

# WHY SHOULD HEDGE FUNDS BE REGULATED AT THE INTERNATIONAL LEVEL AS WELL AS THE NATIONAL LEVEL?

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## I INTRODUCTION

Over the past few decades, the worldwide hedge fund industry has flourished at an astonishing pace.<sup>1</sup> In 2007, over 10,000 hedge funds were operating in global markets, with a total of US\$2.15 trillion in investor assets under management (AUM).<sup>2</sup> Although the industry suffered a downturn in 2008 as a result of the global financial crisis (GFC), its recovery has proceeded smoothly, and the industry has remained massive. The total AUM in the industry was valued at more than \$3.2 trillion in 2016<sup>3</sup> and hit a record level of \$3.62 trillion in the third quarter of 2018.<sup>4</sup> This industry was impacted by the economic downturn due to the Covid-19 pandemic and its assets fell for the first time after the end of 2018, but its AUM was still big — 3.31 trillion at the end of March 2020<sup>5</sup> and nearly \$4 trillion in the third quarter of 2021.<sup>6</sup>

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<sup>1</sup> George Sami, 'Comment: A Comparative Analysis of Hedge Fund Regulation in the United States and Europe' (2009) 29 *Northwestern Journal of International Law & Business* 268, 275.

<sup>2</sup> *Ibid.*

<sup>3</sup> Investopedia, *2016 Preqin Global Hedge Fund Report* (5 October 2017) <<https://www.investopedia.com/terms/h/hedgefund.asp>>.

<sup>4</sup> Investopedia, *2019 Preqin Global Hedge Fund Report* (1 July 2020) <<https://docs.preqin.com/samples/2019-Preqin-Global-Hedge-Fund-Report-Sample-Pages.pdf>>.

<sup>5</sup> Rajiv Bhuvra, *Hedge Funds' AUM Falls to \$3.31 Trillion in Q1 2020* (28 May 2020) <<https://www.fortuneindia.com/investing/hedge-funds-aum-falls-to-331-trillion-in-q12020/104593>>.

<sup>6</sup> Barclays, *Hedge Fund Outlook 2022: Inflows Rising amid Inflation* (15 Feb 2022) <<https://www.cib.barclays/our-insights/3-point-perspective/Hedge-Fund-Outlook-2022>>.

Hedge funds have been significant players in the global economy and one of the most important financial innovations transforming capital markets.<sup>7</sup> Due to their leverage effect and investment strategies, the impact of hedge funds on financial markets is significantly greater than that of traditional investment funds.<sup>8</sup> They have played positive roles in financial markets, but their potential to cause systemic hazards cannot be neglected by academics and regulators. There has been a consensus among them that hedge funds call for regulation,<sup>9</sup> and most jurisdictions have implemented hedge fund regulation to some degree.<sup>10</sup> But its primary justification — systemic risk and its cross-border spread, should be firmly kept in mind by jurisdictions in order to effectively establish and implement relevant regulatory systems. The financial regulation literature overlooks this important analytical question at the international

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<sup>7</sup> The IMF makes three arguments for the importance of hedge funds in global financial stability. Firstly, they are vibrant counterparties to systemically important institutions which are regulated. Secondly, they tend to leverage more aggressively than traditional investment funds. Lastly, with the rapid growth of its industry assets, the hedge fund industry has become a significant choice for investors in global capital markets. See IMF, *Global Financial Stability Report* (September 2004) <<http://www.imf.org/external/Upubs/ft/GFSR/2004/02/pdf/gfsr09O4.pdf>>45. Another reason behind the supposed market stabilising and transforming effect of hedge funds is their exploitation of market anomalies. See Sherry M. Shore, 'SEC Hedge Fund Regulatory Implications on Asian Emerging Markets: Bottom Line of Bust' (2005) 13 *Cardozo Journal of International and Comparative Law* 563, 597.

<sup>8</sup> Unlike traditional investment funds, hedge funds can conduct more active short-term trading and use leverage more aggressively. Although not all hedge funds are leveraged, the potential use of leverage is a prominent characteristic of this industry. To be short, leverage refers involves borrowing to magnify investment; then, when the invested funds outperform the cost of the borrowed funds, the overall gains are achieved. Practically speaking, it is executed by popular trading strategies, such as short sales and derivatives. Thus, the consequence of leverage is that both profits and losses may be magnified. These trading strategies of hedge funds will be further discussed below. See Willa E. Gibson, 'Is Hedge Fund Regulation Necessary' (2000) 73 *Temple Law Review* 681, 685; Mine Aysen Doyran, 'Hedge Funds, Systemic Risk and Lessons for the Sub-Prime Financial Crisis' (2009) 14 *Business Review* 1, 26; Alexander Ineichen, *ALMA's Roadmap to Hedge Funds* (29 October 2017) Alternative Investment Management Association <<http://www.aima.org/en/education>>; Andrew McGarva, Keeping up with the Joneses: A Model Systemic Risk Reporting Regime for the Canadian Hedge Fund Industry (2015) 38 *The Dalhousie Law Journal* 173, 180; Chrysostomos E. Stoforos et al, 'Hedge Fund Returns under Crisis Scenarios: A Holistic Approach' (2017) 42 *Research in International Business and Finance* 186, 196.

<sup>9</sup> Gibson (n 8) 682.

<sup>10</sup> Michel Prada, 'The World of Hedge Funds: Prejudice and Reality: The AMF's Contribution to the Debate on Alternative Investment Strategies' (2007) 10 *Financial Stability Review* 127, 130.

level, although at the national level, much attention has been paid to hedge fund regulation,<sup>11</sup> focusing mainly on economic analysis.<sup>12</sup> This research is topical given that the cross-border activities of hedge funds are increasingly complex, and the systemic risk associated with them is difficult for individual jurisdictions alone to prevent, identify and mitigate.

Therefore, in an increasingly interdependent world economy, this article aims to aid related regulators to obtain a richer understanding of the primary rationale for hedge fund regulation, not only at the national but also at the international level, and might help them improve their regulatory effectiveness and efficiency. By reflecting on two different levels of cases, domestic and international, respectively, this article argues that additional regulation for hedge funds should be imposed not only nationally, but

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<sup>11</sup> See, eg, Barry Eichengreen, ‘Strengthening the International Financial Architecture: Where Do We Stand?’ (2000) 17 (2) *ASEAN Economic Bulletin* 175; Adam R. Bolter, ‘Regulation of Hedge Fund Advisers: A Valid Exercise of Rulemaking Authority or the Promulgation of New Law’ (2005) 57 (2) *Administrative Law Review* 595; Joseph Hellrung, ‘Hedge Fund Regulation: Investors are Knocking at the Door, but Can the SEC Clean House before Everyone Rushes In?’ (2005) 9 *North Carolina Banking Institute* 317; Jennifer Ralph Oppold, ‘The Changing Landscape of Hedge Fund Regulation: Current Concerns and a Principle-based Approach’ (2007) 10 (4) *University of Pennsylvania Journal of Business and Employment Law* 833; Ryan Sklar, ‘Hedges or Thickets: Protecting Investors from Hedge Fund Managers’ Conflicts of Interest’ (2009) 77 *Fordham Law Review* 3251; William A. Roach, ‘Hedge Fund Regulation: What Side of the Hedges Are You on?’ (2009) 40 *The University of Memphis Law Review* 165; Wulf Kaal, ‘Hedge Fund Manager Registration Under the Dodd-Frank Act’ (2013) 50 *San Diego Law Review* 243; Marco Bodellini, ‘From Systemic Risk to Financial Scandals: The Shortcomings of U.S. Hedge Fund Regulation’ (2017) 11 *Brooklyn Journal of Corporate, Financial & Commercial Law* 417; Cecilia C. Lee, ‘Reforming Complexity: Hedge Fund Policy Paradigm for the Way Forward’ (2015) 9 *Brooklyn Journal of Corporate, Financial & Commercial Law* 478; Luther R. Ashworth, ‘Is Hedge Fund Adviser Registration Necessary to Accomplish the Goals of the Dodd-Frank Act’s Title IV?’ (2013) 70 *Washington and Lee Law Review* 651; Eun Jip Kim, *Rethinking Hedge Fund Regulation* (Lambert Academic Publishing, 2015); Lagnesh Kumar, *Hedge Fund Regulation in Australia: Mitigating Fraud Risk in an Environment of Mandated Disclosure* (PhD thesis, University of Wollongong, 2013).

<sup>12</sup> Brandon Becker and Colleen Doherty-Minicozzi, ‘Hedge Funds in Global Financial Markets’ (February 2000) <<http://www.wilmer.com>>; Daniel Capocci and George Hubner, ‘Analysis of Hedge Fund Performance’ (2004) 11 *Journal of Empirical Finance* 55; Haim A. Mozes, ‘The Relation between Hedge Fund Size and Risk’ (2012) 18 *Journal of Derivatives & Hedge Funds* 85; Nicolas P. B. Bollen, ‘The Financial Crisis and Hedge Fund Returns’ (2011) 14 *Review of Derivatives Research* 117; Hany A. Shawky et al, ‘Diversification in the hedge fund industry’ (2012) 18 *Journal of Corporate Finance* 166; Roberto Savona, ‘Risk and Beta Anatomy in the Hedge Fund Industry’ (2014) 20 (1) *The European Journal of Finance* 1.

also internationally, and should centre around major sources of their systemic risk. As such it is structured as follows.

After recognition of potential benefits contributed by hedge funds in Section II, Section III analyses the conspicuous problem inherent in hedge funds — systemic risk and its spread, with the introduction of two cases: the meltdowns of LTCM and Bear Stearns' hedge funds in the GFC. Building on the findings of these case studies, this section further explores the four major factors leading to systemic risk by hedge funds — size, interconnectedness, trading strategies and opaque nature. On this basis, Section IV concludes that the potential systemic risk triggered or transmitted by hedge funds is the primary reason for extra regulation not only at the national level, but also at the international level.

