

# Emergence of a New Regulation: Informational Disclosure Modalities in the Hedge Fund Opacity World

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## Summary

The 2007-2008 crisis has highlighted the tensions related to lack of transparency and asymmetrical information in the hedge fund industry. This opacity was accepted by public and private players as a way to promote informational efficiency, financial innovation and liquidity in markets, but it may induce market failures. As the hedge fund industry manages more and more private and public assets, damage done by market failures is increasing. Damage can be estimated at a micro level by a misallocation induced by a double (*ex ante* and *ex post*) asymmetry and at a macro level by increasing financial and banking instability. One way to resolve market failures is to require hedge funds to disclose more information, but information can be revealed in different ways. Who do hedge funds have to disclose information to: clients, the regulatory authorities, prime brokers, or to all market participants? What kind of information do they have to disclose: personalized, standardized, aggregated public information? Must disclosure be requested or not? These questions show the complexity of practical informational disclosure. A number of reports, guidelines and draft laws have been published about hedge fund regulation. The analysis of the reports' recommendations allows us to emphasize the different configurations of informational disclosure. We propose an original typology of disclosure modalities built on a *consequentialist* approach by distinguishing the aim of informational disclosure (macro/micro allocation) and the modality of information disclosure (by free bargaining with co-contractors, by a standardized contract, by an obligation toward the regulatory authorities, by publicity). In this way, informational disclosure appears as a social norm with different uses and different purposes. Using Kohonen maps to classify these reports, we can characterize the different types of logic to think of financial regulation as the opposition of private versus public interest and the Anglo-Saxon versus the Continental European approach. This typology gives us an insight into the social emergence of the new financial regulation in the hedge fund industry.<sup>2</sup>

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## Introduction

The hedge fund industry has undergone a huge expansion over the last ten years<sup>3</sup> until the aggravation of the financial crisis in mid-2008. Hedge funds promised performance superior to that of index and traditional funds by using new strategies of asset selection<sup>4</sup>. They developed in a niche of risk management and financial innovation to the benefit of wealthy clients, high-net-worth or institutional investors and have become strategic players in financial globalization by promoting liquidity and information on the financial market.

The scope of hedge funds includes a wide range of financial strategies, from the classical behavior of arbitrage or investment with leverage, to riskier strategies involving speculative positions on OTC markets. A common feature is the relative lack of transparency which prevails in their activities and strategy. The hedge fund industry is reputedly very secretive. Until now, regulators have as a whole recognized the positive influence of hedge funds on the financial markets despite the existence of specific risks (Danielsson *et al.* (2006)). They argue that opacity permits innovation -- creating new strategy, trading in new OTC products -- to prompt a search for private information. The disclosure of private information would destroy these private incentives and finally reduce liquidity and market efficiency. Furthermore, given that only sophisticated clients invest in hedge funds, regulatory authorities have no legitimacy to protect them. They assume that these investors are aware of specific hedge fund risks and that risks are sufficiently dispersed. Indeed, hedge fund capital has historically come from high-net-worth individuals. The financial risks are assumed to be known and accepted by experienced wealthy clients. Clients invest with full knowledge of these vehicles judged as risky and so they accept the consequences in terms of losses. Disclosure of private information is very rare: public advertisement is forbidden, regulatory requirements are very slight, and there is no standardized contract. Until now, this informational asymmetry between hedge funds and their stakeholders (clients, prime brokers, regulatory authorities and people in general) has been accepted by supervisors and investors as a trade-off for the promised advantages.

The clients of hedge funds have rapidly widened with the arrival of institutional investors: pension schemes, insurance companies, endowments and more recently funds of hedge funds. Since the stock market crash in 2001-2002 and the decrease of long-term interest rates, institutional investors have been looking for sources of higher returns<sup>5</sup>. The hedge fund industry has seemed very attractive because of its high and allegedly uncorrelated returns. The increasing influence and institutionalization of hedge funds does not change the issue of lack of informational disclosure in the sector.

The 2007-2008 crisis has highlighted the tensions related to financial regulation. The current hedge fund "regulatory consensus" is very light and is based on indirect regulation: regulation on counterparts of hedge fund companies -- principally prime brokers<sup>6</sup> who lend them money, and regulation on transactions -- regulated markets. Hedge funds are also supervised by market discipline via voluntary informational disclosure between stakeholders. To reduce market

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<sup>3</sup> Between 2000 and 2007, we estimate that the number of hedge funds has more than doubled, going from 3 873 to 10 096 funds. Their assets under management have increased from 490 to 1868 billion dollars, namely an annual growth of 20% (Hedge Funds Research).

<sup>4</sup> This innovation brought about by the knowledge of management teams has justified a double fee structure (management fees from 1% to 2% of assets and performance fees between 15% and 20% of profits) and the conditions required by alternative management companies (entry gate: investment minimum between \$100 000 and \$5 million, exit gates - withdrawal after at least 1 year, possible quarterly or yearly disinvestment).

<sup>5</sup> Hedge fund returns were very high between 2001 and 2003 in a bear market. This explains the importance of hedge fund inflows over the last four years.

<sup>6</sup> Prime brokers are often investment bank departments

failures caused by the opacity of hedge funds, three mechanisms could be put into place. The first two are stronger indirect regulation and direct public measures (for example, to limit their leverage, force them to invest in regulated markets and extend banking regulation to hedge funds). The third measure would be informational disclosure requirements.

The crisis highlights the need for more transparency. The proposed regulations are intended primarily to require hedge funds to disclose more information. This is why we focus on measures for informational disclosure, as this is currently the favorite instrument for regulating the banking and financial industry. Yet no consensus has emerged about the implementation of disclosure. This regulation tool is polymorphic; i.e. information disclosure could have different modalities and different aims. The originality of our article is to point out the heterogeneous nature of the agreements on informational disclosure using a typology based on the expected economic outcome of its enforcement. As the recent literature on disclosure shows (see Dye, 2001 for a survey), full disclosure does not guarantee market efficiency or optimal welfare; a contingent trade-off is required. A continuum of arrangements exists from a voluntary commitment between co-contractors to a legal agreement (Talley E. (2001)). Informational disclosure could be implemented as a soft law, as guidelines and best practices; a requested clause in all private contracts, for mutual funds; a prudential obligation, for banks; or as required publicity, the publicity of a company accounting statement.

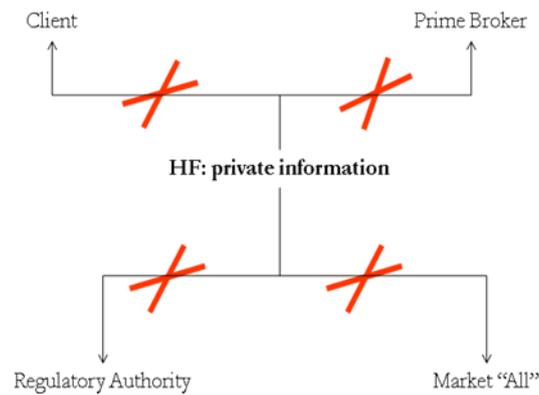
The aim of this article is to analyze the different modalities for disclosing information. The question is how to disclose private information given the aim of communication. Two criteria characterize agreements on informational disclosure. The first is the final aim (micro or macro allocation). The second is the level of informational disclosure: discretionary agreement (private information negotiated by mutual agreement between the hedge fund and its customer), contractual norm (information provided to all the customers on a compulsory or voluntary basis), regulatory (communication to the regulator) and publicity (public information). Various reports, guidelines, draft laws have been published and we have worked on them to characterize agreements using our two criteria. This empirical framework allows us to capture the diversity of disclosure agreements. Our article proposes to clarify the polymorphic nature of disclosure by considering the expected consequences. In this way, we will better be able to understand the difficulties in the current discussions about the emergence of new hedge fund regulation.

