediable by lawmaking (Shadab, 2007).

The cautionary tale fueling the fears about hedge funds' systemic risk is the implosion, federal bailout, and ultimate folding of Long-Term Capital Management (LTCM). The fund lost $4.4 billion in 1998 by, among other things, predicting that spreads between the returns on bonds of developing and industrialized nations would narrow. The Federal Reserve organized the bailout, fearing a default by LTCM would send shockwaves throughout the world economy. LTCM is a spectacular case, to be sure. But it offers little in the way of broader lessons about hedge fund regulation. First, LTCM is not representative of hedge funds today. The fund's loss stemmed from its own unique characteristics combined with a series of very unlikely events, including the 1997 Asian currency crisis and the government of Russia defaulting on its loans in August of 1998. Second, LTCM's extreme leverage, which rose as high as 30:1 before the Federal Reserve intervened, is now a rarity. Third, if the government had not intervened, LTCM would not have collapsed: a

consortium of banks led by Berkshire Hathaway offered to buy the fund's positions and continue to run it. Perhaps most importantly, even if LTCM had collapsed, its counterparties could have absorbed LTCM's losses in the event of a default. The President's Working Group on Financial Markets' 1999 report noted that, as of September 1998, aggregate U.S. bank exposure to all hedge funds through direct lending and derivatives contracts, including LTCM, was only about 1 percent of total bank credit exposures (Shadab, 2007).

Instead of the collapse of a single large fund, a more likely source of systemic risk is multiple funds, perhaps even funds with different styles, failing at the same time and spreading shockwaves throughout the economy, a phenomenon known as "contagion." Related aspects of contagion are "liquidity risk" (being required to dump investments at a major loss), risk to counterparties, and "herding" (different funds making the same investment, which might then gobad). For example, several funds may end up on the wrong side of the same investment (herd) and be forced to sell at a major loss (liquidity risk), which, in turn, spreads losses to lenders and the counterparties and third parties who deal with them. Worries about market failure from contagion are mostly hypothetical. Few academic studies of hedge funds directly address systemic risk, and none conclude that the threat is large or even offer a definitive measure or assessment. (Shadab, 2007).

Moreover, empty voting challenges the fundamental principle of corporate law and governance, which stipulates that there must be a unity between voting power and economic ownership of the stock. The reasoning is that if an investor has economic stake in a company, then she will have the incentive to vote in a manner that will maximise the value of the company. In the case of a de-coupling of voting and ownership, the incentive structure gets skewed (Hu & Black, 2006). The nature and motives of decisions are compromised in a leveraging way, more probable to result in short-term profitability for hedge fund managers, rather than long-term stability of companies evolved in the procedure, causing a major ethical issue. This has not been addressed by both the USA's Financial Services Authority (FSA) and the UK's regulatory agency and requires attention.

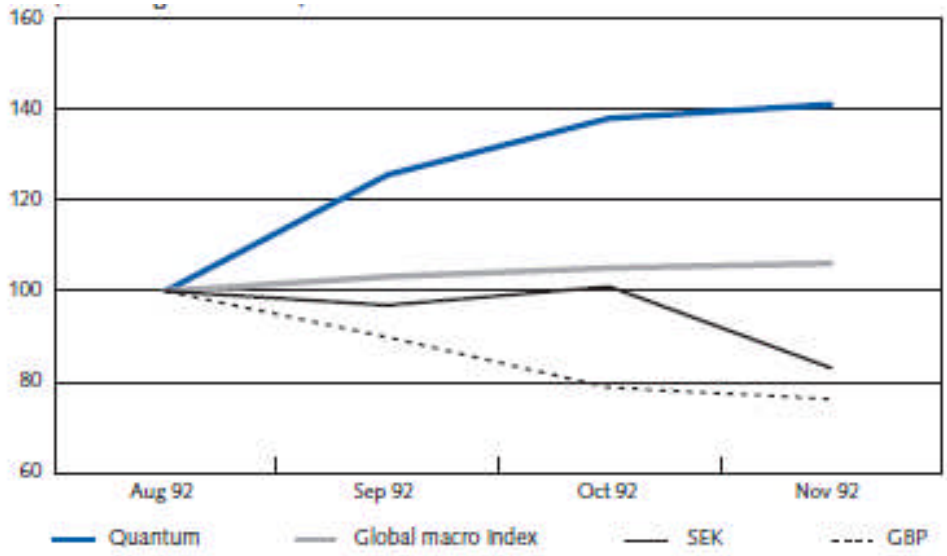
The many remaining questions about hedge funds are likely to keep researchers busy for years to come. Policymakers, on the other hand have to balance the alleged benefits and risks, including the costs and risks of regulation itself (Shadab, 2007).