## II HEDGE FUNDS' POSITIVE ROLES

Before exploring hedge funds' negative impacts on financial markets, it should be acknowledged that as an integral part of financial markets, the hedge fund industry can play positive roles and provide benefits to investors and financial markets,<sup>13</sup> which accounts for the value of imposing appropriate regulation on this industry. Although once known as the bad boys of finance and 'vulnerable to a bad press for a long time',<sup>14</sup> many hedge funds have eclipsed traditional investment funds in the returns generated thereby since the inception of this industry in the 1940s.<sup>15</sup> As significant market actors, they can make unique contributions in several respects, such

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<sup>13</sup> Anita I. Anand, 'Is Systemic Risk Relevant to Securities Regulation?' (2010) 60 (4) *The University of Toronto Law Journal* 941, 957; Jon Danielsson and Jean-Pierre Zigrand, 'Regulating Hedge Funds' (2007) 4 *Financial Stability Review* 29, 29.

<sup>14</sup> Daniel Capocci, *The Complete Guide to Hedge Funds and Hedge Fund Strategies* (Palgrave Macmillan, 2013) 529.

<sup>15</sup> Even under tough economic conditions, hedge funds delivered sustained outperformance. Maria de la O. Gonzalez et al, 'Persistent Doubt: An Examination of Hedge Fund Performance' (2016) 22 (4) *European Financial Management* 613, 615.

as promoting market efficiency, liquidity, and enabling diversification of investment choices.<sup>16</sup>

#### A *Improving Market Efficiency*

As non-conventional financial institutions, hedge funds are conducive to increasing market efficiency because their managers tend to conduct ‘intensive and pointed research’ displaying the true current and future values of securities.<sup>17</sup> In particular, most long-short hedge funds ‘apply large sums of money to perceiving and utilising’ undervalued securities and assets.<sup>18</sup> Besides, while traditional investment vehicles produce returns mainly depending on market conditions, and are confined to tracking and outperforming reference indexes or benchmarks, hedge fund managers pursue absolute returns irrespective of general movements of markets, with the advantage of being able to flexibly manage their assets in ways not correlated with benchmarks or indexes.<sup>19</sup>

Therefore, in these two senses, hedge funds can serve the function of exposing asset mispricing, by pursuing and deriving profits from various mispriced financial products. The market is imperfect all the time, and the phenomena of mispricing and inefficiencies are common as ‘market traders do not have costless and immediate

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<sup>16</sup> See Carl J. Nelson, ‘Hedge Fund Regulation: A Proposal to Maintain Hedge Funds’ Effectiveness without SEC Regulation’ (2007) 2 *Brooklyn Journal of Corporate, Financial & Commercial Law* 221, 235; Danielsson and Zigrand (n 13) 29. See also Mario Draghi, ‘Hedge Funds and Financial Stability’ (2007) 4 *Financial Stability Review* 37, 45.

<sup>17</sup> The efficient market hypothesis assumes that the market price of a security reflects all valuable information in a timely manner and that the market price represents the true value of the security. See Burton G. Malkiel, ‘The Efficient Market Hypothesis and Its Critics’ (17) 2003 (1) *The Journal of Economic Perspectives* 59, 59; Roach (n 11) 173; Staff Report to the United States Securities and Exchange Commission, *Implications of the Growth of Hedge Funds* (September 2003) <<https://www.sec.gov/files/implications-growth-hedge-funds-09292003.pdf>>4.

<sup>18</sup> J’ on Dan’ielsson et al, *Highwaymen or Heroes: Should Hedge Funds be Regulated?* (September 2005) < <http://www.regattapress.com/ShouldHedgeFundsbeRegulated.pdf> >17.

<sup>19</sup> Samuel S. Weiser and Robert M. Steele, ‘The Case for Hedge Funds’ (2002) 5 *Retirement Planning* 21, 23.

access to all publicly available markets, exchanges and information while trading'.<sup>20</sup> The process of spotting and utilising market inefficiencies can drive financial markets towards a more rational state. In other words, hedge fund managers' talent and aptitude can help incorrectly priced securities shift toward their true value to help build a more correctly priced and efficient market.<sup>21</sup>

During uncovering and correcting mispricing, it is hedge fund managers that play the role of arbitrageurs for financial markets through their trading strategies. Arbitrage opportunities spring up in financial markets when financial instruments fail to adhere to the no-arbitrage rule, namely, that two instruments to create the same future cash flows and hold the same risk profile have the same inherent value.<sup>22</sup> Such divergences appear due to information asymmetries and different transaction costs of securities. Profits generated by arbitrageurs can induce prices to shift towards more rationally defensible valuation because the allocation of capital to mispriced securities can ensure the mispricing is quickly identified and rectified.<sup>23</sup> Therefore, in this sense, hedge funds can be regarded as 'price-takers or market-makers', probably creating a lower cost of capital, and helping to increase market efficiency and stability.<sup>24</sup>

### B *Promoting Market Liquidity*

Liquidity is a crucial element of financial markets, as were it not for sufficient liquidity, it would be tough for market players to enter and exit from financial markets easily, and dramatic price changes and even market meltdowns would turn up.<sup>25</sup>

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<sup>20</sup> Dan'ielsson et al (n 18) 17.

<sup>21</sup> Roach (n11) 173–4.

<sup>22</sup> See, eg, Andreas Engert, 'Transnational Hedge Fund Regulation' (2010) 11 *European Business Organisation Law Review* 329, 357. See also Erik Denters, 'Regulation and Supervision of the Global Regulation and Supervision of the Global Financial System: A Proposal for Institutional Reform' (2009) 1 (3) *Amsterdam Law Forum* 63, 70.

<sup>23</sup> Razeen Sappideen, *The Regulation of Hedge Funds* (2016) <<http://ssrn.com/abstract=2835883>>9.

<sup>24</sup> Robert J Bianchi and Michael E Drew, 'Hedge Fund Regulation and Systemic Risk' (2010) 19 (1) *Griffith Law Review* 6, 10.

<sup>25</sup> Roach (n11) 174.

Closely related to investors' confidence, liquidity in financial markets hinges on investors' desire to trade financial products.

As dynamic market participants, hedge funds can create economic benefits by enhancing the liquidity of capital markets. This is because hedge fund managers have the liberty of shifting assets in and out of markets quickly and efficiently, and they do not need to worry about frequent investor withdrawals from funds.<sup>26</sup> The practice of restricting redemption or imposing 'lockup periods, notice periods, withdrawal gates, and side pockets' can protect hedge funds against the impacts of illiquidity in downward markets.<sup>27</sup> Hedge funds tend to provide quarterly or annual redemption to their investors after a certain period of lockup, rather than daily liquidity. When investors intend to redeem their money, they have to give notice to their managers ahead of time and meet certain requirements.

By timely trading securities, hedge funds' dynamic responses to market fluctuations can not only help to increase liquidity to financial markets but also contribute to attracting other investors and improving their confidence at the moment of making investment decisions, benefitting from their function of correcting mispricing as explained above. And with growing investors willing to enter financial markets, markets can become more liquid.<sup>28</sup>

With the passage of Basel Accord III after the GFC, imposing stress testing, and enhanced capital adequacy, liquidity and disclosure requirements, banks increasingly shifted from risk-taking operations towards pursuing commissions by acting as agents, in order to comply with the adequacy requirements of the accord. As a consequence,

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<sup>26</sup> Emily Kehoe, 'Hedge Fund "Regulation" for Systemic Risk: Largely Impossible' (2014) 14 *Journal of Business & Securities Law* 35, 37.

<sup>27</sup> Lloyd Dixon et al, *Hedge Funds and Systemic Risk* (Rand Corporation, 2012) 86; Hossein Nabilou, *The Law and Economics of Hedge Fund Regulation: A Comparison Between the U.S. and the EU* (PhD Thesis, Erasmus University Rotterdam, 2013) 34.

<sup>28</sup> Roach (n11) 174.

fund investors increasingly turned to hedge funds for the intermediation service of liquidity provision, which was the ‘main realm of banking systems’, making hedge funds significant providers of market liquidity.<sup>29</sup>

While acting as liquidity providers, hedge funds may also help in the assimilation and distribution of risk in capital markets to some degree. Hedge funds have been shown to be less likely to herd or conform to trends in investor behaviour.<sup>30</sup> When herding by other financial institutions takes place, hedge funds can act as contrarians, and as stabilisers of financial markets, through negative feedback trading.<sup>31</sup> With the prosperity of the hedge fund industry globally, the markets for unsecured debts have developed greatly.<sup>32</sup>

### C *Diversifying Investment Choices*

Serving ‘as a catalyst for change and innovation in asset management industry’,<sup>33</sup> hedge funds provide a new diversification tool for investors. The rise of this industry in financial markets may help investors diversify their portfolios, as they are distinct from traditional investment vehicles. Not only ‘high net worth individuals’, but also many institutions are drawn to hedge funds, investing in hedge funds as a strategy for risk management to ‘smooth out overall volatility and improve investment returns’.<sup>34</sup>

By providing investors with alternative investment choices, hedge funds can help meet their demand for high returns, with more liberal use of dynamic and complex

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<sup>29</sup> Bianchi and Drew (n24) 15.

<sup>30</sup> See Danielsson and Zigrand (n 13) 32; Matthew Lewis, ‘A Transatlantic Dilemma: A Comparative Review of American and British Hedge Fund Regulation’ (2008) 22 *Emory International Law Review* 347, 365. See also Gibson (n 8) 712.

<sup>31</sup> Barry Eichengreen and Donald Mathieson, ‘Hedge Funds: What Do We Really Know?’ (1999) 19 *Economic Issues* <<https://www.imf.org/external/pubs/ft/issues/issues19/index.htm>>. See also Lewis (n30) 365.

