

Would Hedge Fund Regulation Mitigate Systemic Risk? Direct vs. Indirect Regulation Approach

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Abstract

This paper presents the direct vs. indirect debate of hedge fund regulation and attempts to find which approach is better able to mitigate systemic risk that the industry poses to the economy. The waves of regulatory reforms and enhanced concern regarding investors protection have recently brought attention of the regulators to hedge fund regulation issue. But, many academics fear that direct intervention may limit industry growth and benefit. Addressing these concerns, this paper observes the systemic importance of hedge fund industry based on four criteria's [size, leverage, interconnectedness to large complex financial institutions (LCFIs) and herding] and concludes that although this industry is still small in terms of size and leverage, their interconnectivity with LCFIs and potential herding make them systemically significant. Hence, regulation of hedge fund is necessary to restrict the transmission of systemic events. Analysing direct and indirect approaches, this paper suggests that the counterparties are best positioned to implement this regulatory change.

Keywords: hedge fund, regulation, systemic risk

1. Introduction

Over the past decade hedge funds popularity has increased impressively and attracted a number of investors due to the unparalleled returns they yield. Indicating their rapid growth, a recent paper by Nabilou (2014) states that the value of assets under the management (AUM) of hedge funds has grown from \$50 billion in 1990 to approximately \$2.25 trillion in 2012. Following the global financial crisis of 2008, they gain the attention of regulators based on the concern that although they were not the reason of the crisis, they reinforced the overall downward spiral during the period as argued by Dixon et al. (2012). Since the prevailing legislative regimes do not sufficiently cover the threats arising from their operations, it is the time we looked for regulatory instruments that can best address these risks with the least hindrance to the growth and benefits hedge funds offer to the financial markets.

The rationale behind the growing demand to regulate hedge funds is twofold. First, the concern that the size and leverage level of hedge funds might make them systemically important and generate chain reactions leading to a possible collapse of the financial system. Second, the transparency deficit and informational asymmetries relating to hedge funds might endanger investors' protection. Hence, throughout the regulation process, it is important to maintain a balance between leaving hedge funds unhampered in one hand to keep the unique and innovative strategies they apply, and imposing regulation at the same time so that the protection of investors, as well as, economy is ensured against systemic risks.

The objective of this paper is to find whether regulation of hedge fund would mitigate the systemic threat that they pose to the economy and which form of regulation serves best in this regard; imposing restrictions directly on the funds (direct approach) or regulating their creditors or counterparties (indirect approach). To address the optimal strategy, this paper attempts to assess to what extent hedge funds are systemically important or can be a reason of financial instability focusing on four key areas: hedge fund size, leverage level, interconnectedness to LCFIs and potential herding behaviour. Drawing lessons from major hedge fund collapses, the possible

consequences of adopting direct regulation and indirect regulation have been reviewed separately.

The remainder of this paper is organized as follows. First, a general overview of hedge funds is presented discussing their distinctive characteristics in comparison to other pooled investment funds to support the logic behind their differential treatment. The second section analyzes the major factors that have the potential to make hedge funds systemically relevant. The third section introduces direct regulation and indirect regulation approaches to the regulation of hedge fund and presents the arguments in favour of and against each of the approaches. Finally, section four highlights the findings of the discussion.

2. Background

There was no statutory or legal definition of hedge funds particularly prior to the post-crisis regulatory reforms. Nabilou (2014) describes hedge fund as a privately pooled investment vehicle managed by professionals with a particular mechanism for the fee and not offered to the public at large. Through investing in a variety of assets e.g., securities, futures, options, bonds and currencies, and applying innovative trading strategies such funds attempt to produce unparalleled returns based on the skill of the managers regardless of the market movements. Typically, investors of hedge funds are 'accredited investors or 'qualified purchasers' which may include banks, insurance companies, endowments, pension funds, funds of hedge funds and high net worth individuals who are capable of assessing risk associated with the funds and are presumed to make investments only after extensive due diligence. Investment strategies generally encompass the use of leverage, swaps, short selling, hedging through long and short positions, arbitrage, structured products, options and derivatives in addition to traditional techniques. In terms of investment activities, such funds are minimally regulated.

In response to the global financial crisis, a number of legislative proposals have been made since 2009 to enhance regulatory supervision over systemically important financial instruments and institutions which include the hedge funds. The United States (U.S.) is the largest jurisdiction with the most diverse market covering more than 60% of the global hedge fund industry (Preqin, 2016). Given the span of the U.S. hedge fund industry, it is assumed that any regulatory amendment in that jurisdiction would have a substantial impact on the global hedge fund industry. Hence, the regulatory discussion of this paper is only limited to the U.S. territory.

Hedge funds in the U.S. meet the definition of an 'investment advisor under the 'The Investment Advisers Act of 1940' (IAA). Traditionally, they had been operated under the 'Private Advisor Exemption' of section 203(b) of the IAA based on which they enjoyed their unregulated status. The rule under this section, also known as 'safe harbor rules', allowed hedge funds to get an exemption from the registration requirement with the Securities and Exchange Commission (SEC). However, intending to enhance financial system transparency and accountability, on July 2010, the U.S. Congress passed the 'Dodd-Frank Wall Street Reform and Consumer Protection Act' (known as 'Dodd-Frank Act (2010)').