4. Hedge funds and economic crises

In the aftermath of the economic crises in the 1990s and 2000s, a discussion arose about the role of hedge funds and their connection to economic downturns. The general criticism directed at hedge funds is that with their high level of leverage they could have a strong impact on prices by making speculative attacks on currencies or companies. They are also accused of creating financial bubbles by manipulating the price of assets. A financial bubble is a situation where the actual price for an asset exceeds the value the asset has in terms of income generating potential (Stromqvist, 2007).

The first major crisis where a hedge fund was reported to play a major detrimental role was in the 1992 Exchange Rate Stability Mechanism (ERSM) crisis. Quantum Fund, a macro hedge fund directed by George Soros, speculated against the Europe's fixed exchange rate currencies with the belief that the exchange rates did not correctly correspond to the countries macroeconomic conditions. In practice, the Quantum Fund shorted large amounts of mainly British pounds and Swedish krona against the US dollar, forcing the respective central banks to defend their currencies. In the end, the attempts of the central banks to defend their exchange rate became too costly and were forced to abandon their fixed exchange rate, whilst Quantum Fund made huge profits. George Soros came under vast criticism but supported his actions by claiming that the currencies' values were mispriced and that this adjustment would have been necessary eventually (Rouzbehani, 2007).

Diagram F: The 1992 crisis and global macro funds

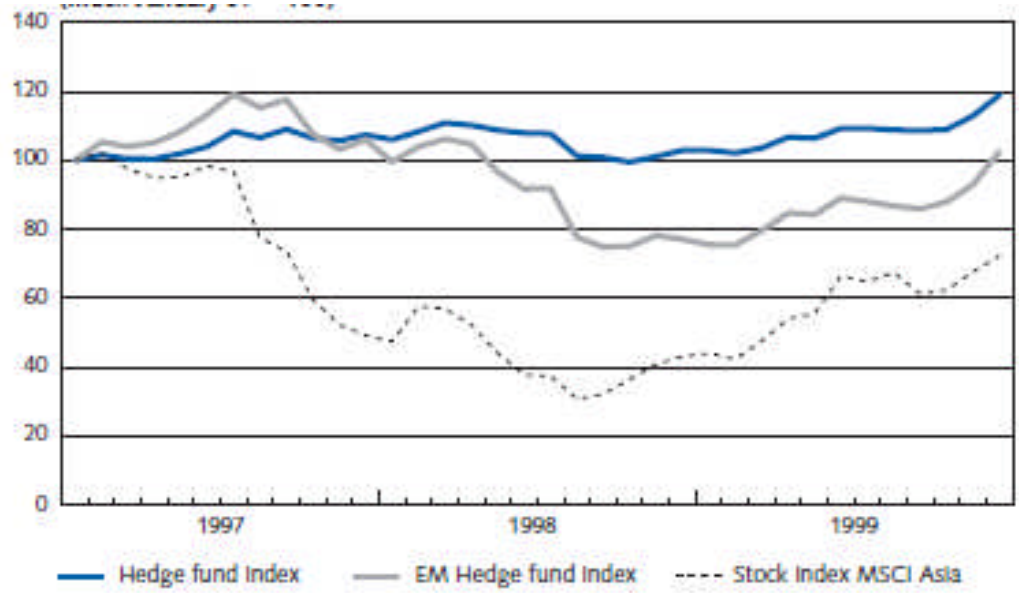


(Source: Stromqvist, 2008)

The above graph illustrates the development of the British pound and Swedish krona against the US dollar, and the earnings of hedge funds with a global macro strategy and earnings for the Quantum Fund. Specifically the graph shows that when the Bank of England abandoned its fixed exchange rate mechanism on the 16th of September 1992, the Quantum Fund made a 25% rate of return. This case exemplifies that a speculative attack of one hedge fund can significantly affect prices. Some commentators suggest that, George Soros Quantum Fund should not be accused of manipulating the prices since the inherent problem was a result of past incorrect economic policies and a price adjustment was unavoidable. The correct criticism that can be made according to this view is that the price adjustment was too sharp and could have taken place with lower economic cost (Stromqvist, 2007). Nevertheless the aforementioned case, helped highlight the increasing importance of hedge funds, including the potential risks related to their increasing clout.

The next crisis where hedge funds came under heavy scrutiny and accused again in speculating against fixed exchange rates was in the 1997 Asian financial crisis. Hedge funds were believed to have held short positions in the Asian currencies, which caused these countries to devalue, allowing hedge funds to make large profits from the weak currencies and falling share prices.

Diagram G: Hedge fund index return



(Source: Stromqvist, 2008)

The above graph shows the return on the Asian stock market, the return for hedge funds that focus on emerging markets (EM Hedge fund Index) and a general hedge fund index. If the accusations that hedge funds had collectively speculated against Asian economies we would expect to see a high return for hedge funds in that period, as in the previous Quantum Fund case. However, it has been suggested that the general hedge fund index shows only a weak positive return during that period. Moreover, hedge funds that focused on emerging markets experienced a 20% loss up to the middle of 1998. This suggests that the Asian crisis, in fact, had a negative effect on hedge funds focused on emerging markets. This suggests that the crisis might have been the result of fundamental and structural imbalances in the South-East Asian economies, with little evidence found to support the argument that hedge funds undermined the economies of Asian countries through speculation and herd behaviour (Eichengreen et al, 1998; Fung & Hsieh, 2000).