<sup>32</sup> Bianchi and Drew (n24) 15.

<sup>33</sup> Philipp M. Hilderbrand, ‘Hedge Funds and Prime Broker Dealers: Steps towards a “Best Practice Proposal’ (2007) 4 *Financial Stability Review* 67,70.

<sup>34</sup> Shalomi H. Abraham, *Hedge Funds and Systemic Risk: A Modest Proposal* (Master’s Thesis, University of Toronto, 2011) 15.



trading strategies, such as short selling, leverage, and derivatives, etc. How and to what degree returns can be realised in large part rest on the talent and capabilities of hedge fund managers.<sup>35</sup>

Aside from the greater liberty in using investment techniques that hedge funds enjoy, co-investment by hedge fund managers themselves can help to spur them to fully make use of their talents. Hedge fund managers typically co-invest with fund investors, and the managers' investment tends to constitute a vital portion of corresponding hedge fund assets. This special asset structure can help to 'align managers' incentives with the interests of external investors' as managers have to share investment risks of the funds with the investors.<sup>36</sup>

Furthermore, the fee structures of hedge funds are conducive to upholding hedge fund investors' interests. Although hedge fund managers have the right to charge dual fees, namely, 1-2% of AUM for the management fee, plus 10-20% of profit as performance or incentive fee, the charge of the latter is constrained by high watermark and hurdle rate requirements.<sup>37</sup> These two types of benchmarks are required to be met before a performance fee is collected from investors. As a common custom in the hedge fund industry, high watermark means that when the profit of a hedge fund falls, hedge fund managers cannot collect a performance fee on ensuing profits except when the net asset value goes up to its prior high at least.<sup>38</sup> Hurdle rate, also known as 'preferred return', has a similar function to a high watermark. It refers to a certain minimum amount of profit or returns to be earned before a performance fee may be charged.<sup>39</sup>

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<sup>35</sup> Weiser and Steele (n19) 25.

<sup>36</sup> Hilderbrand (n 33) 68.

<sup>37</sup> John Kambhu et al, 'Hedge Funds, Financial Intermediation, and Systemic Risk' (2007) 12 *FRBNY Economic Policy Review* 1, 2.

<sup>38</sup> Its purpose is to protect investors against paying performance fees twice or even more when gains and losses occur alternatively. Under this rule, investors are exempted from paying for the same profits twice or even more. See *ibid*.

<sup>39</sup> Jean-Pierre Mustier and Alain Dubois, 'Risks and Return of Banking Activities related to Hedge Funds' (2007) 4 *Financial Stability Review* 85, 87.

If the same fund sets up both a high watermark and a hurdle rate, its managers cannot collect an incentive fee unless the fund's asset value is above the high watermark and returns are above the hurdle rate.<sup>40</sup>

The flexible use of trading strategies, co-investment of hedge fund managers, and the prerequisites for charging of performance or incentive fees function together to incentivise managers to pursue absolute returns and surpass traditional investment vehicles' returns in financial markets. As a matter of fact, the hedge fund industry, taken as a whole, has afforded absolute returns nearly every year.<sup>41</sup> Even though this industry also experienced distressing setbacks due to the GFC, it protected its investors from the market losses common to most investors.<sup>42</sup> In fact, even after the GFC, hedge funds remain popular with many investors as a diversification tool in their portfolio because of their feature of generating absolute return.<sup>43</sup>

### III HEDGE FUNDS' SYSTEMIC HAZARDS AT THE NATIONAL AND INTERNATIONAL LEVELS

Despite the above positive roles in markets, hedge funds possess the tendency to trigger or spread systemic risk nationally and internationally, bringing about the instability of global financial markets,<sup>44</sup> as demonstrated by the turmoils of LTCM and Bear Stearns' hedge funds in the GFC.<sup>45</sup>

#### A *LTCM Event and Its Systemic Hazards at the National Level*

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<sup>40</sup> Ibid; Kambhu et al (n 37) 2.

<sup>41</sup> Capocci (n14) 21.

<sup>42</sup> See Pavlos G Maris, 'The new architecture for hedge fund regulation: an assessment of the recent US and EU initiatives' (2012) 5 *Law and Financial Markets Review* 208, 210. See also Dan 'ielsson et al (n 18) 18.

<sup>43</sup> Capocci (n14) 41.

<sup>44</sup> Anand (n13) 957.

<sup>45</sup> Ibid 958.

Like an admonitory story in financial history, the event of LTCM shocked the world as it made regulators come to realize, for the first time, the huge systemic damage of hedge funds in financial markets.

### 1 *Basics of LTCM Event*

In 1998, the implosion and near-collapse of LTCM, a then US\$4.8 billion hedge fund,<sup>46</sup> provided a quintessential example of hedge funds' lurking hazard to financial stability.<sup>47</sup> As the first and most conspicuous incident in the hedge fund industry since its inception, there is abundant literature about the LTCM debacle from different perspectives.<sup>48</sup> Some accounts highlight hedge funds' lightly regulated status, large size, interconnectedness with large financial institutions, excessive use of leverage, and opaque nature, as explained further below. Although there exists controversy about the justification for the New York Federal Reserve's rescue of LTCM and the moral hazard therein, a consensus has emerged about hedge funds' potentiality to pose and spread systemic risk as revealed in the LTCM fiasco. A detailed and comprehensive explanation of the incident is beyond the scope of this article, but in order to reflect deeply on its significant lessons for regulators, it is necessary to present the following basic facts closely related to the sources of systemic risk.

As a typical fixed-income arbitrage hedge fund, LTCM was established by Johan Meriwether in 1994, based in Greenwich, Connecticut, US, with the capital of

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<sup>46</sup> Houman B. Shadab, 'The Challenge of Hedge Fund Regulation' (2007) Spring *Regulation* 36, 39. Randy Haight, Community of Support: Moving toward Indirect Regulation of the Hedge Fund Industry (2014) 3 *Global Markets Law Journal* 1, 11.

<sup>47</sup> Engert (n22) 339.

<sup>48</sup> See, eg, Franklin R. Edwards, 'Hedge Funds and the Collapse of Long-Term Capital Management' (1999) 13 *Journal of Economic Perspectives* 189; Becker and Doherty-Minicozzi (n 12); Shadab (n 46) 36; Kambhu et al (n 37) 1; Paul M. Jonna, 'In Search of Market Discipline: The Case for Indirect Hedge Fund Regulation' (2008) 45 *San Diego Law Review* 989; Roberta S., Karmel, 'IOSCO's Response to the Financial Crisis' (2012) 37 (4) *The Journal of Corporation Law* 849; Capocci (n14) 456-86.

US\$150 million.<sup>49</sup> It was run by the most talented managers in the field, two of whom were joint Nobel Prize winners in 1997 in economics for their research on the pricing of options: Merton and Scholes.<sup>50</sup> LTCM transacted actively on many markets and in many countries, principally in US, Japanese, and European markets, engaging in complex fixed-income and equity convergence strategies. It was broadly positioned to profit from liquidity and credit spread tightening, and/or to earn from volatility fluctuations. Under usual market movements even if one of the factors did not advance in the anticipated direction, there were geographical and market diversifications helping to reduce any exposure and probable loss.<sup>51</sup> The liquidity of LTCM was maintained as its investors had to follow a lockup period of three years and the lowest level of investment was US\$3 million, which was rather a high investment threshold. The fees of LTCM consisted of a management fee of 2 percent of assets and a performance fee of 25 percent of profits.<sup>52</sup>

When LTCM conducted its first trade on 24 February 1994, the capital under its management amounted to about US\$1 billion. At the launch, LTCM had an eminent position in hedge fund circles benefitting from the reputation of its famous managers and the huge amount of its AUM. The investors placed full trust in the reputed partners or managers, which led to the problem of opaqueness, because the concrete investment strategies employed, the concentration of assets, and the size of positions could be easily concealed from the general investors of LTCM. Most investors were not aware of the extent of their exposure to financial risks.<sup>53</sup> In the first two years, LTCM performed well and offered absolute returns to investors: 33.7% on average in 1995-1997, in contrast to 29.3 for the S&P 500.<sup>54</sup> The positions held in extremely

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<sup>49</sup> Capocci (n14) 94.

<sup>50</sup> Jonna (n 48) 1001.

<sup>51</sup> Capocci (n14) 96.

<sup>52</sup> *Ibid* 97.

<sup>53</sup> See Kambhu et al (n 37) 14.

<sup>54</sup> Eichengreen and Mathieson (n 31).

risky bonds, interest rate swaps and in the Japanese convertible market mainly account for the performance during this period. With the deterioration of investment conditions globally, it became more and more challenging to seek absolute returns in frantic markets at the end of the 1990s.<sup>55</sup>

LTCM managers turned more to the disparities in the relative prices of various financial instruments, such as stocks, bonds, options, swaps, and relevant derivatives, and utilised leveraged positions to magnify tiny arbitrage opportunities and potential profits. In early 1998, the balance sheet positions controlled by LTCM amounted to US\$120 billion. The leverage ratio of more than 25:1 was incredibly high. Besides, the derivatives managed by LTCM totalled about US\$1.3 trillion.<sup>56</sup> LTCM borrowed and bought large volumes of relatively ‘illiquid, low-quality securities’, such as mortgage-backed securities (MBSs), and sold ‘short liquid, high-quality securities’.<sup>57</sup> These leveraged transactions were conducted by using funds borrowed from international investment and commercial banks, mostly without providing sufficient margins or collateral. The alarming amount of debt made the fund systemically important for financial stability, and it became terribly susceptible to the market agitation following the drop of the Russian ruble.<sup>58</sup> The situation continued to deteriorate until the interference of the New York Federal Reserve in September 1998.<sup>59</sup> As LTCM was a huge financial market participant, with positions held in many markets, it was rather tough to raise adequate capital to unwind them. Were it not for a US\$3.6 billion private rescue by an alliance composed of 14 large international financial institutions under the Federal Reserve’s coordination,<sup>60</sup>

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<sup>55</sup> Werner Bijkerk et al, *Systemic Risk Identification in Securities Markets* (Working Paper, No 1, IOSCO Research Department, July 2012) 13.