The first section describes the market failures induced by the secretive hedge fund industry. The second section sets out our typology of agreement. The third one uses this typology to explain the proposals currently made. The fourth section examines our main statistical results. The fifth presents a classification of agreements using Kohonen Maps.

### **1. Informational asymmetry: micro and macro misallocation**

This first section proposes to clarify the market failures induced by opacity in the hedge fund industry. We distinguish the damage according to the different protagonists.

**Figure 1: Informational Asymmetries in the Hedge Fund Industry**



Two levels of market failure appear and will be developed:

- Micro misallocation: A problem of agency relation appears between hedge funds and clients (impairing allocation of individual savings) on the one hand and hedge funds and prime brokers (impairing lending terms) on the other.
- Macro misallocation: The lack of public information and aggregated information about hedge fund activities induces a double inefficiency: informational (causing financial instability) and allocating (systemic risk).

### 1.1. Individual misallocation

According to Jensen and Meckling (1976) an agency relation is defined as "a contract by which one person or several people (principal) hires another person (agent) to perform in its name one task or another which involves a delegation of some decision power to the agent" (...) There is an agency relation between hedge funds/clients and hedge funds/prime brokers. In both contractual relationships, the hedge fund manager is the informed party; he knows his effort to invest, his level of risk, and the asset positions in the portfolio. Depending on whether or not the principal knows the specifications of the agent and his behavior, the agency relation is defined by a relation of adverse selection or moral hazard.

#### *Hedge funds/clients agency relationship*

This first imperfection has been documented at length in the case of traditional mutual funds (Bhattacharya et alii 1985, Bellando 2008 for a "review of literature"). The manager is the only one to know the effort he has put into the portfolio management and the information search. The only information revealed to the customer is the profit of the investment. The manager/client asymmetry impairs information efficiency on the market of funds and induces a misallocation of assets. Two situations must be distinguished in this situation of information asymmetry: the one before the signature of the contract and the one after. The distinction between these two *ex ante/ex post* levels is pertinent because it induces different response mechanisms.

Before signing the contract, the client has to look for information on hedge funds, which are private pools of capital or entities associated in a partnership. Therefore, they are not governed by the same rules as other asset management companies in terms of regulatory requirements. Public information is very scarce and advertisement is forbidden. Moreover, hedge fund entities

are generally registered in tax havens<sup>7</sup> with minimal public information. The client must base his decisions on his prior beliefs using some biased signals such as reputation, rumors, meetings and very scarce quantitative data. In such a secretive context, extraneous signals, as well as the address of the manager, may become informative (Tadjeddine Y., 2010). Some investors sometimes need to call on private detective services to investigate further after initially checking manager registration<sup>8</sup> and this entails additional cost for them. The contract between investors and hedge fund managers is based on trust. This is why the appearance of honesty is vital. Furthermore, hedge funds could manipulate the situation by announcing partial information such as overestimated past or expected returns or an underestimated risk position. The difficulty in obtaining reliable information about hedge funds is a key issue which induces non optimal selection as well as a misallocation of savings. A way to reduce adverse selection is to produce reliable available data about hedge funds and hedge fund managers. For example, if hedge funds are registered on shore, the local regulatory authority could certify their quality as well as that of hedge fund managers.

After signing the contract, clients have to collect information on the managers' efforts, yet monitoring managers proves to be an arduous task. The traditional moral hazard of delegation activities is exacerbated by the risky environment of financial markets and the heterogeneous nature of hedge fund strategies. The return is an imperfect signal of the quality of management (Malkiel and Saha 2005). Furthermore, to improve return, managers are encouraged to make riskier allocations. The prohibitive and asymmetric commissions and the difficulties in liquidating shares, due to lock-up periods are among the many incentive mechanisms which affect the monitoring of hedge fund managers by their clients (Infovest21 report, 2009; Aglietta, Khanniche, Rigot, 2010). A way to reduce moral hazard is for managers to disclose specific information to clients about their portfolio allocation, strategy, leverage, and incentive structure.

Hedge fund clients face informational asymmetry which is undoubtedly linked to market uncertainty, but which is exacerbated above all by the secretive hedge fund industry. This double (*ex ante/ex post*) asymmetry keeps them from making an optimal allocation of their portfolio. A regulation on informational disclosure could usefully reduce this market failure.

#### *Hedge funds/prime brokers agency relationship*

The second agency relationship concerns the lending contract between hedge funds and prime brokers. Indeed, financial leverage (via derivatives markets) is the major service that prime brokers offer to hedge funds. Prime brokers are usually the lending arm of investment banks; they bear the counterparty risk. For their part, hedge funds offer two opportunities to investment banks: firstly they reduce bank credit risks because they sell credit risk protection and secondly they provide liquidity for securitization operations and other financing strategies.

For clients, there are two *ex ante* and *ex post* asymmetries (Stiglitz, Weiss, 1981). Regarding *ex ante* asymmetry, prime brokers must estimate the risk of hedge fund default. However, because of biased signals or the lack of public information, they may underestimate the risk and therefore provide leverage to hedge funds on lax credit conditions, i.e. very narrow credit spreads and a low initial margin. Hedge funds may have several prime brokers. A way of reducing adverse selection is to make hedge funds disclose all their leverage to their prime brokers. As far as *ex post*

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<sup>7</sup> Most hedge funds are domiciled in the Cayman Islands, the Virgin Islands or the Channel Islands to benefit from tax advantages and very loose regulation

<sup>8</sup> Hedge fund managers' registration with supervisors is already effective in the United Kingdom (FSA), but not in the United States. Registration constitutes the first morality check of managers because it allows supervisors to carry out investigations on managers' backgrounds and on their investment activities. It is a prerequisite while not a sufficient condition for improving transparency.

informational asymmetry is concerned, the lack of monitoring is due to the lack of private information disclosure and to hidden risk (asymmetrical risk profile). A way of evaluating the *ex post* exposure to risk more correctly is to request detailed information about risk policy.

As a general rule, both of these issues can be amplified by the fact that hedge funds and prime brokers have an endogenous relationship. Indeed, prime brokers' incomes depend heavily on hedge funds, with hedge funds providing 20% to 30% of the profit of investment banks. Two thirds of this percentage comes from the 200 main hedge funds. As a result, hedge funds are very profitable clients for investment banks and there is fierce competition in the prime brokerage sector to gain market share (Mac Kinsey, 2007). Moreover, prime brokerage is very concentrated<sup>9</sup>, as is the hedge fund industry. For example, in 2006 two investment banks, Morgan Stanley and Goldman Sachs, accounted for more than 40% of total assets.

The current crisis has revealed this vulnerability and shown that the lending channel is a way of transmitting systemic risk. Leverage generates important counterparty risks between hedge funds and prime brokers. In the present financial crisis, counterparty risk has come back with a vengeance to prime brokers and subsequently to investment banks, as shown by the fate of Bear Stearns in March 2008. Until this crisis, prime brokers accepted the lack of transparency and contributed to the procyclical dynamics (Adrian, Shin, 2008). After the crisis, their behavior should change and they may become more wary.