Haight (2014) highlights few major points while discussing the regulatory changes that Dodd-Frank Act (2010) brings about for the U.S. hedge fund industry. First, the hedge funds domiciled in the U.S. are not yet regulated directly, rather regulated through the registration of investment advisor subject to the fulfilment of certain conditions. Title IV of the act on the 'Regulation of Advisers to Hedge Funds and Others' amends the IAA by imposing registration and reporting requirement with the SEC for hedge fund advisers who have 'fewer than fifteen clients'. This modification effectively requires the majority of the advisers to register and therefore, helps bring the industry within the governing landscape of law and reduces the vagueness of its scope. Second, this registration requirement subjects hedge funds to an AUM threshold. According to the act, the private fund advisers who meet the above-mentioned client threshold and have AUM between \$25million and \$100million requires to be registered with the state, if the AUM is above \$100million then the registration has to be with the SEC. Furthermore, advisers with AUM exceeding \$150million must register with the SEC irrespective of the number of clients they have. Due to such reform, the majority of the U.S. hedge funds at present are registered with the SEC. Other significant securities law statutes in the U.S. relating to hedge funds include 'The Securities Act of 1933', the Securities Exchange Act of 1934, 'The Securities Exchange Act of 1934' and 'The Investment Company Act of 1940'.

To develop a better understanding of hedge funds, it is crucial to explore their individual characteristics along with the side that how they are similar to or different from other pooled investment funds and why they should be treated differently when it comes to imposing regulative restrictions. From a functional perspective, hedge funds, mutual funds, and private equity funds are similar on the ground that all of them are collective investment schemes created to trade securities on investors' behalf. However, the major distinguishing feature of hedge funds is the limited regulatory requirements on their investment activities. Kim (2014) argues that in comparison to other financial entities hedge funds escape a number of regulatory restrictions such as periodic reporting,

valuation, liquidity policy, conflict of interest or leverage requirements. This differential treatment is justified on the logic that their investors are merely limited to accredited investors or high-net-worth individuals who are qualified enough to protect themselves. Private equity funds are similar to hedge funds from this aspect as they are also lightly regulated and offer their securities on a limited basis only to the sophisticated investors. However, mutual funds are bound to fulfil the regulatory requirements and are available for trading to the public at large.

From the legal perspective, hedge funds are limited liability partnership or limited liability company. This status shields the investors from losing beyond what they invested, allows them to avoid complex corporate regulation (e.g., corporate governance) and lets them enjoy special tax treatment, i.e., skip the double taxation onshore or offshore. While analyzing the organizational structure of hedge funds, Lhabitant (2006) observes that their legal structure mainly depends on the country in which they are registered. Denoting funds that serve the residents of the fund's country, i.e., the U.S. 'onshore' and otherwise 'offshore', he points out that in order to maximize benefits, onshore hedge funds are organized completely differently from offshore funds. Further, Christofi et al. (2013) shed light on the fact that offshore funds are not taxable under the investor's home jurisdiction, have no obligation to report and therefore allow investors to minimize tax liabilities. This is why a number of the hedge funds are based offshore in countries where the regulative restriction is relatively light such as the Cayman Island where there are no direct taxes. King and Maier (2009) report that in 2006, about 55% of hedge funds operated offshore to take advantages of these benefits.

Applying a performance based fee structure is another key characteristic of hedge funds. In order to align the economic interests of investors and managers, a 15% to 20% performance fee is paid on the capital gain in addition to the management fee of 1% to 2% of the net asset value of the fund portfolio. Although a large number of funds follow this '2 to 20 rule', it may differ among funds or between countries.

Another visible characteristic of hedge funds as identified by Minamihashi and Wakamori (2013) is that they often restrict investors redemption rights by imposing lockup, redemption frequency and redemption notice period rules. During lock up period investors are not allowed to withdraw their capital and after the passage of that period, capital can be drawn at redemption frequency with an advanced notice known as the notice period. Therefore, such investments are considered relatively less liquid than that of the mutual funds which guarantee redemption right to their investors. Concerning liquidity, hedge funds investments are better than that of in private equity as the latter have lock-up period of 2 years or longer.

3. Are Hedge Funds Systemically Important?

The study of financial market instability revolves around the concept of systemic risk as often it is thought that it may lead to financial crisis. Simply, systemic risk is the chain reactions of failures initiated by the systemic events. Due to the globalization of financial services, the financial organizations as well as the national economies all over the world are intertwined. Given this interconnectivity, any market failures or shock might severely impair the global economic system regardless of where the event originated. These potential events are collectively known as systemic risk. Theoretically, hedge funds can be categorized as SIFI if their actions or failures augment financial shocks and afterward lead to negative economic consequences being the source of systemic risk. Abraham (2011) attempts to illustrate what might happen in case a significantly large hedge fund collapses. Primarily, the collapse of the fund would force the fund advisor to sell its' portfolio assets as soon as possible, even at fire-sale prices. This will trigger a sharp decrease in the prices making more asset holders to sell and therefore, leading to a subsequent price falls. Eventually, the price decline gets so huge that the liquidity dries up leaving no buyers in the market. Further, the interconnectivity of the failed hedge fund with LCFIs causes revenue declines and losses to their counterparties and reduces their capacity to lend. Since these counterparties are the supplier of liquidity to the hedge fund sector and are interconnected with other financial institutions, their failures would initiate negative ripple effect on other financial institutions in the world. Moreover, if the failed hedge funds were highly leveraged, the extent of the losses would be magnified several times, enhancing the pressure to sell off assets and thus fueling even severe crisis of market liquidity. The failure of Long-Term Capital Management ('LTCM'), one of the largest collapse in the history of hedge fund, is an example of such a situation. With the primary equity of \$5 billion, LTCM borrowed about \$125 billion stretching the leverage ratio to more than 20-to-1 which was unusually high. Further, they entered into derivative contracts of above \$1 billion. LTCM's plan to make a huge amount of gain reversed when there was a breakdown in Asian market affecting all other emerging countries. Within a short time, the liquidity in the market shrunk leaving no buyers for bonds. As a result, the yield on high-risk bonds plunged. This situation was just the opposite of what LTCM expected. By September 1998, LTCM's equity declined, and they made a loss of above \$4 billion (Edwards, 1999). This incident attracted regulators attention highlighting hedge funds as a source of direct or indirect systemic risk.