<sup>56</sup> Eichengreen and Mathieson (n 31); Shadab (n 46) 39.

<sup>57</sup> Eichengreen and Mathieson (n 31).

<sup>58</sup> Jonna (n 48) 1001.

<sup>59</sup> Capocci (n14) 462.

<sup>60</sup> Eichengreen and Mathieson (n 31). See also Bodellini (n11) 438; Capocci (n14) 463.

LTCM's main 17 counterparties would have suffered a loss of \$5 billion at a maximum collectively.<sup>61</sup> Up to this point, LTCM has been the only case of a potentially risky hedge fund being bailed out by the government.<sup>62</sup> The reason for government intervention was clearly illustrated by Alan Greenspan, the then president of the Federal Reserve at the time of rescue:

[H]ad the failure of LTCM triggered the seizing up of markets, substantial damage could have been inflicted on many market participants, including some not directly involved with the firm, and could have potentially impaired the economies of many nations, including our own...<sup>63</sup>

## 2 *Systemic Hazards of LTCM*

The failure of LTCM underlined the significance of hedge funds as an indispensable segment of financial markets. Compared with banks, hedge funds do not play the most important roles in financial markets, such as lending, deposit taking, payment, and clearance and the impact of individual hedge funds on the global economy may be less. Nevertheless, collectively this industry controls a significant volume of assets,<sup>64</sup> is closely connected with banks and securities traders. Some individual hedge funds can even become too-big-to-fail financial institutions (TBTFs), such as LTCM. Like banks, hedge funds hold great potential to trigger and transmit systemic risk. The systemic shock to financial markets from the failure of hedge funds may be just as hazardous as that of banks.<sup>65</sup> Such is the case with the LTCM. Therefore, the LTCM debacle revealed that the hedge fund industry performs a crucial role in financial

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<sup>61</sup> See Roger Ferguson and David Laster, 'Hedge Funds and Systemic Risk' (2007) 4 *Financial Stability Review* 45, 50.

<sup>62</sup> Wouter Van Eechoud et al, 'Future Regulation of Hedge Funds—A Systemic Risk Perspective' (2010) *New York University Salomon Center and Wiley Periodicals* 269, 269.

<sup>63</sup> Capocci (n14) 456.

<sup>64</sup> Kehoe (n 26) 35.

<sup>65</sup> Phoebus Athanassiou, 'The Conceptual Understandings of Onshore Hedge Fund Regulation: A Global and European Perspective' (2008) 8 *Journal of Corporate Law Studies* 251, 276.

markets, but the free market will fail to constrain hedge funds or maintain market discipline over it.<sup>66</sup>

In this debacle, the characteristics of LTCM — the size of positions taken, the interconnectedness with large financial institutions, the high level of leverage used, and its extreme opaqueness,<sup>67</sup> turned out to be the factors leading to the build-up of systemic risk and the ultimate downfall of LTCM.<sup>68</sup> Regarding these sources of systemic risk, the costly lessons from the incident are worth learning in hedge fund regulation as follows.

First, regulators should pay attention to large hedge funds, as their failure tends to pose and spread greater systemic hazards.<sup>69</sup> As the International Organisation of Securities Commissions (IOSCO) has pointed out: ‘conceptually, the larger the market element being considered, the more damage its failure can potentially cause to the market’.<sup>70</sup> The quasi-collapse of LTCM showed the potential hazard of hedge funds of huge size. It can be tough and even impossible to unwind and liquidate their large positions without imposing downward pressure on prices, the fear of which forced the New York Federal Reserve to coordinate LTCM’s bailout.<sup>71</sup> The scale of individual hedge funds per se does not necessarily determine the degree of their threat to systemic stability, but large hedge funds hold greater potential and capability to exploit drastic and complex trading strategies and greatly impact financial markets thereby.

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<sup>66</sup> Jonna (n 48) 1001.

<sup>67</sup> See Becker and Doherty-Minicozzi (n 12) 24.

<sup>68</sup> Ferguson and Laster (n 61) 51.

<sup>69</sup> The criteria to judge whether a hedge fund is large or not is often stipulated in relevant rules of national jurisdictions and may change over time. For example, in US, if the AUM of a hedge fund exceeds \$150 million, it is large and cannot be exempted from registration with the SEC and related disclosure requirements. See Dodd-Frank Act § 408.

<sup>70</sup> IOSCO, *Mitigating Systemic Risk: A Role for Securities Regulators* (Discussion Paper, No OR01/11, Technical Committee, February 2011) 16.

<sup>71</sup> Dixon et al (n 27) 38.

Second, hedge funds' close interconnectedness with large financial institutions, especially the TBTFs,<sup>72</sup> can expose these institutions to systemic risk from hedge funds. Although the counterparties or prime brokers of hedge funds are regulated financial entities, their interconnectedness with highly risky hedge funds can expose them to counterparty risk, which was evidenced by the LTCM event. As the Organisation for Economic Co-operation and Development (OECD) pointed out, a key lesson from the episode is that large financial institutions should be cautious about 'the quality of their borrowers and counterparties'.<sup>73</sup> If they lack appropriate measures for managing credit risk, they should avoid transactions related to hedge funds.<sup>74</sup>

Third, the flexibility and complexity of trading strategies exploited by hedge funds (for example, the extreme application of leverage) can trigger and spread systemic risk. Reasonable use of leverage can be beneficial for the increase of market liquidity and efficiency, but its extreme use can increase the 'likelihood and severity of hedge fund defaults',<sup>75</sup> triggering huge systemic instability. The LTCM failure exposed the importance of maintaining the balance between keeping the benefits of leverage by hedge funds and mitigating its adverse systemic impacts.<sup>76</sup> The LTCM event forced financial regulators to consider the need for extra regulatory restrictions on the aggressive use of these trading strategies, especially leverage.<sup>77</sup> To a large extent, the fiasco of LTCM was triggered by its counterparties' lax lending requirements and failure to impose appropriate margins in the derivative contracts with LTCM.<sup>78</sup> And

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<sup>72</sup> Although there is no consensus on the criteria for determining whether a financial institution is a TBTF, it is generally believed that TBTFs are large in size and scope, and extremely interconnected, with their liabilities implicitly guaranteed free of charge by society as a whole due to their huge systemic consequences. See Imad A. Moosa, *The Myth of Too Big to Fail* (Palgrave Macmillan, 2010) 1–3.

<sup>73</sup> Becker and Doherty-Minicozzi (n 12) 67.

<sup>74</sup> Kambhu et al (n 37) 14.

<sup>75</sup> Dan'ielsson et al (n 18) 11.

<sup>76</sup> Roach (n 11) 176.

<sup>77</sup> Gibson (n 8) 682.

<sup>78</sup> Dixon et al (n 27) 37.



for LTCM's counterparties, one of the most significant lessons was that increased lending discipline should be exercised as a prerequisite for dealing with hedge funds. Fourth, hedge funds' status of being lightly regulated or unregulated, leads to extreme opaqueness in the industry, posing a serious threat to financial stability. Information asymmetries between hedge fund managers on the one hand, and investors, prime brokers, and regulators on the other hand, were an important contributing factor to the fiasco of LTCM.<sup>79</sup> Brooksley Born, the then Chairman of the US Commodity Futures Trading Commission (CFTC), highlighted that although LTCM traded actively in the Over-The-Counter (OTC) market, regulators had little information about it, which 'contradicted the traditional feature of transparency in the futures market and its good reputation of being the most trusted in the world'.<sup>80</sup> Based on this awareness, government reports released by two US agencies respectively, namely, the President's Working Group on Financial Markets, and the General Accounting Office (GAO) underscored that 'more information on hedge fund industry should go public against extreme leverage'.<sup>81</sup> As a traditional regulatory method in securities law, disclosure should be appropriately used for hedge fund regulation, to mitigate information asymmetry, improving the transparency about this industry.<sup>82</sup>

*B Event of Bear Stearns' Hedge Funds and Its Systemic Hazards at the International Level*

While the impacts of LTCM were mostly confined to the US, the GFC provided a vivid presentation of systemic risk at the international level, namely, 'the contamination of other markets, sectors, or jurisdictions following defaults in a given

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<sup>79</sup> Anand (n13) 947.

<sup>80</sup> Becker and Doherty-Minicozzi (n 12) 8.

<sup>81</sup> Ashworth (n11) 672.

<sup>82</sup> Steven L. Schwarcz, 'Systemic Risk' (2008)97 *The Georgetown Law Journal* 193, 218.

domestic economy'.<sup>83</sup> The causes and consequences of the GFC have been a central topic of debate since its outburst.<sup>84</sup> There has been a consensus in academia and among regulators that although the GFC was not a hedge fund crisis, they did play a 'pivotal role' in it, because they 'amplified systemic risk by unwinding originally highly concentrated and leveraged positions sharply and rapidly'.<sup>85</sup> The GFC showed that at the international level, the liquidation of hedge funds could contribute to and transmit systemic risk in potentially devastating ways.<sup>86</sup>

### 1 *Basics of the Failure of Bear Stearns' Hedge Funds*

There is an awareness that the outbreak of the GFC originated with the collapse of two Bear Stearns' hedge funds in 2007:<sup>87</sup> its Credit Strategies Master Fund and its Enhanced Master Fund. They had invested heavily in MBSs, collateralised debt obligations (CDOs) and credit default swaps (CDSs).<sup>88</sup> As a famous and systemically important financial institution, Bear Stearns then ranked as the fifth largest US investment bank. The fallout of its two hedge funds brought it deadly losses and led to its subsequent failure.<sup>89</sup> Two years later, with the liquidation of Lehman Brothers

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<sup>83</sup> Mario Giovanoli, 'The Reform of the International Financial Architecture after the Global Crisis' (2009) 42 *New York University Journal of International Law and Politics* 81, 87.