## 1.2. Macro misallocation

This part questions the contribution of hedge funds to information and allocation efficiency. It has been argued that hedge fund activity may have a positive effect on financial markets. Hedge funds may lead to lower market volatility because they are less likely to engage in momentum trading, that is to say buying into a rising market and selling into a falling one. Through their ability to engage in short selling and to take contrarian approaches, they may also act as a counterbalance to market herding. Moreover, hedge funds may provide attractive diversification. However, they may have possible negative effects on financial stability. It is difficult to estimate their impact because of the lack of reliable data. There have been several episodes where hedge funds were involved like Soros via quantum funds which caused the European Monetary System crisis in 1992 to benefit from the sterling pound attack and the failure of LTCM to remind us that hedge funds may have detrimental repercussions on financial markets and on the real economy. In other words, we can say that macro misallocation may lead to financial instability and then to systemic risk, that hedge fund activities can not only harm financial markets but also players outside the hedge fund investor groups.

Hedge funds raise issues for several reasons, for example the huge increase of assets under management, their management of public savings, their speculative and risky strategies and their immoderate leverage, among others. In order to deliver high return, hedge funds adopt active and opportunistic behavior. They turn their portfolio over far more frequently than traditional funds, so their short-term influence on markets can be greater than the actual capital under management would indicate. They are encouraged to take on riskier investments like the use of immoderate leverage and huge illiquid positions, to name a few. Such investments in the OTC market and illiquid assets promote extreme risks. Indeed, in an attempt to achieve absolute returns, hedge funds resort to highly non-linear strategies which exhibit extreme risks due to asymmetric risk profiles and thick tail risks since they all have excess kurtosis (negative skewness and very large

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<sup>9</sup> Three quarters of hedge fund managers all over the world are located in the United States and three quarters of European hedge fund managers are located in the United Kingdom. The industry is very concentrated. By 2006, 200 of the biggest hedge funds accounted for three quarters of assets under management (FSF, 2007).

kurtosis). For example, some of the apparently most successful strategies -- *event driven* and *fixed income arbitrage* -- display vulnerability to extreme losses (Aglietta and alii, 2010).

As far as financial instability is concerned, hedge funds raise the main issue of crowded trades. When markets are stable, the presence of hedge funds can boost liquidity, but under stressed conditions hedge funds would be probably the first to exit because they cannot afford to wait when leveraged positions begin to lose money. The crowding of trades or similar positions may further magnify the impact of hedge fund exits on certain fledging or exotic markets where the involvement of regulated institutional investors is less prevalent. In times of stress, if trades are crowded return performance correlations can surge. Moreover, competition encourages hedge funds to have the same strategies; that is to say that a group of hedge funds is exposed to the same risk factors. A research study by ECB confirms: "... correlations between hedge fund strategies have been continually increasing since mid-2003 with a peak in 2005" (Garbaravicius T., F. Dierick, 2005). However, the great increase in correlation in times of turbulence may induce contagion. In periods of stress, the probability of extreme losses sharply increases in all strategies and this risk is amplified if leverage is high.

Furthermore, hedge fund behavior is at the root of systemic risk in two indirect ways: leverage and public savings. The first involves prime brokers, or banks, which provide leverage to hedge funds and which will be ailing if hedge funds fail (De Vries et alii., 2009). In the event of losses or bankruptcies by hedge funds, invested savings fall. Systemic risk arises because hedge fund losses can spread to third parties, such as banks and securities traders. Exposing third parties to hidden risks is a market failure to the extent that third parties are unable to act on such risks by, for example, requiring better credit terms with a bank acting as a hedge fund counterparty (King and Maier, 2008). The second indirect channel of systemic risk concerns public saving. As at the beginnings of the hedge funds industry, clients were wealthy families, lost capital had only an individual impact without any real damage. However, since institutional investors are becoming the main clients of hedge funds, lost capital concerns public savings and impacts the real economy by the wealth effect. Indeed, when pension funds post losses, consequences for final investors are detrimental. Pension benefit levels could be lower than expected and/or employees could have to work longer to obtain the same level of benefits.

Only an aggregate signal about private hedge fund information could improve macro allocation. Until the crisis, such a signal did not exist. To prevent financial or real inefficiency, it would be useful to force all hedge funds or potentially systemic hedge funds to disclose information about their portfolio allocation, leverage and level of managed public savings. Better transparency was and still is seen as one of the main instruments for making market discipline effective and preventing future systemic disruption (ECB, 2005).

This section lists the adverse effects of informational asymmetries. By disclosing some private or public information, hedge funds could reduce these micro and macro misallocations. The second section presents the different modalities of disclosing information.

## **2. Modalities of disclosing information**

To understand and clarify proposals and increase information disclosure in the hedge fund industry, we propose a typology based on two axes. Firstly, we consider that the fight against opacity has two distinct major aims: improving micro allocation or improving macro allocation. We have a similar distinction for banking regulation between micro and macro prudential

regulation. Secondly, we add the modality of informational disclosure. The literature on disclosure traditionally considers only two situations: insider information or public information (Diamond, 1985). Boot and Thakor (2001) proposed distinguishing among three levels, adding a level where the market receives substitute information. We have decided to distinguish among four modalities of disclosure, numbered from one to four.

The first level is discretionary disclosure, based on a voluntary agreement, negotiated between the co-contractors (hedge fund managers and their clients or with prime brokers). Confidentiality could be required by hedge fund managers. The second one is contractual disclosure, a clause in all contracts signed between hedge funds and clients or hedge funds and prime brokers. This clause could consist of standards, such as a code of conduct or guidelines, or law. The difference between this and the first modality is that the clause is implemented for all contractors, without any bargaining. This kind of clause exists for mutual funds in Europe, for UCITS contracts, and in the US. The third modality is regulatory disclosure, whereby hedge funds must disclose information to the regulatory authority. The authority could then reveal the information or not. Such a mechanism is today implemented by banks -- certain information is kept secret, other information is revealed in an anonymous or aggregate form. The last modality is public disclosure where information is accessible to all.

#### *Discretionary disclosure*

The discretionary approach of information disclosure is a liberal approach by mutual agreement. Like elsewhere in the world of finance, the co-contractors freely agree on the execution modalities of the financial service. The *ex-post* informational asymmetry disappears by the implementation of a bilateral agreement forcing the manager to disclose regular and reliable information. The disclosed information content is confidential and tacit. It depends on the parties involved, their preferences and the balance of power. The information transmitted may have been detailed within the framework of a code of good conduct or private charts. It may be the subject-matter of regular detailed reporting on the portfolio, the teams, the level of risk, the procedures put into place, the expectations and the strategies. The discretionary arrangement may also demand the deposit of assets with a prime broker selected by the customer or else the calculation of the net asset value portfolio funds with a selected institution.

Hedge funds may reveal part of the source of their income information and will accept to do so only under certain conditions. Some examples of these are when the client is in a favorable balance of power because he has a high level of savings, as is the case for pension schemes, and when the hedge fund manager may want a long-term partnership with a financial institution, for example funds of hedge funds, the institution's headquarters if it is the subsidiary of a group. Informational disclosure is the result of economic bargaining, the more influential the clients, the more satisfaction they will get. We can talk about customization in the sense that the customer has access to information he wishes to have. Transparency is put into place between the hedge fund manager and the customer, but only the co-contractors have access to this information which remains confidential.

#### *Contractual disclosure*

In this second approach to disclosure, private information is necessarily revealed to all contractors. The contract between hedge funds and clients or hedge funds and prime brokers is standardized. Contrary to the discretionary approach, the information to be disclosed is identical and compulsory for all contractors. This obligation may emanate from a public framework such as the funds' or managers' registration obligation or a leaflet with a list of signals to be published, or it may stem from code of conduct adopted by professional associations. What is at stake is to guarantee good financial service with equal treatment for all the customers or the all prime

brokers. Mutual funds are governed in the following way. In Europe, the UCITS directive details all the information which must be mentioned in the leaflet and the advertisement is checked by the regulation authorities. For hedge funds, the idea is to force the publication or communication of identical information without favoring one or the other. In the case of a contract between hedge funds and their clients, clauses can consist of standardized reporting, the onshore registration of funds/managers, contract standardization with the removal of some clauses such as lock up and minimum amount of investment.