The next crisis was the so called 'Dot Com Bubble' that took place in early 2000s, where the value of IT-related shares in relation to the company's actual value or profit was

hugely overpriced, once this was became commonly realised the prices of these shares fell dramatically. In theory, playing the role of arbitragers, hedge funds should have corrected this mispricing by taking short positions against IT shares. However, as Brunermeier and Nagel (2004) showed the opposite took place, with hedge funds instead taking long positions in IT shares during the bubble and then selling them before the crash. The authors explain that hedge funds were fully aware a bubble was formed on IT shares and their strategy was to bandwagon rather than correct prices.

In 1998 market participants observed the first case where the strategies pursued by a hedge fund failed, almost causing the fund to go completely bankrupt; highlighting the detrimental effects that a highly leveraged fund can have on the stability of the financial system. This fund was no other than Long-Term Capital Management, which was said to have an alarmingly high degree of leverage that amounted to 25 times its equity (Edwards, 1999). The main strategy employed by this fund was to exploit market mispricing, especially on the bond market; the fund had highly invested in the assumption that interest rates of bonds issued at different time periods would converge. However, after Russia's collapse, the market environment changed and interest rates diverged causing the fund to suffer severe losses. With the knowledge of the fund's high leveraged positions, the Federal Reserve Bank of New York was of the opinion that a bankruptcy would affect the whole financial system so a rescue was arranged the positions of the fund were taken over (Stromqvist, 2009).

This crisis showed that there are important risks associated with hedge funds that have taken up high leveraged strategies and that hedge funds can be the cause of 'systematic risk'. Admittedly, LTCM's high leverage was unique since the average degree of leverage hedge funds at the time was no more than 10 times the equity (Edwards, 1999). Furthermore, a similar study by Eichengreen and Park (2002) found that 74% of hedge funds leverage in 1998 was less than two times equity. In this context, the US President's Working Paper (1999) argued that other institutional investors had comparable degree of leverage with hedge funds and therefore, no policies were needed to be put in place to regulate hedge funds.

In the summer of 2007, the globe experienced one of the greatest economic recessions since the Great Depression of the 1930s and once again debate on the role of hedge funds in causing the crisis began. Hedge funds were quick to deny responsibility[5] by relying on two arguments for their defence. Firstly, they claimed they had no involvement in creating the 'toxic' securities that were focal point of the crisis. Indeed, they did not provide these mortgages, repackage them into securities and then bundle them as collateral for other securities, or give a rating on them[6]. Secondly, hedge funds argued that they weren't the only ones that had purchased these subprime backed securities; pensions funds, insurance companies and other worldwide banks were also tempted to invest in them (Shadab, 2008). Indeed, the Democratic chairman, Henry Waxman, in front of the 2008 hearing on Oversight and Government Reform acknowledged that hedge funds high leverage could pose potential risk to the economy; he did not blame the funds or their practices for the economic crisis (Kirchgaessner and Sender, 2008). Not just in the US, but also in the UK, the Turner Review conducted by the Financial Services Authority found that the hedge funds did not cause the crisis but did concede that they played a role in spreading the crisis (House of Lords, 2010). Not even in the EU, where there is a more hostile public attitude towards hedge funds, did the High-Level Group on Financial Supervision in the E.U. consider hedge funds as playing a role in causing the crisis (de Larosiere, 2009).

According to Khandani & Lo τhe behavior of the contrarian strategy during the second week of August 2007 becomes even more significant when compared to the performance of the same strategy during August 1998, around the time of the Long Term Capital Management (LTCM) debacle. On August 17, 1998 Russia defaulted on its GKO government bonds, causing a global flight to quality that widened credit spreads which, in turn, generated extreme losses in the days that followed for LTCM and other fixed-income arbitrage hedge funds and proprietary trading desks. The specific mechanism that caused these losses-widening credit spreads that generated margin calls, which caused the

[5] In a U.S. House Committee hearing on Oversight and Government reform, some of the largest US hedge funds emphasized they were not responsible. Mr. Soros blamed the financial system itself whilst James Simmons threw responsibility on credit rating agencies' practices (Kirchgaessner and Sender, 2008).

[6] Before the US senate, Kenneth Griffen, CEO of Citadel fund, argued that the causes of the crisis actually came from the more regulated institutions of the financial system (Kirchgaessner and Sender, 2008).