Thus, there are several factors that decide to what extent can hedge funds be a reason of systemic externalities. This paper mainly focuses on four factors: size, leverage level, interconnectedness, and herding behaviour, to judge the systemic importance. Nevertheless, it is important to note that due to the voluntary disclosure system there is a lack of reliable public sources of data relating to hedge funds. Measuring its' size is quite tricky because of the non-existence of any clear-cut and universally accepted definition of hedge funds. This shortcoming about the data equally applies in estimating the level of leverage of the industry. However, Danielsson et al. (2005) argue that, even if information relating to hedge fund leverage were available, it would be of extremely limited value due to the volatility of the assets prices and financial conditions. Hence, considering the biases in the prevailing information and complexities in the measurement of the determinants, this paper is confined only to the review of the existing literature.

3.1 Hedge Fund Size

The argument of hedge fund systemic relevance begins from their rapid growth in size and concentration. To be an SIFI, the size of the hedge fund industry relative to the market has to be sufficiently large. Based on data obtained from academic studies, it is observed that prior to 1990s, the growth in hedge funds' size and the number was overlooked. Nevertheless, since the 1990s, the industry has seen a phenomenal growth. The Hedge Fund Research (2008) reveals that in 1990 there were only 530 funds managing assets worth about \$39 billion which soared up to above 10,000 funds with AUM of \$1.87 trillion in 2007 (Nabilou, 2014). Continuing this rapid growth, as observed by Nabilou (2014), the AUM of hedge fund industry went up from \$2.25 trillion in 2012 to \$2.63 trillion in 2013. A recent study by Preqin (2016) shows that as of November 2015, the size of AUM of this industry stands to nearly \$3.2 trillion increasing nearly by \$178 billion from the previous year AUM. King and Maier (2009) state that, the increasing AUM of the industry represents a compound annual growth of 19 percent. Figure 1. captures the growth of the AUM of hedge fund industry over the last 15 years starting from the year 2000. Indeed, except for the slight dip in 2008 financial crisis, the industry has experienced a continuous growth throughout the period.

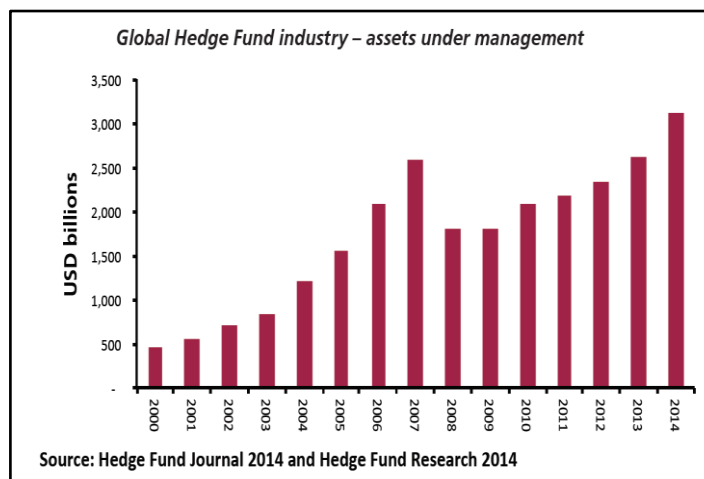


Figure 1. Growth of AUM of Hedge Fund Industry during 2000-2014

Source: Financial Conduct Authority (2015), p-11.

Further, pointing out the geographical concentration of the funds, Preqin (2016) shows that in 2015 among 6000 fund managers operating the entire sector, about 60% are based in the U.S. whereas only 19% are from Europe and the rest from outside. In addition, it is observed that above \$2 trillion of the assets are managed by the U.S. hedge fund managers, approximately \$685 billion by European managers, and \$198 billion in Asia and rest of the world. (Source: Preqin (2016), p-37).

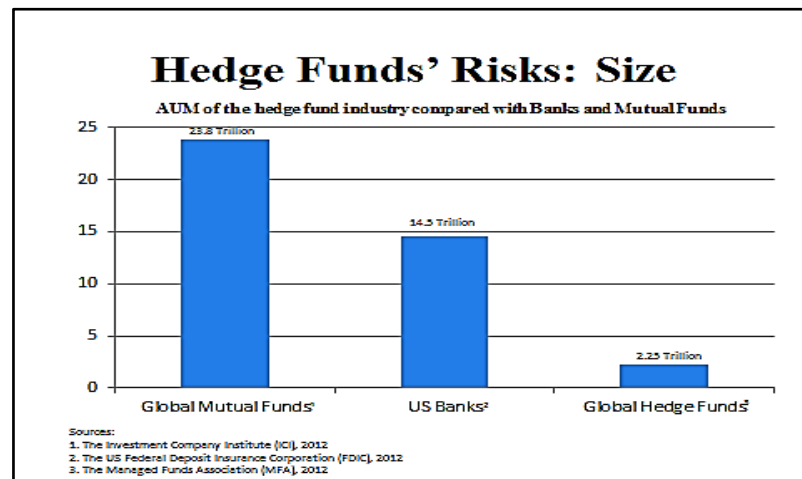


Figure 2. AUM of the hedge fund industry compared with Banks and Mutual Funds

Source: Nabilou (2014), p-93.