*Regulatory disclosure*

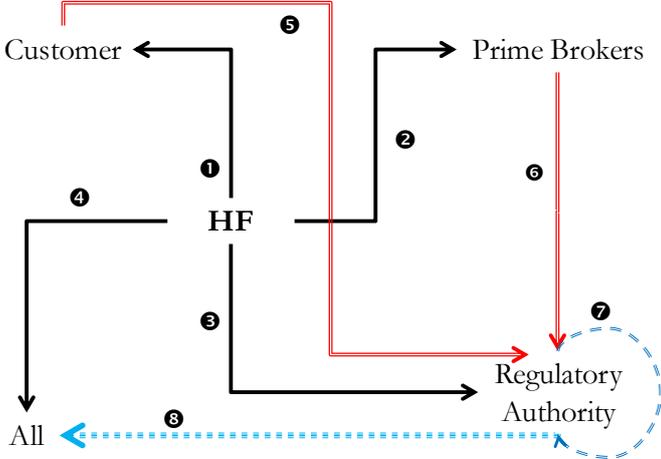
In the third modality, hedge funds have to disclose information to the regulatory authority which is responsible for financial and banking stability. This type of public interventionism is similar to the prudential policy implemented for banks. It could have preventive aims, such as early detection of bankruptcy risks and checking of overall leverage, or possibly curative aims such as determining the key players and defining the appropriate measures. The mode of collecting information can be enforced directly, with hedge funds disclosing information to the regulatory authority, or indirectly, with prime brokers or institutional investors disclosing information obtained from hedge funds. The collected information is not necessarily communicated, but could be disclosed to other national regulatory authorities. In some cases, information could be revealed to all. The disclosed information could involve the leverage, the amount of assets under management, or the main market position.

*Publicity disclosure*

The last modality stipulates communication to all. Information is available for everyone, whether clients, participants in financial markets, prime brokers or plain citizens. In this liberal world with perfect information, everyone could make his own rational choice and evaluate the risks run. For example, hedge funds could publish their accounts as is the case for public companies. A daily net asset value of the funds could be created as for UCITS funds.

Figure 2 summarizes the different ways of disclosing information.

**Figure 2: Who discloses to whom?**



Hedge Funds could disclose to one or all customer(s) (1), to one or all prime broker(s) (2), to the regulatory authority (3), or to all (4). The regulatory authority could force some regulated clients like insurance companies or pension funds (5) or prime brokers (6) to communicate the information they received from hedge funds. Lastly, the regulatory authority could communicate the information they collected from hedge funds, prime brokers, or regulated clients to other regulatory authorities, for example to the FSA, SEC, AMF (7) or to all (8). According to our

definition, disclosures (1) and (2) are discretionary or contractual modalities; disclosures (3) (5) (6) and (7) are regulatory modalities; while disclosures (4) and (8) are publicity modalities. The relationships (1) and (2) emphasize the role of auto regulation. The relationship (3) implies direct hedge funds regulation. The relationship (5) refers to an indirect regulation by investment companies (pension fund, insurance, mutual funds companies). The relationship (6) concerns investment bank regulation. The relationship (7) is related to coordination between national market/banking supervisors

### 3. Data: hedge fund recommendations since LTCM 1998

We carried out an inventory of reports published since 1999 to mitigate specific hedge fund risks (see Annex 1 for references). Proposals have come from public as well as private players: the FED (US Federal Reserve), the FSA (Financial Service Authority), the FSF (Financial Stability Forum), the SEC (Securities and Exchange Commission), the IMF (International Monetary Fund), the IOSCO (International Organization of Securities Commissions), the US PWG (US Presidential Working Group), the AIMA (Alternative Investment Management Association), the HFWG (Hedge Fund Working Group) and the socialist group of the European Parliament (PSE). We introduced in our data base hedge fund draft laws prepared by the EU and the US government. The first one is a draft directive from the European Commission entitled “Alternative Investment Fund Managers” (AIFM). Two draft laws have been published, the first in 2009 and the second in 2010. The second one is part of two more comprehensive US regulation reforms, one of which was published by the US Treasury in 2009 while the second one was drafted by Volker in 2010. Our initial set contains 209 proposals, with 30 proposals not related to informational disclosure. They deal with indirect regulation, i.e. regulation on markets and capital requirements for prime brokers, or direct measures to constrain leverage and to limit short selling, for example. Informational disclosure proposals are predominant, accounting for 86% of all proposals. There is a consensus on how to resolve market failures induced by the hedge fund industry, based on prudential policy and market discipline.

Our final qualitative data base contains 179 proposals from 22 reports written by 15 different institutions, with 109 proposals dating from before the crisis and 70 after. There are only 45 different original proposals<sup>10</sup>, some of which are suggested in various different reports. For example, “Initial Due Diligences” is suggested in 13 reports. These proposals have been coded using the criteria described in the previous parts of this article: the level of disclosure (discretionary, contractual, regulatory and publicity) and the aim (macro/micro misallocation). We would like to mention the intermediate objective, which is to reduce *ex ante* asymmetry, *ex post* asymmetry, financial instability and systemic risk. We have added three elements: the time criterion (after/before the crisis), the nature of the institution (professional, supervisory, political, research) and the geographical origin (Europe, the US, international). We have separately analyzed draft laws published by the EU and the US. Annex 4 gives the characteristics of all the proposals. We have built a variable for each proposal to each report. For example, the AIMA published the *Guide to sound practices for European Hedge funds managers* in 2007, with 10 proposals and we created 10 variables named AIMA20071 to AIMA200710.

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<sup>10</sup> See Annex 3 for examples of proposals.

#### 4. Descriptive statistics results

This section summarizes the main results obtained after coding the proposals.

##### *Analysis by modalities of disclosure (Annex 5)*

Most of proposals focus on the contractual approach to disclosure, mainly from hedge funds to their clients/prime brokers, then on the regulatory approach from hedge funds/prime brokers to regulatory authorities and between regulatory authorities. Clients seem to be the favorite recipients of information and prime brokers appear to be the key informational go-betweens between unregulated hedge funds and regulatory authorities. The first two relations are important, but contractual relations between hedge fund managers and clients are at stake. Almost half of the disclosure proposals concern information disclosure from hedge fund managers to their clients. Eighty per cent of the proposals focus on a contractual approach and to a lesser extent on a discretionary approach. This result is consistent with the current regulatory framework where hedge funds are indirectly regulated by prime brokers on the one hand and supervised by market discipline on the other via informational disclosure between stakeholders. However, only a few proposals promote a liberal approach to disclosure, i.e. public disclosure to all from hedge funds/regulatory authorities. This result is in line with the secretive characteristics of the hedge fund industry, which can benefit from comparative advantages due to this effective and permissive opacity.

After the crisis, the two other important relationships featured in disclosure proposals involve the disclosures from hedge funds/prime brokers to regulatory authorities in order to prevent financial instability and systemic risk. Even if the number of proposals has decreased since the crisis, these relations play an important role in hedge fund indirect regulation.