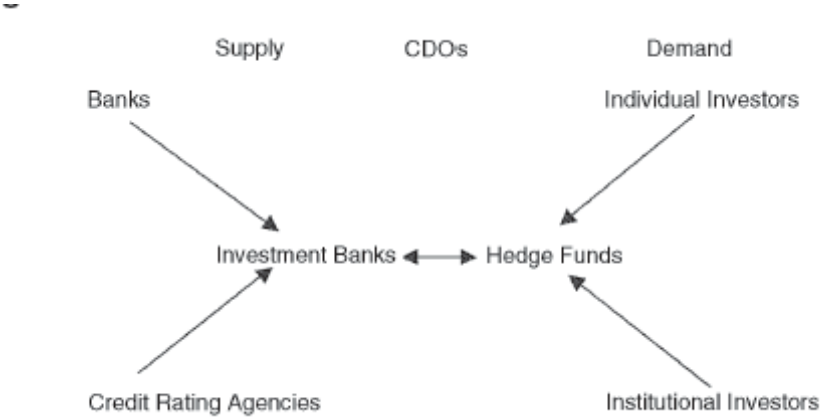
unwinding of illiquid portfolios, generating further losses and additional margin calls, leading ultimately to a fund's collapse-is virtually identical to the sub-prime mortgage problems that affected Bear Stearns and other credit-related hedge funds in 2007. However, there is one significant difference between August 1998 and August 2007. The table below reports the daily returns of the contrarian strategy (1) during the months of August and September 1998, which show that the turmoil in fixed-income markets had little or no effect on the profitability of our long/short equity strategy. In contrast to August 2007 where an apparent demand for liquidity caused a fire sale liquidation that is easily observed in the contrarian strategy's daily returns, the well-documented demand for liquidity in the fixed-income arbitrage space of August 1998 had no discernible impact on the very same strategy. This is a significant difference that signals a greater degree of financial-market integration in 2007 than in 1998. While this may be viewed positively as a sign of progress in financial markets and technology, along with the many benefits of integration is the cost that a financial crisis in one sector can have dramatic repercussions in several others, i.e., contagion (Khandani & Lo, 2007).

There are several possible explanations for the difference between August 1998 and August 2007. One interpretation is that in 1998, there were fewer multi-strategy funds and proprietary-trading desks engaged in both fixed-income arbitrage and long/short equity, so the demand for liquidity caused by deteriorating fixed-income arbitrage strategies did not spill over as readily to long/short equity portfolios. Another possible explanation is that the amount of capital engaged in long/short equity strategies, particularly market-neutral statistical arbitrage strategies, was not large enough to cause any significant dislocation even if such strategies were unwound quickly in August 1998. A third possibility is that in 1998, long/short equity funds did not employ as much leverage as they were apparently using in 2007.We argue in the remaining sections that all three of these interpretations may be correct to some degree (Khandani & Lo, 2007).