In spite of the explosive growth of the hedge fund industry, they are still far from being systemically significant based on their size when they are compared to the other mainstream financial institutions. Figure 2. compares the size of the AUM of the hedge fund industry worldwide to that of the banking and mutual fund industry. As observed in figure 2., in 2012, the collective AUM of the hedge funds is \$2.25 trillion. On that period, the AUM of the U.S. banks is nearly seven times of that of hedge funds standing at \$14.5 trillion. Moreover, the AUM of the worldwide mutual funds is the highest around \$23.8 trillion which is about twelve times as compared to that of hedge funds. Therefore, based on sizes, hedge funds are unlikely to become systemically important.

3.2 Hedge Fund Leverage

The level of leverage often decides how much such funds are interconnected to LCFIs and whether they fall under the category of SIFI. Nicholas (2000) argues that excessive high leverage by hedge funds enhances the probability of default and may put the financial system at risk or even may lead to crisis. Following the LTCM collapse, such concerns were magnified. In fact, it was reported by Rubin et al. (1999) that one of the major contributing factors to LTCM collapse was the extreme debts by hedge funds. However, King and Maier (2009) argue that leverage by itself does not lead a hedge fund to collapse, but it is a factor that accentuates other risks such as liquidity risk, market risk, and asset risk. When a firm is excessively levered, even a moderate fluctuation in price can force it to liquidate positions to meet margin calls, creating a ripple effect across markets.

There is a presumption that hedge funds are highly levered than its contemporary institutions as they are allowed to raise unlimited leverage. In practice, it is observed that this notion is not true for most of the funds. Since a number of financial market participants such as hedge fund counterparties or prime brokers, investors, managers as well as regulators are stakeholders of hedge fund's debt, they impose market-based restrictions on its level. This refrain hedge funds from employing excessive leverage. Analysis of empirical data also supports this finding. As per the study by Hennessee Group (2003), from a sample of hedge funds, about 84% use leverage less than 200% of their capital while only 2% of them use more than 500% relative to the capital. Referring to a survey by Bank of England, King and Maier (2009), note that about 20% of hedge funds had no leverage at the end of 2004, and approximately 50% of the sample funds had just less than one times of their equity. Further, observing leverage during the period 2004-2009, Ang et al. (2011) find that compared to that of banks and finance sector, the hedge fund leverage is 'fairly modest'. They also highlight that in the mid-2007 just before the financial crisis, the leverage of regulated investment banks gradually went up whereas that of the hedge funds went down. In fact, after the crisis period, the investment banks' leverage touched highest point whereas the hedge fund's was at the bottom. This has been illustrated in figure 3. in which average gross hedge fund leverage has been compared with the leverage of banks, investment banks, and the finance sector during December 2004 to October 2009.

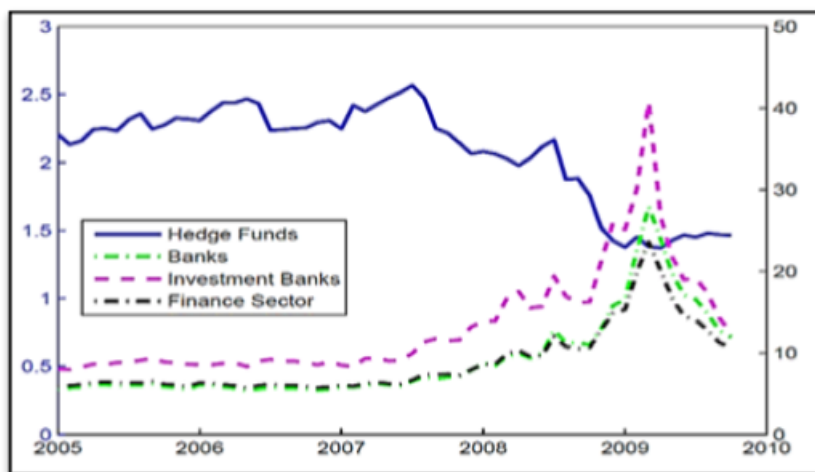


Figure 3. Hedge fund and Financial Sector Leverage (Source: Ang et al. (2011), p-55)

It is observed from figure 3. that, gross leverage of hedge funds is around 2.3 until it reaches the peak of 2.6 in the mid-2007. After that, it starts falling and continues the downward trend until March 2009 when it touches the minimum of 1.4. As estimated by Ang et al. (2011) the average gross leverage throughout the study period is 2.1. However, since 2009 hedge funds' leverage is observed to be lower than that of investment banks and banks. One of the potential reasons for such decline is the market discipline or limits imposed by stakeholders on the leverage level of hedge funds. Therefore, empirical evidence proves that the worries regarding the contribution of hedge fund leverage in financial instability is overrated, particularly, in case of small and mid-sized hedge funds, as argued by Danielsson et al. (2005), this factor is unlikely to be systemically significant.

3.3 Hedge Fund Interconnectedness

A number of literature (Danielsson et al., 2005, King and Maier, 2009 and Nabilou, 2014) argue that the reliance of hedge funds on LCFI's and the LCFI's further dependency on hedge funds can act as a significant transmission channel during the crisis period. Here, 'LCFI's' mean the largest global commercial banks and investment banks. As per King and Maier (2009), LCFI's can be connected to the hedge funds at least in three possible ways, i.e., as prime brokers, as trading counterparties, and as the owners or manager of funds. Interestingly, one LCFI can maintain all these roles at a time.