However, since the crisis, relationships among regulatory authorities have been very successful. They represent 10% of proposals that came out after the crisis. The main disclosure approach is regulatory, with a view to preventing financial instability and systemic risk. This disclosure relationship belongs to indirect regulation requirements. The idea is to reinforce oversight on investment banks. Very few proposals back public disclosure from hedge funds to all and from regulatory authorities to all. Lastly, it is important to notice that there is no proposal for informational disclosure from hedge funds to prime brokers, which is a means of indirect regulation. This is very surprising because this type of disclosure is a condition for reducing asymmetry between hedge funds and prime brokers and a way of reinforcing indirect regulation (Maier, King, 2007)

##### *General analysis of proposals (Annex 6)*

The 2007-2008 crisis was a turning point inasmuch as the proposals<sup>11</sup> aims and disclosure modalities have changed. Before the crisis, the final aim was to optimize micro and macro allocation and the intermediate aims were to mitigate systemic risk as well as to reduce informational asymmetry via contractual disclosure and regulatory disclosure. Since the crisis,

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<sup>11</sup> Proposals related to informational disclosure or not.

proposals mainly aimed at optimizing micro allocation and recommended more contractual relations between hedge funds and clients and prime brokers than between hedge funds and regulation authorities. This result shows that most of the players had identified issues inherent to hedge funds, such as informational asymmetry and systemic risk, before the crisis, but they believed these risks were limited. In other words, they acknowledged that the advantages of hedge fund were greater than the detrimental effects on financial markets. This attitude is consistent with what we have called “regulatory consensus” which respects a good balance between stakeholders’ interests. Hedge funds must benefit from lax regulation, given that they are efficiency-enhancing. Consequently, inherent hedge fund risks could be well controlled via voluntary disclosure by means of the contractual disclosure modality, i.e. market discipline, and not by a restrictive regulatory disclosure modality.

The great success of the contractual modality in reducing informational asymmetry can be explained by the fact that hedge fund clients registered detrimental losses during the crisis. Institutional investors/private clients continue to allocate to hedge funds but under different conditions. They ask for more information to perform efficient monitoring. The contractual disclosure modality is the linchpin of the change in institutional investors’ governance. “The economic theory of disclosure predicts that hedge funds will disclose information only to the point where the benefits equal the costs. The benefits of disclosure are that a fund can attract more investors, obtain terms more favorable to the fund (e.g., higher fees), and raise capital and enter into trades with counterparties at a lower cost. Hedge funds are increasingly finding that greater transparency is a net benefit, and there is a trend toward disclosing information by voluntarily registering with regulatory bodies” (Shabdab, 2007).

#### *Analysis by institutions (Annex 7)*

We can distinguish among five groups of players by final and intermediate aim and by disclosure modality. They are numbered from one to five and range from the most liberal to the most interventionist. These groups partially, but not solely, correspond to the distinction between the nature of the institution (professional, supervisory, political, research) and the geographical origin (Europe, US, international).

The first group represents the Hayekian type whose aim is to reduce *ex ante/post* informational asymmetry (>70%) in order to optimize private allocation (>75%) mainly via a public disclosure modality (>75%) combined with a contractual modality. The philosophy of this group is to promote public information to prevent market failures in general. Before the crisis, no institution was in this group and since the crisis, there has been only one: PWG 2008.

The second group represents the individualist contractual free marketer (liberal) type whose aim is to reduce *ex ante/post* informational asymmetry in order to optimize private allocation exclusively. This means that this group recognizes that hedge funds may induce huge informational asymmetry because of their business model, but does not at all acknowledge their negative effects concerning systemic risk. Consequently, information disclosure must be referred to only with their clients via contractual and discretionary modalities. AIMA and HFWG have belonged to this group before and after the crisis. This is no surprise because they are hedge fund professional associations that work together and have the same objective. The characteristics of this group are in line with the “current regulator’s consensus” where loose market discipline, via voluntary disclosure, must be the linchpin of regulation.

The third group represents the collective contractual type whose aims are to reduce information asymmetry as well as prevent systemic risk to a lesser extent in order to optimize private

allocation (60%) mainly via a mix of contractual (>70%) and regulatory (<25%) disclosure modalities. This group corresponds to international institutions such as IOSCO and FSF, except for the EU commission and PWG. We can find IOSCO 2006, IOSCO 2009, UE 2010, FSF 2007, PWG 1998 in this group.

The fourth group represents the consensual type whose aim is to reduce information asymmetry and prevent systemic risk at the same time in order to optimize both private and public (allocations) (50%-50%), via a wide combination of contractual (>30%), regulatory (>30%) and public (>15%) disclosure modalities. This group is more heterogeneous with regulation authorities, political authorities and EU institutions such as FSA 2005, PSE 2007, FED 2006, EU 2009, G8. The presence in this group of FSA and Fed before the crisis may reveal their liberal attitude for hedge funds. This indulgence could be considered as a capture phenomenon of the supervisor by hedge funds. After the crisis, they are not in this group any more, but rather in the regulatory group. The same is true for political power with the G8 summit.

The last group represents the regulatory type whose aim is to prevent systemic risk in order to optimize overall allocation (60%), mainly via the regulatory disclosure modality. In the group there are IMF 2007, G20, SEC 2006, Volcker 2010, US Treasury 2009, FSA 2009. This group is more uniform to some extent. It is composed mainly of supervisory and political authorities except for IMF 2007. This group is in line with more restrictive hedge fund regulation, with the reinforcement of indirect regulation and the implementation of efficient market discipline conditions.

Lastly, before the crisis, group 3 (the collective contractual type) and group 4 (the consensual type) were in the lead. Since the crisis, we have noticed three main trends: the emergence for the first time of group 4 (the Hayekian type), the disappearance of group 2 (the consensual type) and above all the increased importance of groups 1 and 5 (the contractual individual and regulatory types) which have become dominant. They potentially represent the base of the new consensus on hedge funds regulation.

#### *EU and US Draft Laws*

This trend is in line with the first EU and US draft laws published in 2009, which generally endorsed the regulatory disclosure modality to prevent financial instability and systemic risk. They decided to give priority to macro allocation. We can easily explain this position. In times of turbulence, political leaders come to decisions under the pressure of “Main Street”. It is important to point out that this crisis is a watershed, because political leaders decided to propose hedge fund draft laws for the first time.

The first one is an EU directive proposal for alternative fund managers (April 2009) and the second one is part of the more comprehensive financial reform plan of the US Treasury (June 2009).

Both draft laws were discussed, amended and enhanced during 2009. As a result, a new directive proposal was published in the EU in November 2009 with substantial changes we have included in our data base.

In the United States, a new financial reform plan, the Volcker Plan, has been under discussion since the end of January 2010. This plan is comprehensive, but contains specific propositions inherent to the hedge funds industry and investment banks. We find evidence of continuity in both US hedge funds draft laws. They belong to the regulatory group which has adopted a macro approach. However, if the first directive proposal was in the consensual group, the second one belongs to the individualist contractual group which has adopted a more micro regulation

approach. This analysis typology allows us to conclude that the US and the EU have two different points of view on hedge fund regulation. The US has decided to fight market failures by a macro regulation approach and not to intervene at a micro level to reduce informational asymmetry. On the contrary, the EU, in the second draft directive, tends increasingly to consider it is important to intervene more at a micro level (via contractual disclosure) to fight market failures than at a macro level via regulatory disclosure requirements. The first draft directive aimed at optimizing macro as well as micro allocation, mainly via a contractual/regulatory disclosure. This change could be explained by the intensive lobbying by the City and the hedge funds industry to lessen this first position, but we have to be cautious because these directives have not yet been promulgated.

## 5. Kohonen Maps analysis

We decided to use Kohonen maps to analyze our database because they are a very useful algorithms for classifying and interpreting data.