Date	Deciles by Market Capitalization										All
	Smallest	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Largest	
8/3/1998	3.35%	1.75%	1.68%	0.15%	3.25%	-0.33%	0.40%	0.06%	0.62%	0.16%	1.01%
8/4/1998	-0.29%	2.16%	1.64%	-1.35%	-1.18%	-0.51%	-0.82%	-0.07%	-1.22%	-0.16%	-0.18%
8/5/1998	2.75%	1.93%	0.68%	2.60%	2.04%	0.93%	-0.57%	0.38%	-0.59%	2.56%	1.27%
8/6/1998	2.25%	1.68%	2.01%	0.36%	0.17%	-0.33%	-1.35%	0.15%	0.85%	1.34%	0.66%
8/7/1998	3.05%	2.99%	0.79%	0.26%	-0.23%	0.03%	0.12%	0.39%	2.93%	-0.10%	0.67%
8/10/1998	3.48%	1.69%	1.53%	0.91%	0.48%	2.23%	1.03%	-0.23%	0.68%	0.27%	1.27%
8/11/1998	2.34%	1.72%	0.81%	-0.24%	0.60%	1.18%	-0.36%	0.79%	-0.29%	-0.14%	0.59%
8/12/1998	4.83%	2.88%	2.71%	1.31%	0.96%	0.58%	2.01%	0.93%	1.00%	0.68%	2.04%
8/13/1998	3.74%	2.24%	0.88%	2.72%	0.37%	0.39%	1.03%	0.48%	-0.11%	0.04%	1.33%
8/14/1998	2.25%	1.64%	3.57%	1.42%	-0.46%	-0.05%	0.66%	-0.07%	0.77%	-0.42%	0.94%
8/17/1998	**2.46%**	**2.48%**	**1.81%**	**0.11%**	**-0.32%**	**1.66%**	**-0.01%**	**-0.80%**	**0.11%**	**0.49%**	**0.96%**
8/18/1998	4.31%	1.85%	1.75%	3.86%	0.35%	-0.16%	-2.12%	0.03%	0.29%	0.12%	0.87%
8/19/1998	2.60%	2.15%	1.16%	0.45%	-0.65%	-0.36%	0.34%	-0.80%	0.06%	-0.13%	0.63%
8/20/1998	1.60%	3.04%	1.49%	0.42%	-0.64%	0.55%	0.87%	-0.61%	-0.55%	-1.47%	0.46%
8/21/1998	**2.26%**	**4.06%**	**2.18%**	**1.79%**	**1.03%**	**-0.06%**	**-0.28%**	**-0.51%**	**0.06%**	**-0.36%**	**1.04%**
8/24/1998	5.35%	1.84%	4.13%	0.63%	-0.83%	0.13%	-1.57%	-1.02%	-0.68%	0.73%	0.90%
8/25/1998	2.05%	2.19%	1.76%	0.85%	-0.45%	-0.34%	0.91%	-1.46%	-0.48%	-0.56%	0.36%
8/26/1998	4.02%	1.39%	1.78%	0.81%	-0.31%	0.06%	-0.43%	1.03%	-0.65%	-0.26%	0.61%
8/27/1998	1.69%	1.15%	0.24%	-1.16%	-2.02%	-0.47%	-1.54%	-1.91%	-0.63%	-2.20%	-0.78%
8/28/1998	2.52%	2.29%	1.33%	1.35%	0.11%	1.12%	-1.29%	-1.32%	-1.18%	-0.36%	0.39%
8/31/1998	3.31%	1.79%	0.51%	-0.36%	-3.44%	-1.97%	-3.08%	-4.47%	-2.73%	-2.82%	-1.62%
9/1/1998	4.96%	4.42%	6.04%	4.67%	9.06%	6.68%	6.71%	6.67%	4.90%	6.10%	6.59%
9/2/1998	4.43%	2.74%	1.90%	0.82%	-1.33%	0.25%	0.86%	-0.39%	0.45%	0.33%	0.63%
9/3/1998	**3.89%**	**3.78%**	**2.08%**	**2.09%**	**0.23%**	**-0.03%**	**0.79%**	**0.15%**	**0.51%**	**0.76%**	**1.41%**
9/4/1998	5.10%	3.95%	2.09%	0.75%	-0.33%	-0.84%	-1.33%	-1.61%	-1.15%	-3.68%	0.26%
9/8/1998	3.53%	3.40%	3.82%	0.57%	0.60%	0.82%	1.35%	1.05%	0.97%	3.73%	2.08%
9/9/1998	1.99%	3.62%	1.38%	1.15%	1.12%	1.66%	1.70%	2.10%	2.32%	2.92%	2.42%
9/10/1998	4.26%	2.68%	0.08%	2.05%	0.96%	-0.27%	0.64%	-0.86%	-0.67%	-2.16%	0.29%
9/11/1998	3.34%	3.17%	2.15%	0.77%	0.20%	0.50%	-0.95%	1.28%	-0.18%	0.15%	1.24%
9/14/1998	3.53%	3.58%	1.54%	0.83%	-0.20%	-0.42%	-0.47%	-0.50%	0.02%	-0.23%	0.33%
9/15/1998	3.62%	2.36%	1.34%	0.77%	-0.17%	-0.98%	-0.52%	-1.15%	-0.95%	-0.63%	0.14%
9/16/1998	2.71%	3.33%	0.89%	1.48%	0.58%	0.83%	0.00%	0.05%	1.53%	-0.04%	1.01%
9/17/1998	3.70%	2.24%	1.54%	1.56%	-0.95%	0.23%	1.10%	-0.40%	-0.86%	0.38%	0.79%
9/18/1998	4.01%	3.94%	2.67%	1.27%	2.55%	1.20%	-1.17%	-1.41%	-0.51%	-0.45%	1.07%
9/21/1998	3.22%	1.28%	1.86%	-0.61%	-0.87%	-0.09%	-2.22%	1.08%	-0.47%	-0.32%	0.19%
9/22/1998	3.26%	2.15%	1.68%	1.76%	-0.21%	-0.16%	-0.62%	-2.06%	-1.46%	0.16%	0.42%
9/23/1998	4.24%	2.16%	0.78%	-1.66%	-0.34%	-2.33%	-3.08%	-3.27%	-0.60%	-0.42%	-0.71%
9/24/1998	**2.54%**	**1.47%**	**3.13%**	**1.60%**	**0.63%**	**-0.38%**	**-0.06%**	**-0.27%**	**0.59%**	**1.63%**	**1.21%**
9/25/1998	2.28%	3.27%	0.16%	0.86%	0.28%	-0.90%	-0.66%	0.67%	1.16%	0.36%	0.61%
9/28/1998	4.24%	1.24%	1.81%	2.64%	0.52%	-1.30%	0.47%	-1.58%	-0.59%	0.16%	0.60%
9/29/1998	2.75%	1.48%	-0.07%	0.81%	-0.83%	-1.61%	-1.58%	-0.83%	-1.19%	-0.83%	-0.29%
9/30/1998	2.98%	0.41%	0.33%	-0.96%	0.01%	-1.00%	-1.78%	-0.41%	-0.10%	-0.74%	-0.33%

Table : Daily returns of Lo and MacKinlay's (1990) contrarian trading strategy applied to all U.S. common stocks (CRSP share codes 10 and 11) with share prices above $5 and less than $2,000, and market-capitalization deciles, from Monday August 3, 1998 to Friday September 30, 1998. Highlighted dates are: August 17 (default of Russian GKO bonds), August 21 (LTCM loses $550MM in one day), September 3 (first LTCM letter to investors regarding their losses), and September 24 (news about the bailout by the consortium).