First, prime brokers are the LCFI's offering brokerage services to the hedge funds. They include the investment banks and security firms that help hedge funds manage risk, monitor portfolios, maintain liquidity and build their business. They charge interests or premiums on the loans approved and fees for providing services to hedge funds. Second, LCFI's are the major trading counterparties for hedge funds. That is, hedge funds are active traders in the primary and secondary markets of securities underwritten by LCFI's. Therefore, both of them often go through the similar types of risk and failure on any side can trigger systemic externalities just as occurred by bankruptcy of the Lehman Brothers in 2007. Finally, hedge funds can be directly owned and managed by LCFI's, such as JPMorgan Asset Management or may be obtained indirectly through minority stakes such as Morgan Stanley holds 19% of Lansdowne and Avenue Capital (King and Maier, 2009). Further, many LCFI's sponsor hedge funds that operate under the firm's name such as Bear Stearns. Theoretically, investors of hedge funds are supposed to bear any losses made by the fund. However, as discussed by King and Maier (2009), in reality, if an LCFI sponsors or owns a distressed hedge fund, collapse of that fund may severely damage their reputation or bring about a huge amount of loss on their balance sheet. Considering negative consequences, the LCFI may decide to inject liquidity and rescue the drowning entity. This approach was adopted by Bear Stearns and Goldman Sachs in 2007, among others. Nevertheless, such a situation means that the risk is eventually transferred to the LCFI's balance sheet.

In the opinion of Nabilou and Paccès (2015), collapse on any side of this relationship, either hedge fund or LCFI's might lead to the channeling of shocks throughout the system. However, King and Maier (2009) point out that such risks can be minimized by LCFI's through imposing adequate margin and collateral requirements on hedge funds. This is possible through regulating the counterparties. In the absence of regulation, they may be involved in an extensive competition of enticing hedge funds through favourable conditions.

3.4 Hedge Fund Herd Behaviour

Analysis of empirical studies suggest that although the probability of single hedge fund posing a systemic threat is very little, the overall collective behaviour accompanied by the financial bubbles can potentially be systemic

and might magnify the potential crisis. Herding occurs when hedge funds mimic other funds even though having their own separate trading strategies. Such behaviour may be due to the reputation of a certain institution, or the belief of a number of fund managers that a particular institution has better discretion in stock selection or holds inside information. Nevertheless, in many cases managers may naturally take similar positions too.

Given the fact that hedge funds can adopt a variety of investment strategies without being restricted by regulatory requirements and are quite opaque in terms of their activities, the possibility of hedge fund herding is unlikely. However, many large funds disclose some of their information to their stakeholders, and there is also the chance of information leakage. Another factor that encourages hedge funds managers to herd as identified by Brown and Goetzmann (2003) is that by mimicking the peer activities they may free-ride on the strategies of other advisors. Particularly during financial downturn, they have more incentive to herd as in case, everybody loses money their poor performance might be excused. Such behaviour can magnify hedge fund contagion leading the risks to spill over to other financial sectors as well as to the real economy. Analysis of literature on hedge fund herding suggests mixed opinion. In this regard, two widely discussed instances are the European Exchange Rate Mechanism (ERM) crisis in 1992, and the Asian currency crisis in 1997. Fung and Hsieh (2000) find clues of herding during the ERM crisis but fails to provide any strong evidence for the Asian currency crisis. In fact, Danielsson et al. (2005) state that during Asian currency crisis, hedge funds played an important role providing liquidity and balancing dislocation of asset prices. Another study by Boyson (2010) suggests that herding behaviour varies among managers based on the levels of their experience. That is, higher the experience of the managers greater the possibility of herding. Further, King and Maier (2009) observe very little evidence of herding during the financial crisis of 2008.

Based on the above discussion, it can be said that there are literatures that find historical evidence of herding by hedge fund managers, but none of them accuse strongly such behaviour to be the only reason of triggering a collapse. However, regulators have already shown concern for this area and plan to incorporate provisions to minimize its possible impact on the system.

4. Regulation of Hedge Funds to Mitigate Systemic Risk: Direct Vs Indirect Approach

It is important to note that, although the possibility of systemic risk cannot be eradicated, the severity of their contagious effect can be reduced substantially. Hence, the quest for the appropriate regulatory regime for hedge funds must be carried out to settle on a system that has the potential to restrict the transmission of shock originated by hedge fund industry. Various commentators have expressed their opinion regarding the choice of the regulatory approach, but the regulators worldwide have not yet come up with a unique view. Given the hedge fund scandals in the past decade, a number of countries (e.g., Germany) are in the side of direct regulation while the major jurisdictions such as the U.S. and the U.K. supports indirect approach (Ladi, 2008). As per the U.S. policymakers, strengthening market discipline through counterparty financial institutions rather than enforcing direct regulatory intervention would be a more cost-efficient way to mitigate the systemic risk and to prohibit the chain reaction of LTCM-like events. Kim (2014) identifies that one of the reason for this choice by the U.S and the U.K. is the thought that it is the aim of regulation to protect unsophisticated and unaccredited investors, not the qualified ones. Since hedge funds are not publicly available and are only offered to qualified investors, there is no strong logic behind intervening hedge fund operations. Another reason as suggested by Nabilou and Paccas (2015) is that these jurisdictions fear that the stricter domestic rules might make hedge funds shift their business to other markets (also known as regulatory arbitrage) or offshore.