### *Explanation of Kohonen Maps*

The objective of Kohonen maps (Kohonen, 1995) is the same as that of ACP (principal component analysis), which is to obtain a simple reading of a database. However, the spirit of the two methods is radically different. The Kohonen algorithm is based on the preservation of topology, i.e. the distance between points, between the cloud and the initial representation constructed. Moreover, it permits a more easily understandable classification of qualitative data.

To run a Kohonen algorithm, we have to choose a structure of projection. We have chosen a 3\*3 table. During initialization, the algorithm randomly assigns to each cell  $(i,j)$  a vector code size  $C_{ij}$  (number of variables) by taking an individual  $ind$  basis and using the formula:  $C_{ij} = X_{ind}$  (vector of variables for the selected individual). During the  $t$  iterations, the following tasks are performed:

- An individual  $ind$  is randomly selected in the database;
- The algorithm looks for the code vector box closest to  $X_{ind}$  respecting

$$(i_0, j_0) = \arg \min_{i,j} \left( d(\overline{C_{i,j}}, \overline{X_{ind}}) \right)$$

- The code vectors of the selected square and the adjacent fields are changed by

$$\forall (i,j) d \left( ((i,j), (i_0, j_0)) \right) \leq r(t), \overline{C_{i,j}} = \varepsilon(t) \overline{X_{ind}} + (1 - \varepsilon(t)) \overline{C_{i,j}}$$

The functions  $r(t)$  and  $\varepsilon(t)$  are called the radius and the gain respectively. They are both positive, decreasing, with no limit at infinity.  $\varepsilon(t)$  must be less than 1. The radius function defines the number of adjacent fields changed according to the iteration. The gain function defines the magnitude of the change according to the iteration.

This algorithm is built around the preservation of topology. However, this method has two inherent drawbacks:

- The structure of projection and size are chosen *a priori* and not as the result of calculation;

- The stochastic aspect of the algorithm, random drawings at each stage, can produce different results at the end of the calculation. This disadvantage can be circumvented by repeating the algorithm to ensure convergence by simulation. In our case we repeated the algorithm ten times and got the same projection that we have therefore adopted (Aaron, 2004).

### *Two Kohonen maps*

We ran the Kohonen algorithm on the proposal database and on the report database. An individual proposal or report is defined by a vector of dimension 6 (discretionary, contractual, regulatory, all, micro aim, macro aim). For example, proposal AIMA20061 is a discretionary modality and has a micro aim. So, vector AIMA20061 is (1;0;0;0;1;0). For reports, we consider the weight of each modality and of each aim. For instance, the vector of HFWG2009 is (0,2; 0,8 ; 0; 0 ; 1 ; 0).

We obtain two Kohonen 3\*3 maps: one to classify proposals (Figures 3a and 3b), and the other to classify reports (Figures 4a and 4b). One map is composed of 9 code vectors, with each code vector characterized by 6 weights (discretionary, contractual, regulatory, all, micro aim, macro aim). A code vector defines a class. By construction, the weights are between 0 and 1. In the map, there is a continuous deformation of code vectors.

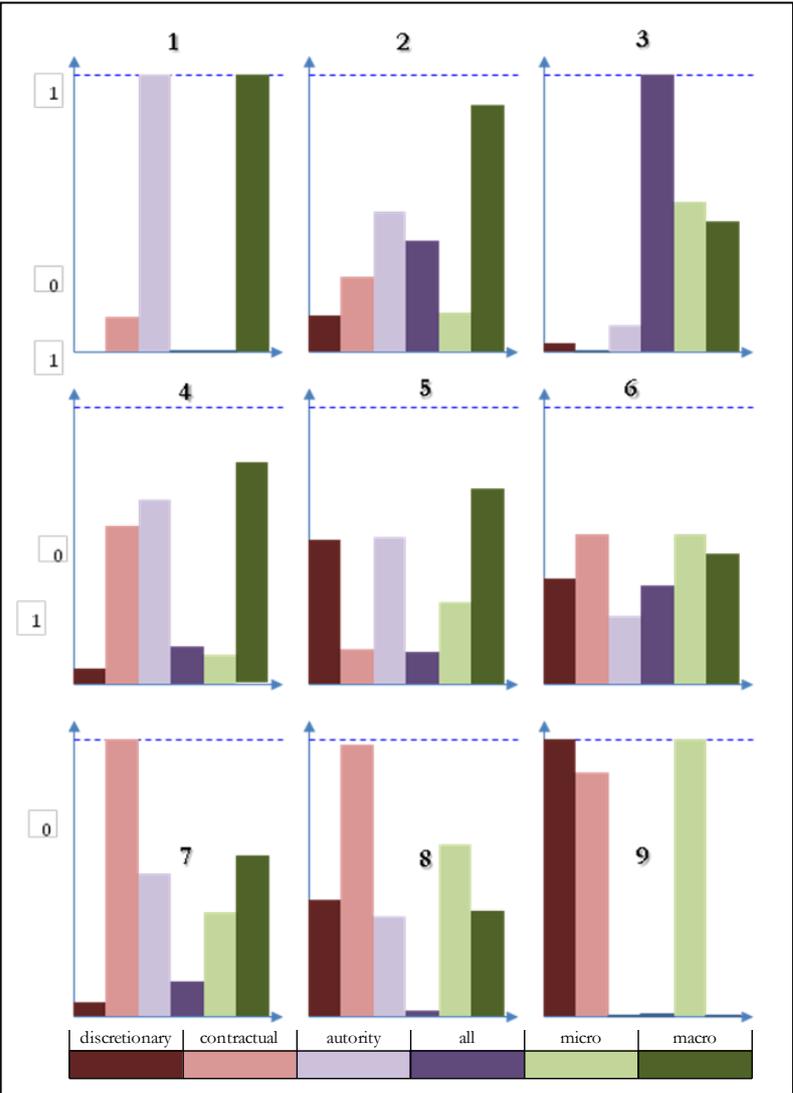
To facilitate an understanding of Kohonen maps, we will explain Figure 3a. Class 1 corresponds to a code vector (1;0;0;0;1;0). It groups proposals of informational disclosure based on the discretionary modality with a micro allocation aim. From this northwest point, we notice a continuous deformation to the south (classes 4 and 7) and to the east (classes 2 and 3). Toward the south, the weights of discretionary modality and micro aim decrease to 0. At the same time, the weights of regulatory modality and macro aim increase. Toward the east, the weights of discretionary modality decrease to 0. At the same time, the weight of contractual modality increases. We can analyze the same continuous deformation of each class. Each class represents a code vector calculated by the Kohonen algorithm. Some of the classes could be empty, as is true for classes 2, 4 and 8. Class 1 groups proposals with discretionary modality and micro aim; class 3 groups contractual modality and micro aim; class 5 contractual modality and macro aim; class 6 contractual/ all modalities mainly with micro aim; class 7 regulatory modality with macro aim and lastly class 9 publicity with macro aim.

Figure 3b gives the result of the Kohonen classifications of proposals. We find four significant sets of proposals: class 1 (discretionary modality and micro aim), class 2 (contractual modality and micro aim), class 7 (regulatory modality and macro aim) and class 9 (publicity and macro aim). This is in line with previous results (analysis by modalities of disclosure). Classes 5 and 6 are a kind of garbage dump for proposals which are not in the four preceding classes. In class 5 we find proposals with contractual modality and macro aim, and in class 6 publicity modality and micro aim.