Position of hedge funds in financial system



Source: Lysandrou (2011)

However, more critical studies argued that hedge funds might of not directly caused the crisis but if it had not been for hedge funds' intermediary position (as shown in the above diagram) between investors seeking high returns and banks creating high yielding securities, the supply of these securities would not have reached levels that were decisive in causing the near collapse of the financial system. The argument is that the huge market for these subprime backed securities would not have existed since wealthy individual investors do not have the requisite know-how to participate in this market, while risk controls limited institutional investors from having an unrestricted participation. So the bottom line is that if you remove hedge funds from the equation, a crisis could have still occurred but not in the form of a subprime crisis (Lysandrou, 2011).

Moreover, the same author argued that hedge funds contributed to the crisis by creating a market for CDOs with other large prime brokers, such as Goldman Sachs. Lysandrou (2011) shows that hedge funds found it increasingly harder to generate high returns in the period after the dot.com bubble because of low interest rates and higher competition from other hedge funds. The evidence is there since by the end of 2006, half of the total stocks of CDOs were held by hedge funds (ibid). Therefore, hedge funds in fact severely fueled a strong demand for CDOs towards brokers, who in turn increased the amount of subprime loans that could be packaged into CDOs. Eisinger and Bernstein (2010)

also argued that certain hedge funds during the crisis cooperated with investment banks to design more CDOs, which they then bet on to collapse using credit default swaps (CDS).

In addition, the recent financial crisis of 2008 has called into question the view that hedge funds are really hedged, and that diversification across hedge fund styles in beneficial. The 2008 financial crisis has significantly reduced returns to all hedge fund strategies, leaving no safe place for investors. During this crisis period, all hedge fund strategies performed poorly (Billio, Getmansky & Pelizzon, 2010).

Another very important aspect of hedge funds, which needs to be highlighted and has become a rather new debate amongst heterodox economists, is their role as key agents in the financialization[7] process. Based on the work of Paley (2007), attempts to explain how hedge funds have affected the structure and operation of financial markets and the change in the behavior of corporations. Hedge funds have been recognized as market leaders where they are able to unilaterally influence asset prices through their high leverage strategy and ability to concentrate capital in just a few investments (Harmes, 2002). Using these unique abilities, Harmes (2002) argues that their main aim is not to satisfy material needs but solely aim to gain short term profits through risky speculation. For example, Valdez and Molyneuxn (2010) argue that a Goldman Sachs report showed that "as much as 20 percent of the huge oil price increase that year was a result of hedge fund buying". Against proponents of hedge who claim that hedge funds offer liquidity to the market (as explained in parts of this paper), a 2011 UNCTAD report argued that "financialization has strongly affected the functioning of commodity markets. Due to the increased participation of financial players in those markets, the nature of information that drives commodity price formation has changed. Contrary to the assumptions of the efficient market hypothesis, the majority of market participants do not base their trading decisions purely on the

[7] Epstein's definition of "financialization refers to the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operation of the economy and its governing institutions, both at the national and international level (Epstein, 2001: 1). It should be noted that this concept has been brought to academic attention by heterodox economists that use this concept to explain how "financialization has transformed how economic actors (households, workers, firms and financial institutions) perceive of themselves, what goals they pursue and what constraints they face" (Stockhammer, 2012: 40).

fundamentals of supply and demand; they also consider aspects which are related to other markets or to portfolio diversification. This introduces spurious price signals to the market" (UNCTAD, 2011, p.55).

5. Regulatory issues

US regulatory framework

Hedge funds in the United States were traditionally under- regulated as they were exempted from the Securities Act of 1933 (which regulates public offerings), the Securities Exchange Act of 1934 (which imposes disclosure on public companies), the Investment Company Act of 1940 (which regulates mutual funds) and the Investment Advisors Act of 1940 (which regulates investment advisers). However, they were held accountable to the Commodity Futures Trading Commission (CFTC), state level securities laws, anti-fraud provisions, anti-laundering requirements and other legal considerations (Ferran, 2011).

Exemption to Securities Act of 1933

This Act aimed to provide full informational disclosure to the public from firms that seek to obtain capital from financial markets, while Section 5 of this Act mandates that securities must be registered with the Securities and Exchange Committee (SEC) before they are sold. Hedge funds are exempt from this Act as they rely on Section 4(2), which exempts *private* offerings, and Rule 506, which exempts hedge funds on the basis that the issuer has no more than 35 purchases who are not "accredited investors"[8], and do not advertise publicly. Since hedge funds are created through private offerings, sell mainly to accredited investors

[8] "Accredited investors" is defined as an individuals who have a net worth above $1,000,000, or have income above $200,000 in the last two years; or are directors, officers or general partners of the hedge fund or its general partner; and [(ii)] certain institutional investors, including banks; savings and loan associations; registered brokers, dealers and investment companies; licensed small business investment companies; corporations; partnerships; limited liability companies and business trusts with more than $5,000,000 in assets (Sami, 2009).

and do not exceed the 35 limit for non-accredited investors nor they advertise publicly, they are exempt from registering with SEC (Coffee et al, 2007).