At present, there are more than 10,000 hedge funds around the globe controlling above \$3.2 trillion assets. Yet, examples of failure are very few. Even though some incidents did happen, but, as stated by Kim (2014), they were not big enough to bring about global financial catastrophe. According to Fung and Hsieh (2000), the probability of hedge funds initiating a systemic event is quite low as a major proportion of the losses are directly absorbed by its wealthy investors. The collapse of Amaranth Advisors, LLC in the year 2006, another largest hedge-fund debacle following the LTCM, is a case of such situation. Amaranth Advisors suffered a loss of almost \$6.6 billion (Till, 2007) in less than two weeks due to its highly levered natural gas spread strategy. This amount of loss is almost 1.5 times of that of observed in the LTCM case. But, the destabilizing effect of this event was negligible as it happened in a comparatively small and isolated market (Fung and Hsieh, 2000) and sufficient collateral and margins were held by its counterparties.

The analysis of two biggest hedge fund collapse LTCM and Amaranth show the potential impacts hedge funds have on the financial market. It is important to note that, both of the failures were big, but not as big as to expose the global economy to system-wide breakdown. Sharing the similar thought, Kim (2014) argues that neither of these events provides strong evidence in favour of regulating hedge funds. Instead, they demonstrate market's

ability to self-regulate poorly managed hedge funds and that the hedge funds regulation is unnecessary. He further points out that even if the funds had disclosed their position, it would not prevent the downfall. Thus, Amaranth Advisors is an example that proves that, it is not hedge funds which are needed to be regulated. Rather, it is the counterparties and creditors who directly deals with the funds are required to be regulated.

In the words of Nabilou and Paccès (2015), direct regulation is a rules-based regulatory measure that imposes regulatory requirements directly to the hedge fund's structure, activities, and mechanism. King and Maier (2009) propose a number of measures that can be adopted to regulate hedge funds directly. The first requirement might include mandatory registration of hedge fund managers. Interestingly, after the 2008 crisis, in response to the concerns of market participants, the U.S. included mandatory registration requirement for hedge fund advisers introducing Dodd-Frank Act (2010). However, King and Maier (2009) note that, although such a requirement addresses concerns regarding investor protection, it fails to prevent the systemic threat. Another measure might be requiring more disclosure of hedge fund activities to their prime counterparties to remove transparency deficit. However, this may lead to the creation of free-riding problem. Besides, limitations on the size or the amount of leverage, specific policy for remuneration of advisors and liquidity maintenance, rules and requirements for valuation and so on can also be imposed under this approach.

On the contrary, indirect regulation involves mandating hedge funds counterparties with regulatory obligations by legislative authorities which are finally transmitted to the targeted subject of regulation, i.e., hedge funds. That means this approach uses hedge fund intermediaries such as investors, creditors, and counterparties, most importantly, prime brokers and securities brokers as 'surrogate'. For instance, requiring a prime broker who provides loan to the hedge fund to maintain minimum margin requirements or setting an upper limit on leverage ratio falls under the category of indirect regulation. To deal with the problem of interconnectedness with LCFI's, the attachment of Section 619 of the Dodd-Frank Act (2010) restricting the proprietary trading and investment by banking entities on hedge funds, is a practical example of the indirect regulatory approach. Other restrictions that can be implemented on the hedge fund counterparties include their compulsory registration, monitoring of trading relations, restrictions on the qualifications, requirements on capital adequacy, policy for risk management, improved transparency and so on.

From a regulatory perspective, King and Maier (2009) state that it is more feasible to implement indirect approach since the focus is on the financial institutions that are already operating under regulatory supervision. On the other hand, supporting direct regulation Engert (2010) argues that depending merely on self-regulation is not good enough to address the systemic problems. Instead, harmonization of government intervention is better able to achieve this objective. The rest of this section extends this debate on the choice of regulatory approach through the discussion of the consequences of adapting each method.

4.1 Unintended Consequences of Direct Regulation

To illustrate the possible effects of adopting direct intervention, let's assume that a new provision has been imposed that immediately affects the leverage limit hedge funds can utilize. Not being able to undertake desired investment activities, within a short period of time many hedge funds would leave the market. This would create a short-term interruption for hedge fund investors, advisors and counterparties. The long-term impact to the economy would be more serious as the economic values that they offer to the financial market would disappear along with the funds themselves (Abraham, 2011). Analysing the future implications, a number of literature argue against the imposition of direct regulation, such as Nabilou and Paccès (2015), King and Maier (2009), Ladi (2008) and Dardanelli (2011). They point out many unintended consequences of this approach which may lead the system towards more complex situations.

4.2 Moral Hazard

Hedge funds are only available to sophisticated qualified investors who are expected to carry out due diligence while making investments and be able to mandate hedge funds to maintain certain codes of conduct regarding leverage, liquidity and disclosure. However, Danielsson et al. (2005) point out that direct regulation of hedge funds might create an illusion of safety among their investors and counterparties and discourage them to conduct due diligence. This change in the attitude towards risk due to the false sense of protection in response to the regulation of hedge funds is described by Crockett (2007) as 'moral hazard'. Thus, imposition of direct supervision may weaken the alertness of counterparties or may encourage them to take on excessive high risk. Moreover, such regulation also may make investors believe that if trading activities get too complex or hazardous, the regulative authority would warn them. Such a misleading illusion results in a suboptimal investment decision by hedge fund investors and enhances systemic risk instead of reducing it.

4.2.1 Free Rider Problem and Liquidity Concern

The imposition of direct regulation, particularly, mandatory disclosure by hedge funds may have a threefold effect. The first shortcoming relates to the creation of free-rider problem. The free riding problem arises when some market participants do not pay for what they take advantage of. As discussed by Nabilou and Paccès (2015), disclosure of private information will allow the competitors of the disclosing firm to access the information and use them for their own sake, although the entire cost is borne by the disclosing firm. This gives rise to free-riding problem which might discourage the hedge funds to publish authentic information in the first place. And, if they are compelled to do so, the extent of the disclosure will often be suboptimal. Second, it may encourage hedge fund managers to engage in herd behaviour and fuel on the possibility of a systemic event. Third, enhanced transparency requirement may make it riskier for the fund managers to bet on the opposite side of the market. Sharing similar view King and Maier (2009) document that reduced contrarian position means reduced supply of liquidity and increased volatility in asset prices which may eventually make the market less stable.