<sup>84</sup> Stefano Pagliari, 'The Domestic Foundations of Transnational Regulatory Networks. IOSCO and the Reassertion of National Authority in Global Securities Regulation' (Paper presented at the Workshop on Remaking Globalisation, Temple University, Philadelphia, 5–7 May 2011) 23.

<sup>85</sup> Lee (n11) 500; Cary Martin Shelby, 'Closing the Hedge Fund Loophole: The SEC as the Primary Regulator of Systemic Risk' (2017) 58 *Boston University Law Review* 639, 664.

<sup>86</sup> Navin Beekarry, 'Hedge Funds and Offshore Financial Centres: New Challenges for the Regulation of Systemic Risks' in Benton E. Gup (ed), *The Financial and Economic Crises: An International Perspective* (Edward Elgar Publishing, 2010) 203.

<sup>87</sup> *Ibid* 202.

<sup>88</sup> An MBS is 'a type of asset-backed security that is secured by a mortgage or collection of mortgages'; CDOs are 'investment-grade securities backed by a pool of bonds, loans, and other assets'; CDSs are 'bilateral contracts designed for credit hedging or speculative investment'. See Athanassiou (n 65) 276.

<sup>89</sup> Dixon et al (n 27) 45.

and the rescue of Merrill Lynch by Bank of America, the total world economy confronted ‘the worst recession for 70 years’.<sup>90</sup>

Bear Stearns had tried to rescue the two hedge funds to safeguard its own reputation. As a matter of fact, the meltdown was not triggered off in just one day, but after the build-up of adverse effects from misuse of leverage and various derivatives. The Bear Stearns’ hedge funds had been exposed to a liquidity turmoil because their need for short-term funding obliged them to dispose of assets in illiquid markets.<sup>91</sup> Since 2006, Bear Stearns had exploited the two internal hedge funds to unwind highly leveraged or problematic assets that it could not sell,<sup>92</sup> which was explained in detail by Rand as follows:

[B]y the mid-2000s, Bear Stearns had become the leading securitiser of MBSs on Wall Street. As part of its efforts to expand its mortgage packaging business, Bear Stearns bought subsidiaries that made subprime mortgages directly to home buyers and set up two internal hedge funds that loaded up on MBSs and CDOs. The Bear Stearns’ funds were leveraged 10 or 15 to 1 and targeted assets that were rated AA or AAA. The hedge funds financed the purchase of these assets by borrowing on the repo market, which, as discussed previously, was not uncommon for hedge funds. Repo lenders in May 2007 sent low marks on the value of the MBSs and CDOs in the portfolios of the Bear Stearns hedge funds. These low marks triggered margin calls, and the funds had to sell assets at distressed prices to raise cash. This led to a loss of confidence by fund investors, increasing redemption requests and creating the need to sell additional assets. Bear Stearns ultimately decided to rescue the hedge funds, probably to protect the Bear Stearns’ brand. In the end, Bear Stearns essentially bought out the repo lenders for approximately \$1.6 billion. By July 2007, the Bear Stearns’ hedge funds had lost all their value...<sup>93</sup>

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<sup>90</sup> Beekarry (n 86) 202.

<sup>91</sup> Dixon et al (n 27) 54.

<sup>92</sup> Beekarry (n 86) 202.

<sup>93</sup> Dixon et al (n 27) 45.

Its severe liquidity stresses also compelled the New York Federal Reserve to intervene and offered emergency rescue through J.P. Morgan.<sup>94</sup> Even so, the emergency funding could not terminate the deterioration and Bear Stearns went on the verge of bankruptcy.<sup>95</sup> Under this circumstance, J.P Morgan acquired Bear Stearns with financial support from the Federal Reserve Bank in May 2008.<sup>96</sup> What astounded the world most was that such a major investment bank could collapse due to the failure of its hedge funds. The counterparties of Bear Stearns declined to offer lending services by funding or securities, or other services such as clearing, which further made other market participants decrease exposure to hedge funds. The worsening US mortgage market apparent in the Bear Stearns debacle ultimately resulted in financial turmoil,<sup>97</sup> namely the subprime mortgage crisis or the GFC, and both the US and the global economy were seriously impaired.

## 2 *Systemic Hazards of Bear Stearns' Hedge Funds*

Like the LTCM event, the failure of Bear Stearns' hedge funds also revealed hedge funds' huge potential to trigger and spread systemic hazards to financial markets. Moreover, Bear Stearns' hedge funds also had similar major factors to systemic damage.

In the GFC, hedge funds were recognised to have created and spread systemic risk in capital markets.<sup>98</sup> The wide scope of Lehman Brothers' liquidation also revealed the spread of systemic risks arising 'from its sudden and disorderly wind-down' to other indirectly related market participants through market channels.<sup>99</sup> While banks as mortgage lenders, insurance companies, rating agencies, and insufficiently backed

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<sup>94</sup> Douglas W. Arner, 'The Global Credit Crisis of 2008: Causes and Consequences' (2008) 43 (1) *The International Lawyer* 91, 112.

<sup>95</sup> See Eechoud et al (n 62) 346.

<sup>96</sup> Arner (n 94) 112.

<sup>97</sup> Ashworth (n11) 653.

<sup>98</sup> Karmel (n 48) 856.

<sup>99</sup> Lee(n11) 501.

derivatives, were considered as the immediate cause of the GFC,<sup>100</sup> hedge funds, as significant counterparties to prime brokers and an integral part of financial markets, posed, amplified and transmitted systemic risk through their proprietary trading. Accordingly, the hazards of Bear Stearns' hedge funds can offer valuable warning of coming financial disruptions.<sup>101</sup>

This crisis has also proved that market discipline is not enough to ensure the identification and mitigation of systemic risk related to hedge funds,<sup>102</sup> due to insufficient systemic risk regulation.<sup>103</sup> As a reaction to this insufficiency, regulators ought to grasp the idea of 'macro-prudential regulation'.<sup>104</sup> Indirect regulation on prime brokers and other counterparties cannot work if it is not combined with appropriate direct regulation on hedge funds and their managers. During both events, the indirect regulation imposed on hedge funds depended on market discipline, namely action by the counterparties of hedge funds, which turned out to rapidly break down.<sup>105</sup> Only through the combination and interaction of direct and indirect regulation of hedge funds can the balance between the financial innovative entrepreneurship of this industry and financial stability be struck and maintained.

Furthermore, in addition to the huge size of hedge funds, which were considerably interlinked and extremely leveraged,<sup>106</sup> the GFC also suggested that there were a multitude of contributing factors to the systemic collapse, namely:

[T]he prevalence of sub-prime mortgages, the housing boom and decline; loose monetary policy which encouraged excessive risk taking; the prevalent trading of

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<sup>100</sup> Dixon et al (n 27) 61.

<sup>101</sup> Andrew W. Lo, 'Regulatory reform in the wake of the financial crisis of 2007-2008' (2009) 1 (1) *Journal of Financial Economic Policy* 4, 8.

<sup>102</sup> Jonna (n 48) 994.

<sup>103</sup> Rosa Maria Lastra, 'Systemic risk, SIFIs and financial stability' (2011) 6 (2) *Capital Markets Law Journal* 197, 197.

<sup>104</sup> *Ibid.*

<sup>105</sup> Dixon et al (n 27) 67-8.

<sup>106</sup> Beekarry (n 86) 207.

securitized derivative products, including MBSs, CDOs, and CDSs; the failure of mortgage insurance systems, including the institutions that provided this insurance (e.g., Fannie Mae and Freddie Mac); and the absence or inefficacy of capital-adequacy rules...<sup>107</sup>

Like the LTCM fallout, the episodes of Bear Stearns' hedge funds also revealed that the major sources of unease about hedge funds' possible systemic hazards were their size, interconnectedness with large financial firms, trading strategies, and opaqueness, which will be explained further and specifically in the next section.

However, unlike the LTCM event, the GFC demonstrated that, in addition to the national level, the vulnerability of one or two hedge funds could pose systemic risk to financial markets and ultimately trigger a chain reaction at the international level.<sup>108</sup> Originating from the breakdown of Bear Stearns' hedge funds, this crisis impacted almost all global financial markets due to the cross-border spread of systemic risk and hindered the global financial market and world economy, leading to the worst recession in 70 years.<sup>109</sup> This clearly demonstrated that systemic risk by hedge funds could be a globalised phenomenon. This prompted broad concern among international financial institutions, for example, the Financial Stability Board and IOSCO. The collapse of Bear Stearns' hedge funds put the issue of transnational hedge fund regulation on the global agenda due to regulatory concerns about hedge funds' potential to destabilise global financial markets.<sup>110</sup> Therefore, a significant lesson from the GFC is that 'international cooperation should be part of domestic policies and global financial stability should be an objective on the national regulatory

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<sup>107</sup> Anand (n13) 946–7.

<sup>108</sup> Oppold (n11) 858. See also Giovanoli (n 83) 83.

<sup>109</sup> Giovanoli (n 83) 83.

<sup>110</sup> Beekarry (n 86) 203.

agenda',<sup>111</sup> with the global nature of financial markets and the significance of an international regulatory network taken into serious account.

*C Contributing Factors to Hedge Funds' Systemic Risk and Its Cross-border Transmission*

As mentioned above, in both events of LTCM and Bear Stearns' hedge funds, there were four common major factors leading to systemic hazards — size; interconnectedness with large financial institutions; trading strategies, for example, short-selling, leverage and derivatives, as well as opacity. Furthermore, the systemic risk of Bear Stearns' hedge funds spread across borders and contributed to the GFC, reverberating throughout global capital markets. So effective hedge fund regulation should center around the sources of systemic risk and its cross-border transmission.