Exemption to Securities Exchange Act 1934

Under this Act any person engaged in the business of buying and selling securities is required to register with SEC. Moreover, Section 12(g) of this Act requires that a dealer (in this case the hedge fund) whose assets are held by more than 500 people and has assets of more than $1 million has to register. Hedge funds however, avoid this Act by having less than 499 investors in each fund and hence, are not required to register with SEC (Sami, 2009).

Exemption to Investors Act 1940

Under this Act's mandates, hedge funds are not recognised as investment companies and are exempt from registration and from the provisions that would require regulation (Gibson, 2000). Hedge funds achieve this by resorting to one of two exemptions:

- Section 3(c) (1) states that issuers with no more than 100 owners are not recognised as investment companies, and so many hedge funds limit themselves to 99 or less owners.
- Section 3(c) (7) states that a fund that limits its sales only to "qualified investors" as an individual who owns more than $5 million in investments; a family held business that owns more than $5 million in investments; or any person or business that has discretion of over $25 million in investments. The reasoning behind this exemption is that these "smart investors" are not in need of protection because they have the knowledge to understand the risks and/or have the financial means to withstand a loss from an investment.

Exemption to Investment Advisers 1940

This act requires investment advisers to register with SEC, so that investment advisers' conduct and practices are regulated and their information readily available to investors. However, hedge fund advisors avoid this Act by relying on Section 203(b) (3), which exempts advisors who have fewer than 15 clients in the past 12 months and who do not hold themselves out to the public as an investment adviser. So, as long as a hedge fund does not have more than 14 clients in the last year and does not consider itself as an investment adviser, it is exempt to registration to SEC (Sami, 2009).

US regulators did not pay much attention to hedge funds until the near bankruptcy of LTCM in 1998. However even then, when the President's Working Group paper (1999) identified the 'systemic risk' high leveraged hedge funds could place in financial markets as LTCM showcased, the paper ultimately recommended not to regulate hedge funds. Nonetheless, a 2003 staff report by SEC aimed again at reviewing the operations, strategies of hedge funds, after the rapid growth of hedge funds in the early 2000s, recommended to pass a new rule that would register hedge fund advisers with SEC as investment advisers. This recommendation was in fact adopted by SEC and went into effect in 2006 however; it lasted only 6 months after the federal Court of Appeals for the D.C. Circuit ruled that SEC's new hedge fund rule was "arbitrary" and in effect reinstated the earlier Investment Advisers Act (Sami, 2009).

In the aftermath of the 2007/08 economic crisis, a movement arose toward more financial regulation. The main aim was to allow regulatory agencies to access information needed to determine whether an investment firm may potentially pose systemic risk in the event of a bankruptcy. The Dodd-Frank Act in 2010, considered one of the greatest changes in the American financial regulatory system, was employed to eliminate the exemptions that hedge funds, and other investment firms, used to avoid registration with the SEC, allowing regulators to access the required information they needed. Specifically, the Dodd-Frank Act requires the registration of private funds, where private funds are defined as those funds that would be investment companies under the Investment Company Act of 1940 but are not because of their use of exemptions under Section 3(c)(1) and 3(c)(7).

Moreover, private funds would be required to keep records and reports with SEC, which would be available to other regulators. These records need to include: assets under management, amount of leverage, trading positions, type of assets held and any other information deemed necessary by SEC to assess the funds systemic risk. In addition, the Volcker Rule under the Dodd-Frank Act restricts a bank to sponsor or take ownership interest in the hedge fund if the investment is more than 3% of the bank's Tier 1 capital or the bank's interest amounts to more than 3% of the total ownership (Shidlo, 2012).

Investment funds in the EU are classified into two categories:

1. Undertakings for Collective Investment in Transferable Securities (UCITS): Investment funds that meet and follow the requirement set out by the UCITS Directive and have the authority to sell to the retail market.
2. Non-UCITS: Includes hedge funds, private equity, real estate funds and more, and are regarded to involve risky investments and as such, are not authorised to sell to retail investors. Only professional and institutional investors have access to these funds.