The second set of Kohonen maps runs a classification on reports. The logic is the same as before. We obtain 9 classes. One class is empty, class 6. Class 1 corresponds to regulatory disclosure and macro allocation, class 2 mixed disclosures and macro allocation, class 3 publicity modality with mixed aims, class 4 contractual and regulatory disclosure and a macro aim, class 5 mixed disclosures (discretionary and regulatory modalities) and a macro aim, class 7 predominantly contractual and secondly regulatory disclosure with macro/micro aims, class 8 a mix with predominantly contractual modality with mixed aims and class 9 discretionary and contractual modalities with a micro aim. Some classes (1, 3, 9) exhibit specialized orientation. In class 1, informational disclosure is through a public regulator with a macro aim. Class 9 is the opposite side, i.e. a disclosure to clients (discretionary or contractual modality) with a micro aim. They correspond respectively to the regulatory type and the individualist contractual free marketer (liberal) type we previously defined. Class 3 is Hayekian type where the publicity permits resolution of macro and micro allocation.

**Figure 4a: Kohonen maps of reports**



Source: Authors' calculation

**Figure 4b: Classification of reports**

<b>1</b>	<b>2</b>	<b>3</b>
G20 2009	PSE 2007	PWG 2008
Volcker 2010	G8 2007	
US treasury 2009	FSF 2007	
FSA 2009	FMI 2007	
<b>4</b>	<b>5</b>	<b>6</b>
SEC 2006	IOSCO 2006	
	FSA 2005	
	FED 2006	
<b>7</b>	<b>8</b>	<b>9</b>
IOSCO 2009	HFVG 2007	HFVG 2009
PWG 1998	AIMA 2007	AIMA 2009
UE 2010		
FSF 2007		
UE 2009		

Source: Authors' calculation

The Kohonen classification confirms some results we noticed in the previous section:

-The change for the professional associations AIMA and HFVG from the contractual/micro regulation form to the discretionary/micro regulation form after the crisis (from class 8 to class 9).

-The choice of EU (through the two successive draft laws) for the regulation form which is a mix of contractual/regulatory and macro/micro (class 7)

-The choice of US (through the two successive draft laws) for the regulation form (regulatory/macro) (class 1)

-The original orientation of PWG for the public disclosure/macro and micro regulation form after the crisis (class 3)

It refines some results:

-The choice of international institutions for the regulation form which is a mix of disclosure/macro before the crisis (class 2). We can put (this?) together with map 5 (mixed/macro).

## Conclusion

In this paper, we focus on a particular form of hedge fund regulation: market discipline via information disclosure. Indeed, information disclosure seems to have two advantages: it is an appropriate way to reduce the lack of transparency and particularly *ex ante* / *ex post* informational asymmetry, which may induce micro and macro misallocation involving investor/counterparty damage and financial stability respectively. However, achieving transparency is a difficult task. We have proposed an original typology of disclosure modalities by distinguishing between the aim of informational disclosure (macro/micro allocation) and the recipient of disclosure. We have

considered a continuum of informational disclosure agreements: informational disclosure by discretionary deals (private information disclosed by mutual agreement between hedge funds and their clients), by contractual agreement (compulsory information disclosure to all clients), by regulatory requirement (compulsory disclosure to regulators) and via a public modality (public information disclosure).

As most draft law proposals come from regulation recommendations made by experts in their reports, we have analyzed those inherent to hedge funds since 1998 (LTCM bail out) through this typology. Our empirical survey has allowed us to distinguish among five different types of player logic: liberal, contractual, consensual, interventionist and Hayekian. These types correspond to different typologies of agreements concerning information disclosure and final aim. They are sorted by increasing order of transparency and from micro to macro allocation aim. Thanks to this typology, we can classify recommendations which have emanated from various institutions and understand the social emergence of new financial regulation in the hedge fund industry. Indeed, for the first time since the beginning of the hedge fund industry in the 1950's, hedge fund draft laws are to be promulgated in the EU and the US. The first is specific to hedge funds while the second is in line with the comprehensive US financial reform.

This typology highlights the divergence between the public view of regulation and the private view. The second one claims for auto regulation to resolve market failures, while the first one promotes the intervention of public authority.

Lastly, this typology also reveals that the US and the EU diverge on the configuration of hedge fund regulation. The final aim and the way of achieving it are quite different. The EU regulation form seems to be a mix of contractual and regulatory agreement modalities in order to enhance macro as well as micro allocation. This choice of regulation form is close to that promoted by international institutions, which is a mix of disclosure modalities to support macro allocation. The EU Commission considered that intervention was necessary at both micro and macro levels. The US administration seems to support a regulation form whose final aim is to optimize macro allocation mainly via regulatory agreement modalities. For the US, supervisors are the only ones able to prevent financial instability and systemic risk and this is why they have to collect information from hedge funds. The US considers that there is no need for a specific law for hedge funds. The issue of information asymmetry is a contractual concern which must be solved between main stakeholders (clients/hedge funds and prime brokers/hedge funds) without external intervention. As a result we understand better the opposition of the US to the first European draft proposal that tended to be more restrictive at the micro level. This form of regulation is not in line with that of the US. No draft laws have taken into account the regulation form supported by the AIMA and HFWG hedge fund professional associations and which is based on the modality of agreement contractual/micro allocation. The same is true for the Hayekian type regulation form which has promoted the agreement modality public disclosure/macro and micro regulation since the crisis. This typology is useful tool to follow the evolution of hedge fund regulation proposals until the law is promulgated.

## **Annex 1: Sources of empirical framework**

### **Before the Crisis :**

- AIMA(2007), *Guide to sound practices for European Hedge funds managers*, May.
- Financial Stability Forum (2000), “*Report of the Working Group on Highly Leveraged Institutions*”
- Financial Stability Forum, (2007), “Hedge funds”, numéro spécial, *Revue de la Stabilité Financière*, avril.
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- IMF, The International Monetary Fund Global Financial Stability report, GFSR (2007), *Financial Market Turbulence, causes consequences and policies*, October.
- IOSCO (2006), *The regulatory environment for hedge funds: a survey and comparison*.
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- U.S. Securities and Exchange Commission (2006), *Performance and Accountability Report*.
- US President’s Working Group on Financial Markets (1999), “*Hedge funds, leverage, and the lessons of Long-Term Capital Management*”, April.
- US President’s Working Group (2007a), “*Hedge Funds and Systemic Risk: Perspectives of The President’s Working Group on Financial Markets*”, July.
- US President’s Working Group (2007b) “*Agreement among PWG and US Agency principals on principles and guidelines regarding private pools of capital*” February.

### **After the crisis:**

- AIMA (2009), “*Guide to Sound Practices for Hedge Fund Administrators*”, September
- Financial Stability Board, FSB ( 2009), Overview of Progress in Implementing the London Summit Recommendations for Strengthening Financial Stability, Report of the Financial Stability Board to G20 Leaders, September.
- G20 summit (2008) press release, October
- G20 summit (2009) press release, April
- HFSB (2009), “HFSB proposes toughening standards and announces new signatories”.
- HFSB (2009), “Response to FSA Discussion Paper 09/21: A regulatory response to the global banking crisis”
- HFSB Consultation Paper (CP1/2009): Hedge Fund Redemptions
- IOSCO (2009), Technical committee of the international organization of securities commissions, “Hedge funds oversight final report”, June.
- The Turner Review: a regulatory response to the global banking crisis, 2009
- US President’s Working Group (2008), “*Policy Statement on Financial Market Development*”, March.

### **Draft Laws:**

- Directive of the European Parliament and Council on Alternative Investment Fund Managers (AIFM) First Proposal – April 2009
- Directive of the European Parliament and Council on Alternative Investment Fund Managers (AIFM) Second Proposal with amendments – November 2009 (Gauzes report)
- US Treasury financial regulation reform, Geithner Plan (June, 2009)
- Financial reform, a framework for financial stability, Volcker plan (January 2010)

## **Annex 2: Presentation of the different protagonists**

Proposals are from different nationalities, some European, others American or international. We can classify them in four categories. Some of the recommendations come from professional industry or regulatory authorities, others emanate from political leaders or academic researchers. Most of them have published recommendations before the crisis and after the crisis.