1 *Size*

It is practically impossible to accurately estimate the overarching size of the hedge fund industry due to its secretive nature. But, even if the general volume of AUM of this industry is smaller than that of other financial sectors,<sup>112</sup> the real impact that hedge funds have on financial markets is much greater because of their trading volumes, strategies and market liquidity. As to the whole industry, the size alone does not explain hedge funds' systemic implications. They can influence the efficiency, liquidity, and risk diversification of financial markets. In terms of individual hedge funds, those with large size tend to possess great potential for systemic implications. A single large hedge fund may become a 'future source of significant systemic risk'.<sup>113</sup> As Hildebrand points out, the 'largest hedge funds could generate sufficiently

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<sup>111</sup> Lee(n11) 494.

<sup>112</sup> See, eg, compared with other U.S. financial entities, despite representing 'only a small section of the investing community', 'hedge funds have the potential to impact the U.S. financial markets significantly' due to their application of 'more active, short-term trading' and more aggressive leverage: Gibson (n 8) 685.

<sup>113</sup> Bianchi and Drew (n24) 20.

large losses to threaten the solvency of a large bank’, and, ‘regulatory focus should be on the activities of the largest hedge funds’.<sup>114</sup>

When LTCM, then one of the largest hedge funds, nearly collapsed in 1998, its capital amounted to US\$4.8 billion.<sup>115</sup> Combined with the leverage ratio of 25:1, a ‘terrific amount of debt’,<sup>116</sup> LTCM could generate approximately US\$150 billion in influence on financial markets. The LTCM event demonstrated the broad economic hazard that a collapsed hedge fund of large size could potentially pose.

In addition, a sequence of smaller hedge funds may pose and spread systemic risk due to the industry’s considerable involvement with various sectors of financial markets.<sup>117</sup> The combined impact of a group of medium or small hedge funds with the same or similar exposures to the same or similar sources of risks, can lead to the ‘ensuing run for exit’ and ‘quasi concurrent failure’, triggering systemic meltdowns.<sup>118</sup> Altogether, the collective effort of hedge funds can create and influence markets greatly as ‘half of the daily trading volume on the New York and London Stock Exchanges’ gets conducted by the industry, holding great potential for financial systemic stability.<sup>119</sup>

## 2 *Interconnectedness*

With the growing interdependence and inter-linkage of financial markets across the world, the potential for the negative effects of systemic risk posed by financial entities increases in times of crises.<sup>120</sup> Such is the case with the hedge fund industry. Most hedge funds’ counterparties are directly regulated financial entities, for example,

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<sup>114</sup> Hilderbrand (n 33) 73.

<sup>115</sup> Jonna (n 48) 993.

<sup>116</sup> Bodellini (n11) 438.

<sup>117</sup> Shelby (n 85) 665.

<sup>118</sup> Dan’ielsson et al (n 18) 26.

<sup>119</sup> Bodellini (n11) 442.

<sup>120</sup> Tobias H. Troger, ‘Organisational Choices of Banks and the Effective Supervision of Transnational Financial Institutions’ (2013) 48 *Texas International Law Journal* 177, 179.



commercial banks and investment banks. They receive ‘large infusions of capital from governments’.<sup>121</sup> By competent agent fees, hedge funds can progressively draw large financial institutions for various financial services, among which the most significant is prime brokerage<sup>122</sup> offered by investment banks and securities broker dealers, such as ‘loans, securities lending, derivatives trading, executing transactions, asset custody, and other operational support’.<sup>123</sup> These services allow these counterparties to theoretically figure out the positions and transaction flows of relevant hedge funds.<sup>124</sup> Statistics show that as lively players in various sectors of financial markets, hedge funds constitute ‘more than 85% of the trading volume in distressed debt, 40% in leverage loan market’ and operate actively ‘in high return and emerging market debt markets’.<sup>125</sup> Once huge hedge fund failure occurs the prime brokers are directly exposed to systemic risks.

As shown by the GFC, in the event of massive redemption requests, hedge fund managers may be forced to clear hedge funds’ basic equity positions ‘as fire sale prices’.<sup>126</sup> Besides, with the growing scale and weight of the hedge fund industry, more and more investment banks and security traders, especially TBTFs have increasingly plunged into business with hedge funds. They also get involved in distributing, trading, managing hedge funds or financial products related to hedge funds, and even directly invest in hedge funds on some occasions.<sup>127</sup> Therefore, due

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<sup>121</sup> Andrew Ang et al, ‘Hedge Fund Leverage’ (2011) 102 *Journal of Financial Economics* 102, 102–3.

<sup>122</sup> The main business of prime brokerage includes ‘global custody, clearing, margin lending, securities lending and borrowing, transaction execution and operational support’: Eechoud et al (n 62) 336. See also Dixon et al (n 27) XVI.

<sup>123</sup> Shadab (n 46) 38; See also Hilderbrand (n 33) 73.

<sup>124</sup> Eechoud et al (n 62) 336.

<sup>125</sup> *Ibid* 337.

<sup>126</sup> Shelby (n 85) 662–3.

<sup>127</sup> Eechoud et al (n 62) 335.

to their interconnectedness with large financial institutions, hedge funds have the potential to generate and transmit systemic risk during their trading activities.<sup>128</sup>

In the case of LTCM, the ‘high level of interconnectedness’ with large banks or other financial institutions was a key contributing factor for LTCM’s large systemic implications.<sup>129</sup> It had been 17 important investment banks’ direct exposure to LTCM liquidation risk, and indirect counterparty risk for financial entities due to ‘inter-bank exposures’, that ultimately compelled the Federal Reserve to interfere in and coordinate a rescue against the breakout of ‘domino style defaults throughout the banking system’.<sup>130</sup> LTCM got their financial services from its 17 financial counterparties without providing sufficient margin,<sup>131</sup> which turned out to be a huge hidden danger for these counterparties. Sometimes history can repeat itself. Such was also the case with Bear Stearns’ hedge funds. The failure of the two funds also underscored that threats to systemic stability can emerge in the cases of hedge funds operating within bigger financial firms. Parent organisations tend to consider it responsible to rescue their failing funds out of concern for the exposure of the weakness in themselves. When a parent financial institution has many interlinkages and interdependence with other financial institutions in financial markets, the consequences of systemic risk can be inevitable. As to TBTFs, governments tend to

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<sup>128</sup> Shelby (n 85) 660–1.

<sup>129</sup> Bijkerk et al (n 55) 14.

<sup>130</sup> Dan’ielsson et al (n 18) 12.

<sup>131</sup> As a core part of counterparty credit risk management practice for prime brokers and banks, margin acts as a buffer against exposure to hedge funds. Prime brokers and banks tend to ‘extend credit to’ the latter when the latter provides cash or collateral no less than the amount of exposure. In addition to the initial margin, there is a variation or additional margin ‘to cover potential future changes in the value of the contract’. In September 2013, the BCBS and IOSCO published the standard margin requirements for non-centrally cleared derivatives, covering both variation margin and initial margin. See Kambhu et al (n 37) 3–4; Engert (n22) 340; IOSCO, Board Priorities - IOSCO work program for 2019 (25 March 2019)

<<https://www.iosco.org/library/pubdocs/pdf/IOSCOPD625.pdf>>4.

coordinate or offer financial rescue directly, and ultimately it is taxpayers who pay the bill.<sup>132</sup>

### 3 *Trading Strategies*

Benefitting from less or lighter regulation than traditional investment vehicles, hedge funds enjoy more flexibility and freedom in exploiting a multitude of trading strategies and financial instruments. Therefore, they have the advantage of grasping profit-earning opportunities as they emerge.<sup>133</sup> This explains why they can pursue absolute returns and outperform traditional investment funds. But the unlimited use of complex investment strategies by hedge funds can lead to the potential for systemic contagion,<sup>134</sup> among which the most prominent and frequently used ones are short selling, leverage, and derivatives.<sup>135</sup>

#### (a) *Short selling*

To seek absolute returns, short selling is one of hedge fund managers' favourite and basic investment strategies. It refers to the practice of selling securities not owned today at current value, based on the judgment that the sold securities are essentially overvalued, will depreciate, and can be bought at lower prices sometime in the future to return to lenders.<sup>136</sup> During the practice, the seller has to borrow and sell securities, wait for downward prices, buy and return securities at desirable lower prices. Profit can be realized when the selling price is higher than the buying price plus the cost of securities borrowing. Inversely, if the prices of the securities have not dropped or even gone up until the repayment is due, the short seller has to purchase them back at high

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<sup>132</sup> Dixon et al (n 27) 45.

<sup>133</sup> Rand Corporation, 'Do Hedge Funds Pose a Systemic Risk to the Economy?' (2012) <<http://www.rand.org>>.1

<sup>134</sup> Wulf A. Kaal and Timothy A. Krause, *Handbook on Hedge Funds* (Oxford University Press, 2016) 9.

<sup>135</sup> Shelby (n 85) 659.