On the whole, hedge funds regulation in the EU takes place on a national level and varies from one country to the next. However, after the 2007/08 financial crisis a number of new regulations were put into place to regulate hedge fund investment strategies. For example, naked credit default swaps related to sovereign debt were banned and excessive shorting of bonds and shares were curbed. Moreover, the EU Commission implemented the Financial Transaction Tax (FTT) set at 0.1% for shares, bonds and 0.001% for derivatives (Shidlo, 2012); this however, is not implemented in all member states. More recently, the Alternative Investment Fund Managers Directive (AIFMD) put into force in 2013, regulates "alternative investment" fund managers indirectly and requires hedge fund managers to a number of new far reaching regulations that limit their investment strategies and increase their transparency and accountability (Ferran, 2011). After New York, London is the next biggest centre for hedge fund management and by far the leader in Europe; in 2009, this sector accounted for 21% of global hedge fund assets and 76% of European assets,

amounting to $382 million (International Financial Services London, 2010). The general regulatory framework differs from the American rules-based approach as the main regulatory institution, the Financial Services Authority, follows a principle based perspective. As such, the FSA prefers to base their regulatory control in the ways hedge funds generate risk through their investment strategies rather than through a strict legal structure (Tiffith, 2007). As a result, hedge funds are discouraged from finding ways to evade the legal structure. Therefore, the FSA oversees any fund that is following a typical hedge fund investment strategy regardless of whether they operate within a legal structure. Specifically, any investment fund in the UK has to follow the eleven "Principles for Business" of the FSA Handbook of Rules and Guidance. Following this, the Hedge Fund Working Group was created to provide guidance to the hedge industry on how these eleven principles need to be enacted (Rivierre, 2011). In practice, the FSA evaluates the risk presented by hedge funds using periodic risk assessments in a process called ARROW II, which examines different aspects such as governance, financial reports or management (Cornish, 2009).

More recently, regulations are being considered in Europe for hedge fund practices which involved shorting major companies with very large funds, by using apparently unrelated offshore companies based in tax heavens, hence fully avoiding any scrutiny. This case reveals that regulators are almost always a step behind, and often step in once a problem such as the above manifests itself.

7. *Concluding Remarks*

With the few exceptions discussed above, extant approaches to the role, impact and regulation of hedge funds tend to be quite microeconomic/finance-based and to ignore wider political economy issues and concerns. Provided that hedge funds operate under conditions of competition and are subject to comparable regulatory oversight to other sectors and activities, and perform their stated roles, they can play an important positive

role in addressing market and also government failures. There are however doubts as to whether the above is the case and indeed in built incentive structures and wider 'conflicts of interest' that help explain such divergences. We have already discussed incentives to bandwagon rather than correct mispriced assets, and practices where voting and short selling coincide, hence in effect helping to bring about the desired outcomes. The more recent cases of anonymised shorting by vehicles under the control of well known hedge funds highlights the ability of such players to avoid the scrutiny that other investors face. Practices such as the above would typically invite the wrath of anti-trust policies in both sides of the Atlantic. Yet finance and hedge funds in particular seem to be able to get away with actions that in manufacturing for example would be seen as restrictive ones.
Assuming that hedge funds have an important positive role to play, it should be presumed that competition will help them do so more effectively, hence rewarding the more efficient ones as in every other sector. Yet regulatory bodies seem to be reticent in making these points explicit, that is that regulation is needed to help not just to constraint healthy activities.

Perhaps more important are the wider political economy issues posed by the importance of hedge funds. These relate to concentration and solidification of power structures that can impede mobility, enhance distributional inequities and help lead to regulatory capture, which in turn help maintain such structures. In this context the result is not simply too big, or too systemic, to fail, but also too powerful to regulate.
Regulation of hedge funds in this context, should not be limited to mitigating conflicts of interest, systemic risks and other potentially restrictive practices discussed, but should also try to address some of the underlying causes of the phenomena, not least the increasing might of a handful of interconnected individuals who often transcend sectors, and the declining role of the 'third sector' (or polity), the middle classes and indeed the new generations. We address some of these issues in other parts of this project, notably in WP6 and WP12. For now suffices to note that in precisely the same way that sometimes actions by hedge funds seem to be international, in regulation too international cooperation can be

of the essence. Importantly this is not in order to punish success but in order to ensure a level playing field that does not turn success into a self-fulfilling prophecy.

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THE ABSTRACT OF THE PROJECT IS:

The research programme will integrate diverse levels, methods and disciplinary traditions with the aim of developing a comprehensive policy agenda for changing the role of the financial system to help achieve a future which is sustainable in environmental, social and economic terms. The programme involves an integrated and balanced consortium involving partners from 14 countries that has unsurpassed experience of deploying diverse perspectives both within economics and across disciplines inclusive of economics. The programme is distinctively pluralistic, and aims to forge alliances across the social sciences, so as to understand how finance can better serve economic, social and environmental needs. The central issues addressed are the ways in which the growth and performance of economies in the last 30 years have been dependent on the characteristics of the processes of financialisation; how has financialisation impacted on the achievement of specific economic, social, and environmental objectives?; the nature of the relationship between financialisation and the sustainability of the financial system, economic development and the environment?; the lessons to be drawn from the crisis about the nature and impacts of financialisation? ; what are the requisites of a financial system able to support a process of sustainable development, broadly conceived?'

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