4.2.2 Non-applicability of one-size-fits-all Approach

The term hedge fund covers various categories of funds that are heterogeneous in terms of their structures, types or strategies but similar in a way that they exploit certain statutory exemptions. This heterogeneity makes it difficult to implement one-size-fits-all regulation i.e., an almost all-inclusive rule-based requirement for hedge fund industry. The utility of information disclosed by hedge funds mainly depends on what investment activities they undertake or in which strategy they concentrate on. Cole et al. (2007) find that, in practice, many firms are not comfortable with disclosing even at the cost of letting go profitable opportunities or getting favourable borrowing terms. For instance, a hedge fund that has invested a huge amount in short position might put itself in a serious situation just by revealing its position. Another problem of regulation identified by Nabilou and Paccès (2015) is the disproportionate division of cost for following the regulation. Such as, smaller hedge funds will bear higher costs to abide by the requirements than larger funds as larger funds have the advantage of economies of scale.

4.2.3 Limiting the Benefits Hedge Funds Offer

Another objection that arises against direct regulation is that it may limit the benefits hedge funds actually offer to the financial market. Their ability to raise unlimited leverage allow them to take an offsetting position in distressed markets and therefore abate and ease the impact of losses on the asset values. Nevertheless, the imposition of leverage restriction on them might weaken this beneficial contribution to the financial market stability. Further, Zingales (2009) suggests that disclosing confidential proprietary information may reduce its capacity to eliminate security mispricing or inefficiency in the market as well.

4.3 *Is Indirect Regulation More Feasible?*

Pointing out at the deficiencies of direct regulation, commentators shed light on the fact that indirect regulation of hedge funds is better placed to achieve the factors required to guard against financial instability. This approach may help regulators address their prime concern in regulating hedge funds, i.e., to strike a balance between market stability and investor protection.

4.3.1 No Moral Hazard and Less Herding

Indirect regulation is less likely to generate moral hazard. This is because, mandating hedge fund counterparties and investors is a reminder of the fact that the investors themselves are in charge of hedge fund discipline, instead of any government agency. This will prohibit the development of any false illusion or misperception in the market and motivate the counterparties to carry out due diligence with utmost care. Further, limited disclosure of proprietary information by hedge funds will minimize the possibility of herding behaviour by hedge fund managers.

4.3.2 Uses Counterparties as Surrogate Regulators and Relies on Existing Institutional Setting

One of the distinguishing features of indirect approach is the delegation of regulatory responsibility to the surrogate regulators. Using counterparties as surrogate is effective from a number of perspectives. First, hedge fund counterparties are qualified, well-empowered and wealthy prime brokers. They are larger than the hedge funds both in terms of the number of counterparties and activities in the market. They have the authority to impose conditions on lending and restrict hedge funds from undertaking excessive risky activities with the amount approved. Further, Engert (2010) argues that the high concentration of prime brokerage industry to a few large brokers aids the collective supervision of hedge funds to make sure that the conditions imposed are observed properly. Second, investors in hedge funds are in fact equity holders and will lose their amount if the fund fails. Due to this risk exposure, they are motivated enough to oversee the hedge funds operations, activities

and positions. Therefore, the funds are structured in a way to motivate private monitoring by the related market participants. Third, hedge funds do not allow investors to redeem their investment as and when they want. As indicated by Minamihashi and Wakamori (2013), there are lock-ups, holding period or gates restricting investors to exit. Such a commitment automatically creates loyalty among investors' which encourages them to closely monitor the fund activities.

Hence, the presence of such self-motivated and qualified counterparties facilitates the effective implementation of hedge fund regulation. Moreover, another positive side of such approach as discussed by King and Maier (2009) is that it depends on the existing institutional settings and involves the use of financial entities majority of which are already under the supervision of national or international regulatory bodies.

4.3.3 Decentralization of Rules, Increased Flexibility and Efficiency

The application and enforcement of indirect regulation would result in more decentralization of regulative functions, allow more flexibility on the part of counterparties and ensure efficient allocation of credit. These benefits have simply been illustrated through an example by Nabilou and Paccès (2015). Suppose, in order to control the leverage level of hedge funds, instead of directly putting a limit on them, leverage restrictions have been imposed on prime brokers. Since prime brokers are the main source of borrowing by hedge funds, decentralization of regulative functions would give them more authority and flexibility to impose stricter standards or margin requirements prior to approving loans. In turn, many hedge funds may choose to go to the other financial institutions, such as banks who are assumed to be more professional when it comes to handling borrowers. Thus, the entire framework will promote discretion in the approval of loans, flexibility in the supervision of funds and efficiency of the allocation of credit.

4.3.4 Less Costly and More Feasible

Some other concerns regarding the imposition of new regulation include deciding who is responsible for bearing the additional cost of compliance or whether the benefits exceed the costs incurred and if there is any possibility of free riding. Nabilou and Paccès (2015) argue that the prime brokers are in best position to afford the additional costs considering their existing institutional infrastructures such as compliance offices to handle the regulatory functions and the economies of scale they enjoy for the relative bigger size. On the contrary, for hedge funds, the cost of regulatory compliance may exceed the benefits due to their relatively small size and the possibility of free riding.