<sup>136</sup> Anand (n13) 970.

prices and incur losses.<sup>137</sup> And in short selling, the borrowing of securities per se affects leverage with the amount of debt expanded.<sup>138</sup>

Under most circumstances, short selling is a significant tool to offset portfolio risks, facilitate market players declaring price views on traded assets, help correct asset mispricing, and decrease speculative bubbles. In this sense, it can function as an efficient mechanism for price discovery to fight against distorted valuations when a hedge fund makes a correct judgement of overvalued securities.<sup>139</sup> On the other hand, unrestricted use of short selling can upset or cause volatility in markets, triggering and increasing financial disruptions.<sup>140</sup> In particular, ‘opportunistic short selling’ conducted by ‘a large hedge fund or multiple hedge funds’ can reduce the value of lucrative firm’s share due to synchronically combined short selling.<sup>141</sup> This can have serious adverse consequences, such as sharp downward prices or the depreciation of the true value of companies, when there is no adequate time or opportunity for these companies to clarify or dispel rumours to investors before debacles. This can, in turn, pose systemic risk to financial markets and even impair the real economy.<sup>142</sup>

Short selling’s contribution to self-reinforcing downward trends in asset prices across industries and asset classes became apparent in 2008, particularly by the ‘massive short selling of major bank stocks’ around the Lehman insolvency.<sup>143</sup> And it has been blamed as one of the culprits for contributing to the GFC despite playing a minor role<sup>144</sup> compared with leverage and toxic derivatives.<sup>145</sup> Therefore, relying on affected

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<sup>137</sup> De Brouwer Gordon, *Hedge Funds in Emerging Markets* (Cambridge University Press, 2001) 9.

<sup>138</sup> Bodellini (n11) 441.

<sup>139</sup> *Ibid.*

<sup>140</sup> Barbara Crutchfield George et al, ‘The Opaque and Under-Regulated Hedge Fund Industry: Victim or Culprit in the Subprime Mortgage Crisis?’ (2009) 5 *NYU Journal of Law & Business* 359, 378.

<sup>141</sup> Bodellini (n11) 441. See also Dixon et al (n 27) 65.

<sup>142</sup> Dixon et al (n 27) 65.

<sup>143</sup> Eechoud et al (n 62) 285; Dixon et al (n 27) 55; Bodellini (n11) 441.

<sup>144</sup> Dixon et al (n 27) 56.

<sup>145</sup> Dixon et al (n 27) XVII.

securities and markets, the extreme use of short selling has the potential to create and transmit systemic risk. The failure of Bear Stearns' hedge funds suggested that some degree of restrictions on the frequency and cost of short selling should comprise an important part of hedge fund regulation.

*(b) Leverage*

As a common strategy in various transactions of hedge funds,<sup>146</sup> leverage, also called gearing, refers to borrowing funds or securities to extend investment so that, when the investment outperforms the cost of the borrowed funds, profits are made. In the converse scenario, losses are suffered. According to IOSCO, generally, leverage means 'any situation where a fund achieves an exposure larger than the capital it invests.'<sup>147</sup> Essentially leverage is 'the strategy of using debt to acquire assets'.<sup>148</sup> The level of leverage means the degree to which a financial entity is in debt, normally in relation to its asset base<sup>149</sup> and the ability 'to lose or gain more than the initial amount invested (i.e., the equity capital)'.<sup>150</sup> Much commentary on the sources of systemic risk associated with hedge funds has concentrated on their extreme use of leverage.<sup>151</sup> As a 'characteristic risk of hedge funds',<sup>152</sup> leverage has been considered one of the major contributing factors to hedge funds' systemic implications.<sup>153</sup>

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<sup>146</sup> Alternative Investment Management Association, *ALMA's Roadmap to Hedge Funds* (Alexander Ineichen, 2012) <<http://www.aima.org/en/education>>.

<sup>147</sup> The Board of IOSCO, Report on the Fourth IOSCO Hedge Funds Survey (Report, IOSCO, November 2017) 19.

<sup>148</sup> Roach (n11) 167.

<sup>149</sup> Dan 'ielsson et al (n 18) 11.

<sup>150</sup> Shadab (n 46) 40.

<sup>151</sup> Doyran (n 8) 26.

<sup>152</sup> Frank Hespeler and Giuseppe Loiacono, 'Monitoring systemic risk in the hedge fund sector' (2017) 17 (12) *Quantitative Finance* 1859, 1860.

<sup>153</sup> Eechoud et al (n 62) 326.

Benefitting from the comparative advantage of being exempt from upper restrictions on allowable leverage,<sup>154</sup> the hedge fund industry can use leveraged strategies much more freely than traditional investment funds. In most jurisdictions ‘there are no legal constraints (at least direct) on the maximum level of leverage to be exploited by hedge fund managers, and it tends to be only defined or described in hedge funds’ prospectuses, or be constrained by their prime brokers’.<sup>155</sup> Although not all hedge funds leverage their positions, their potential to do so is a differentiating feature compared with other investment funds, depending on their individual investment styles.<sup>156</sup> As a matter of fact, within the asset management community, collectively hedge funds leverage the most and ‘the relatively high and sophisticated use of leverage’ can be considered ‘a defining characteristic’ of this industry.<sup>157</sup> Due to this outstanding feature, hedge funds are also sometimes called Highly Leveraged Institutions (HLIs).<sup>158</sup>

In practice, there are direct and indirect means for hedge funds to leverage positions. This may involve directly borrowing money or securities from counterparties, such as prime brokers and repo markets. Or it may entail indirectly leveraging by purchasing certain derivative products, for example, options, futures, and swaps.<sup>159</sup> The impact of derivatives trading can be greater than direct borrowing as the performance of derivatives also depends on the price movement of their underlying assets.

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<sup>154</sup> Dan ’ielsson et al (n 18) 11; Maris (n 42) 209 (“A major drive for the use of leverage by hedge funds was the absence, in most jurisdictions, of any statutory limits on the level of leverage employed by hedge funds”).

<sup>155</sup> Capocci (n14) 95.

<sup>156</sup> See Eechoud et al (n 62) 339. See also Gibson (n 8) 686–7.

<sup>157</sup> Ang et al (n 121) 102–3.

<sup>158</sup> In 1999, the Financial Stability Forum (FSF) selected hedge funds as one of the three major issues to be dealt with and established the Working Group on Highly Leveraged Institutions (HLIs) together with a task force — the Study Group on Market Dynamics to handle the role of the hedge fund industry in the 1997/1998 emerging market crisis. HLI was name used to identify hedge funds. See Robotti, Paola, Hedge Funds and Financial Stability: Explaining the Debate at the Financial Stability Forum (December 2017) <<http://eprints.lse.ac.uk/24514/1/dp560.pdf>>5.

<sup>159</sup> The Board of IOSCO (n 147) 19; Shadab (n 46) 40.

The utilisation of leverage equips hedge funds to exert a much greater influence on capital markets than the actual degree of their AUM suggests,<sup>160</sup> either amplifying returns on a transaction, or magnifying losses for the same level of investment.<sup>161</sup> Aggressive hedge funds tend to adopt a 25:1 debt-to-equity ratio, implying that for each dollar invested, the fund has borrowed \$25 more from a financial firm.<sup>162</sup> In this sense, huge leverage can run the risk of amplifying losses to many times the actual invested capital.<sup>163</sup> And the higher the leverage used, the more susceptible hedge funds are to abrupt exogenous distress and default of counterparties,<sup>164</sup> which was demonstrated by the breakdown of Bear Stearns' hedge funds.<sup>165</sup> Were it not for the debt created by leverage, the possibility of triggering financial failures would be much smaller.<sup>166</sup> Besides, high leverage can potentially cause the problem of poor market liquidity, with a large amount of investment unable to be paid back or redeemed rapidly without a sharp decrease in value. The case of Bear Stearns' illustrated the direct consequence of extreme leverage—the sharp decrease of asset liquidity, especially within a short period of time. Furthermore, once a hedge fund is both highly leveraged and concentrates heavily on certain securities, its big and abrupt sales may influence the portions of financial markets where these products are traded and even the whole market.<sup>167</sup>

The especially high leverage of LTCM was 'the most conspicuous, but not the solitary factor that resulted in its fallout'.<sup>168</sup> The extreme use of leverage was more of a contributing factor to the GFC, as compared with the short selling of securities by

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<sup>160</sup> Oppold (n11) 839.

<sup>161</sup> Shadab (n 46) 40.

<sup>162</sup> Roach (n11) 168.

<sup>163</sup> Shadab (n 46) 40.

<sup>164</sup> Eechoud et al (n 62) 284.

<sup>165</sup> Oppold (n11) 858. See also Dixon et al (n 27) XVII.

<sup>166</sup> Bodellini (n11) 441.

<sup>167</sup> Ibid.

<sup>168</sup> Becker and Doherty-Minicozzi (n 12) 45.

hedge fund managers while the losses of prime brokers were more directly attributed to harmful mortgage assets.<sup>169</sup> Both systemic events — the demise of LTCM and Bear Stearns' hedge funds — demonstrated that hedge funds' use of leverage is one of the most convincing reasons for extra regulation. As Roach contends, it was the 'rogue strategies' adopted by managers that were 'the driving force behind the Securities and Exchange Commission (SEC)'s attempt at increased regulation', especially to constrain hedge funds from 'using high amounts of economic leverage'.<sup>170</sup>

Aided by other contributing factors, such as their size, and positions taken in the markets, the level of leverage used by a hedge fund can determine the impact of its default on markets.<sup>171</sup> If a hedge fund is big, has a lot of interlinkages with other financial players and assumes a high level of leverage, it can potentially suffer losses that can be spread to their creditors and trading counterparties. Leveraged losses are much more likely to generate systemic risk and even lead to financial meltdowns at the national and global levels. Therefore, it is necessary for regulators to consider the components of limiting leverage use, such as margin requirements as a buffer against systemic risk.

The episodes of LTCM and Bear Stearns' hedge funds also revealed the significance of imposing appropriate margin requirements on trades with hedge funds. Had the trades with elements of leverage been cleared by enforcement of appropriate margin and collateral requirements, the fiascos might have been avoided. In fact, when conducting trading with LTCM and Bear Stearns' hedge funds, their respective counterparties did not require them to provide adequate margin and collateral, and

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<sup>169</sup> Dixon et al (n 27) 59.

<sup>170</sup> Roach (n11) 167, citing Thomas Kostigen, 'Without Hedge-Fund Regulation, There Will Be Dark Days Ahead' (*Market Watch Com*, 9 March 2007) <<http://www.marketwatch.com/news/story/without-hedge-fund-regulation-there-dark/story.aspx?guid=E4416EB-AEE1-44A1-987F-486EE41F3BD8/&dist=msr6>>.

<sup>171</sup> Tomas Garbaravicius and Frank Dierick, *Hedge Funds and Their Implications for Financial Stability* (Eur. Cent. Bank Occasional Paper Series, Paper No 34, 2005) 27.



there were ‘no regulations on the margins required for leverage’.<sup>172</sup> So, when they reached the excessive leverage ratio, and the market moved in an unexpected direction, their losses inevitably became extremely large. Therefore, the fallouts of LTCM and Bear Stearns’ hedge funds were caused in large part by the failure of their counterparties to impose proper margin and collateral requirements. As Guo argues, ‘ideally, maintaining a margin requirement will protect against losses from counterparty default because it requires a party to provide real money as collateral for their obligations under a derivative contract’.<sup>173</sup>

(c) *Derivatives*

Derivatives are financial instruments whose value depends on underlying variables, including forwards, futures, swaps, options and hybrid products formed by their combination and decomposition with other financial instruments.<sup>174</sup> In addition to borrowing funds or securities directly, the use of derivatives is the other basic means for hedge funds to leverage positions indirectly.<sup>175</sup> As Oppold explains, ‘puts and calls can be bought for a fraction of the underlying value of the security, but enable a fund to capture the gain if the security moves in the expected direction’.<sup>176</sup> However, the use of derivatives is also a double-edged sword, as the trading of derivatives can increase funds’ level of leverage. Because their pricing does not always reflect their embedded risk profiles, the potential for huge losses is intrinsic in derivative products, for example, MBSs, CDOs, and CDSs, in which hedge funds typically and liberally

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<sup>172</sup> Dixon et al (n 27) 64.

<sup>173</sup> Yankun Guo, ‘Pause and Harmonise: Issues on the Dodd-Frank Act and its Cross-border Applications’ (2015) 3 *Global Markets Law Journal* 89, 94, citing Lucy McKinstry, ‘Regulating a Global Market: The Extraterritorial Challenge of Dodd-Frank’s Margin Requirements for Uncleared OTC Derivatives & A Mutual Recognition Solution’ (2013) 51 *Columbia Journal of Transnational Law* 776, 784.

<sup>174</sup> See Michael J. Schmidt, ‘Investor Protection in Europe and the United States: Impacting the Future of Hedge Funds’ (2007) 25 *Wisconsin International Law Journal* 161, 163; Bodellini (n11) 441.

<sup>175</sup> Hespeler and Loiacono (n 152) 1859.

<sup>176</sup> Oppold (n11) 859.

trade. This makes their trading strategies risky and means that they pose systemic risk to financial markets.

As illustrated above, many counterparties had direct exposures to LTCM and Bear Stearns' funds, mostly rising from derivatives.<sup>177</sup> And the 'main culprits' of the GFC were considered to be the complex and innovative derivatives, such as CDOs, CDSs, and other structured investment vehicles, creating highly leveraged positions.<sup>178</sup> The Bear Stearns' hedge funds were heavily involved in the derivatives of Bear Stearns' Asset Management subgroups.<sup>179</sup>

#### 4 *Opaque Nature*

Opacity is a distinctive feature of the hedge fund industry. Hedge funds hold lawful rights to protect their proprietary trading strategies. Among financial entities, they 'hold a prominent reputation for opacity and complexity'.<sup>180</sup> However, in the absence of necessary and reliable information about their strategies and positions, investors, prime brokers or counterparties and regulators cannot fully comprehend the systemic risk that they pose or contribute to.<sup>181</sup>

It can be tough for investors to make informed and rational investment choices as they 'cannot tell the "lemons" from the "peaches"',<sup>182</sup> however sophisticated they are, adding uncertainties to financial markets and leading to systemic risk. Although managers also have a portion of their own fortune put in hedge funds, implicating that as co-investors, they take the same risks and 'stand in the same boat with investors',

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<sup>177</sup> Ferguson and Laster (n 61) 50.

<sup>178</sup> Karmel (n 48) 854; Shelby (n 85) 665.

<sup>179</sup> Kaal and Krause (n134) 3.

<sup>180</sup> Information asymmetry is defined in economics as the situation where one party to a transaction has more or better information than the other party to the transaction, which creates an imbalance in the power of the parties and in some instances is a form of market failure: Hossein Nabilou, 'Regulatory Arbitrage and Hedge Fund Regulation: The Need for a Transnational Response' (2017) 22 *Fordham Journal of Corporate & Financial Law* 557, 594.

<sup>181</sup> Dixon et al (n 27) 38.

<sup>182</sup> Nabilou (n 180) 592.

the problem remains that ‘it is hard or even impossible for ordinary investors to gather true information on managers’ stakes except the largest and most financially shrewd ones’.<sup>183</sup> For prime brokers or counterparties, due to the inability to see the full accounts of hedge funds and the volatility of their trading, it is tough for them to evaluate the risks of hedge funds in a comprehensive and timely manner despite their financial shrewdness. For regulators, limited to fragmentary and patchy data on hedge funds, in terms of their asset values, held positions, and trading strategies of leverage, short selling, and derivatives, they cannot analyse and evaluate whether systemic risk is building up and if so, how much is accumulated, rendering them unable to impose ‘genuine financial market reform’.<sup>184</sup>

In the case of the LTCM fallout, it was also a deadly defect of LTCM that its investors, prime brokers, and creditors were not well informed of its activities and fell short of timely and appropriate monitoring, being ‘either unwilling or unable to do so’.<sup>185</sup> It turned out that LTCM had covered up the fact that their balance sheet leverage exceeded 25:1 because it banked on many counterparties who did not have an entire vision of the risks accumulated on LTCM’s balance sheet.<sup>186</sup>

Therefore, a balance between and among the rights and interests of hedge funds’ investors, counterparties, and managers should be struck and maintained regarding hedge fund information.<sup>187</sup> With hedge funds’ increasing trading activities in multiple jurisdictions, the information asymmetry problem in this industry becomes more

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<sup>183</sup> Kambhu et al (n 37) 3.

<sup>184</sup> Bianchi and Drew (n24) 7.

<sup>185</sup> Anand (n13) 947.

<sup>186</sup> Lee Reiners, ‘*Do Hedge Funds Threaten Financial Stability?*’

<<http://sites.duke.edu/thefinregblog/2017/01/26/do-hedge-funds-threaten-financial-stability/>> (26 January 2017).

<sup>187</sup> Roger T. Cole et al, ‘Hedge Funds, Credit Risk Transfer and Financial Stability’ (2007) 10 *Financial Stability Review* 3, 12.

prominent, suggesting a need for information sharing and cooperation amongst national regulators.<sup>188</sup>

In a nutshell, the impact of a hedge fund's failure on financial markets can be determined by its size, interconnectedness with other financial institutions, especially TBTFs, volatile trading strategies, such as leverage, short selling, and derivatives, and low degree of transparency and disclosure.<sup>189</sup> Some or all of these factors can combine to bring about systemic impairment or financial meltdown.

#### IV CONCLUSION

As an integral part of financial markets, hedge funds can play positive roles under effective regulation. But their potentially destructive impacts should be highly paid attention to by regulators worldwide. The tragic events of hedge funds reminded regulators that the triggering and transmission of systemic risk by hedge funds and its huge damage to financial markets and the real economy have made the need for extra regulation urgent at both national and international levels. The core issue of hedge fund regulation should be to spot, monitor and mitigate the sources of their systemic risk on both national and global scales. Among other things, the increasing size of hedge funds, their interconnectedness with TBTFs, their sophisticated use of various strategies and instruments, and their opacity have made it rather tough to regulate this industry.

With the interdependence and interconnection of financial markets among jurisdictions, and more convenient movement of money across borders, the hedge fund industry has grown increasingly global, as funds and managers can operate in many jurisdictions, and trade across multiple financial markets. Accordingly, the systemic potential for spill-over effects by hedge funds increases, as systemic risk

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<sup>188</sup> Karmel (n 48) 914.

<sup>189</sup> Bodellini (n11) 440.

emerging from them can cross borders, transmitting among the financial markets of various countries and undermining the stability of the global financial market. ‘The systemic implications of what happens in one market can be felt immediately in other markets around the world’.<sup>190</sup> Therefore, it is necessary to regulate hedge funds at the global level,<sup>191</sup> and individual national regulators need to ‘work with their foreign counterparts to seek coordinated international solutions to assure fairer as well as more efficient market operations across borders’.<sup>192</sup> Based on this awareness, in this post-financial era, there has been a consensus that the interconnectedness of financial markets calls for a global approach to hedge fund regulation.<sup>193</sup> Combined efforts at both national and international levels are crucial to safeguard a fair playing field and maintain financial stability in the global financial markets.

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<sup>190</sup> Jane Diplock, ‘The Work of IOSCO and the Financial Regulatory Framework’ in Mohamed Ariff (eds), *Regulatory Failure and the Global Financial Crisis* (Edward Elgar Publishing, 2012) 139.

<sup>191</sup> Barbara Black, ‘Introduction: The Globalisation of Securities Regulation — Competition or Coordination?’ (2010) 79 *University of Cincinnati Law Review* 461, 469-470.

<sup>192</sup> Roberta S. Karmel and Claire R. Kelly, ‘The Hardening of Soft Law in Securities Regulation’ (2009) 34 *Brooklyn Journal of International Law* 883, 911, citing H.R. RFP. No. 101-240, at 3 (1989), as reprinted in 1990 U.S.C.C.A.N. 3888.

<sup>193</sup> Karmel and Kelly (n 192) 911.