4.4 Shortcomings of Indirect Regulation

The arguments presented in the previous parts of this essay demonstrate that the contribution of indirect regulation to mitigate systemic risk significantly exceed the contribution offered by direct regulation. However, mere focus on benefits of indirect regulation may make us develop a biased point of view. Hence, the next part of this paper highlights some of the potential shortcomings of adopting indirect approach by the regulators.

4.4.1 Exposure to Multiple Prime Brokers and Free Riding

In this world of globalization, in order to take operational and risk management advantages, the hedge funds have diversified their engagements both domestically and internationally. This makes it difficult for a single broker to keep track of all activities its hedge fund clients are involved in. As a result, ongoing monitoring of hedge fund strategies and raising objections whenever any irregularity occurs by counterparties is no longer possible. King and Maier (2009) supporting this argument state that this increasing involvement with diverse prime brokers and diminishing observation of hedge fund operations hamper continuous monitoring and undermine the arguments in support of indirect regulation. Further, Nabilou and Paccès (2015) argue that carrying out the due diligence process involves high cost but the benefits are non-deductible, and therefore, it may create a tendency of free-riding among prime brokers. An increasing trend of free-riding may result in an overall inefficient discipline in the market leading to further bigger problems. Nevertheless, Nabilou and Paccès (2015) further point out that, instead of ruling out the enforcement of indirect approach on account of inadequate monitoring by prime brokers, regulators must focus on how counterparties can be better motivated to perform their fiduciary duties in an appropriate manner.

4.4.2 Enhanced Ineffectiveness due to Intense Competition among Prime Brokers

Another objection raised by commentators (e.g., King and Maier, 2009) with regard to indirect regulation is that there is a high possibility that such an approach would trigger an excessive competition among prime brokers to attract large size hedge funds. Since the hedge fund industry is dominated by a few major funds and bigger fund size means higher returns by the prime brokers, they might end up loosening lending conditions, reducing margin requirements or providing more favourable terms to attract valuable hedge fund clients. Further, this

competitive spirit among prime brokers will set hedge funds in a position to bargain. Through negotiation, they can turn the terms of the contract in their favour for their own interest, which may be against the interest of the system. Relaxing the terms of collateral, borrowing or margin enhances the risk exposure of prime brokers and makes the market more vulnerable to any shock. However, this competitive pressure may lead to positive consequences too. Enhanced competition among prime brokers may improve their monitoring mechanism and help them develop the accountability of hedge funds.

4.4.3 Collateral Re-pledging and Its Effects

In case of hedge funds and prime brokers, re-pledging occurs when prime brokers reuse the collateral, posted by hedge funds against the amount they have borrowed, in other transactions with other financial institutions entirely independent of the original transaction. Although financial intermediaries consider re-pledging to be a low-cost source of financing, it has high potential to create systemic externalities. The global financial crisis of 2008 originated from withdrawals of collateral by investment banks is a real-life example that makes us realize how far reaching the impact of re-pledging can be. According to Nabilou and Paccès (2015), empowering counterparties to regulate hedge funds may create a conflict of interests for the prime brokers. There is high chance that the option to reuse of collateral will motivate the prime brokers to relax the conditions imposed to attract more hedge funds. Thus, indirect approach has the potentiality to create a conflict between the regulative function and profit making objective of prime brokers. This will expose the entire market to a systemic threat. However, after 2008 crisis, the provision of re-pledging has been revised and should not be a major concern for regulators.

5. Conclusion

This paper starts with an analysis of the systemic importance of the hedge fund industry and moves towards the debate regarding the choice of regulatory approach that has the best potential to alleviate the threat that the industry poses to the economy. In order to assess the extent to which hedge funds are systemically important and able to magnify the financial instability, four criteria's, i.e., size, leverage, interconnectivity and herding behavior have been taken as the key determinant of SIFI and are studied to judge their relevance. The empirical evidence fails to strongly support the concern that the increasing size, leverage, interconnectedness and herding of hedge funds might create severe systemic externalities. Thereafter, the paper analyses the consequences of adapting direct and indirect regulatory approaches and suggests that the counterparties and creditors are in a better place to mitigate the risk. It is argued that direct intervention may severely restrict the growth of the industry, or may make them shift the business to another market or offshore. There is also a high chance that this approach will create the problem of moral hazard or free-riding and lead the industry towards further complexity and opaqueness. Instead, regulators should consider the enforcement of regulation through closer scrutiny of intermediaries and let the industry regulate itself. This suggestion has been made looking at the relative effectiveness of the indirect approach. This approach not only allows hedge fund industry to remain free flowing but also is cost efficient and flexible. It is easier to implement as it uses the existing regulatory infrastructure to monitor and provides more incentive to the third party to keep an eye on hedge fund activities. Nevertheless, there are counterarguments on indirect approach as well. There is fear of triggering intensive competition to lure dominating funds by relaxing regulatory standards or the concern that the engagement of hedge funds with multiple counterparties will make it difficult to monitor their strategies completely. Therefore, even though this paper recommends the adoption of the indirect approach, it also points out the fact that this is not sufficient to deal with the systemic risk. However, objections on the effectiveness of this regulation do not imply that the direct intervention is the best choice. Rather, it means that there are some areas on which regulators must work on prior to considering the adoption of the indirect regulation. Further, there are arguments in support of the harmonization of both approaches as well. In fact, in 2010, the U.S. adopted the Dodd-Frank Act (2010) which actually combines both direct and indirect regulatory approaches to ensure the safety of the investors along with the functioning of the industry with the minimum potential to accelerate any systemic externality.

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