AIMA and MFA are hedge fund professional organizations. AIMA is the hedge fund industry's global, not-for-profit trade association with over 1,100 corporate members worldwide based in the UK. Members include leading hedge fund managers, funds of hedge fund managers, prime brokers, legal and accounting services and fund administrators. AIMA is committed to education standards and sound practice manuals. Managed Funds Association is AIMA's US counterpart. Its members are professionals in hedge funds, funds of funds and managed futures funds, as well as industry service providers. Established in 1991, MFA is the leading advocate for sound business practices and industry growth

The Hedge Fund Standards were drawn up by the Hedge Fund Working Group (HFWG). The HFWG, comprising 14 of the leading hedge funds based mainly in London, was set up in 2007 in response to concerns about the industry, including financial stability, risk management, evaluation and voluntary information disclosure. Its aims are to develop guidelines in these areas. The Hedge Fund Standards Board Ltd (HFSB) is a company limited by guarantee. It was set up to monitor conformity to the hedge fund best practice standards. As a custodian of the best practice standards it has the responsibility of ensuring that they are updated and refined as appropriate.

FED and SEC are regulatory authorities. The first is the central bank of the United States. It was founded by Congress in 1913 to provide the nation with a safer, more flexible, and more stable monetary and financial system. The mission of the U.S. Securities and Exchange Commission SEC is to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation. The SEC oversees the key participants in the securities world, including securities exchanges, securities brokers and dealers, investment advisors, and mutual funds. Here the SEC is concerned primarily with promoting the disclosure of important market-related information, maintaining fair dealing, and protecting against fraud.

The Financial Services Authority (FSA) is an independent non-governmental body, given statutory powers by the Financial Services and Markets Act 2000. The FSA is accountable to treasury ministers and through them to parliament. It is operationally independent of government and is funded entirely by the firms it regulates. It is a unique regulator of all providers of financial services in the UK (as well as BAFIN) but Bank of England retains responsibility for systemic risk.

IOSCO was born in 1983 from the transformation of its ancestor inter-American regional association (created in 1974) into a truly international cooperative body. IOSCO is recognized as the international standard setter for securities markets. The Organization's wide membership regulates more than 90% of the world's securities markets and IOSCO is the world's most important international cooperative forum for securities regulatory agencies. IOSCO members regulate more than one hundred jurisdictions and the Organization's membership is steadily growing. Its role is to develop international standards.

The Financial Stability Forum (FSF) was a group consisting of major national financial authorities such as finance ministries, central bankers and financial bodies. The Forum was founded in 1999 to promote international financial stability. It facilitated discussion and co-operation on supervision and surveillance of financial institutions, transactions and events. The G20 summit on April 2009 decided to establish a successor to the FSF, the Financial Stability Board. The FSB includes members of the G20 who were not members of the FSF.

The Working Group on Financial Markets (President's Working Group) was created in March 18, 1988 by Ronald Reagan. The Group was established explicitly in response to events in the financial markets during the period around October 19, 1987 to give recommendations for legislative and private sector solutions for "enhancing the integrity, efficiency, orderliness, and competitiveness of US financial markets and maintaining investor confidence". The Group is compounded of the secretary of treasury, the chairman of the board of governors of the Federal Reserve System, the chairman of the SEC and the chairman of the CFTC, Commodity Futures Trading Commission.

The Group of Twenty, G20, finance ministers and central bank governors was established in 1999 to bring together systemically important industrialized and developing economies to discuss key issues in the global economy. The

G20 was created as a response both to the financial crises of the late 1990s and to a growing recognition that key emerging-market countries were not adequately included in the core of global economic discussion and governance.

The International Monetary Fund (IMF) is an organization of 186 countries, working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.

The European Commission embodies and upholds the general interest of the Union and is the driving force in the Union's institutional system. Its four main roles are to propose legislation to the Parliament and the Council, to administer and implement Community policies, to enforce Community law (jointly with the Court of Justice) and to negotiate international agreements, mainly those relating to trade and cooperation. It published the first AIFMs “Alternative Investment Funds Managers” directive proposal in April 2009 and the second one in November 2009.

The US Treasury Department is the executive agency responsible for promoting economic prosperity and ensuring the financial security of the United States. The Department is responsible for a wide range of activities such as advising the president on economic and financial issues, encouraging sustainable economic growth, and fostering improved governance in financial institutions.

The former chairman of the Federal Reserve under Presidents Carter and Reagan was made chairman of the Economic Recovery Advisory Board. He (became at the center of financial and economic debate in January 2010 when Barack Obama endorsed his proposed separation between commercial banking and proprietary trading, a plan dubbed, the “Volcker Rule”.

### Annex 3: Encoding of proposals (sample)

Description of proposals	relation	#	Informational disclosure	Aim	Intermediate Objective	% total proposals	% total proposals before	% total proposals after
<i>Ex ante</i> due diligences	HF=>C	16	2	1	1	8,9%	10,1%	7,1%
Stress tests at aggregate level	HF=>RA	11	3	2	3	6,1%	10,1%	0,0%
Obligation of registration of hedge fund companies	HF=>C	10	2	1	1	5,6%	5,5%	5,7%
Minimum standard of regular and complete disclosure	HF=>C	10	2	1	2	5,6%	5,5%	5,7%
Rules to ensure an equitable treatment of the investors by hedge funds and counterparties	HF=>C	10	2	1	2	5,6%	9,2%	0,0%
Ongoing due diligences	HF=>C	9	2	1	2	5,0%	4,6%	5,7%
Obligation for prime brokers to inform regulators about risk exposure	PB=>RA	9	3	2	4	5,0%	6,4%	2,9%
Best practices	HF=>C	7	1	1	2	3,9%	4,6%	2,9%
Reinforcement of international cooperation between regulatory authorities and hedge funds	HF=>RA	7	3	2	4	3,9%	3,7%	4,3%
Reinforcement of international cooperation between financial and banking regulators	RA	6	3	2	4	3,4%	3,7%	2,9%
Obligation to disclose information about hedge funds with high leverage	HF=>RA	6	3	2	4	3,4%	0,0%	8,6%
Disclosure of stress tests and comments	RA=>ALL	6	4	2	3	3,4%	5,5%	0,0%
Bi-annual surveys on prime brokers aiming to evaluate their exposure to hedge funds	PB=>RA	5	3	2	3	2,8%	1,8%	4,3%
Creation of a systemic risk authority	RA	5	3	2	4	2,8%	0,0%	7,1%
Publicity about aggregate leverage of Hedge Funds	RA=>ALL	5	4	2	3	2,8%	0,0%	7,1%

Source: Authors' calculation

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#### Annex 4: Proposals made by institution (sample)

Institution	Variable	Information Disclosure	Aim	Intermediate Objective	Time	Origin	Status	Proposal
AIMA	AIMA20061	1	1	1	1	1	1	Reputation
AIMA	AIMA200611	2	1	2	1	1	1	Ongoing due diligences
AIMA	AIMA20065	2	1	1	1	1	1	Minimum standard of regular and complete disclosure
AIMA	AIMA20091	1	1	2	2	1	1	To appoint an independent third party
AIMA	AIMA200910	2	1	4	2	1	1	Reinforcement of international cooperation between regulatory authorities and Hedge Funds
AIMA	AIMA20092	1	1	2	2	1	1	An independent and competent Valuation Service Provider
AIMA	AIMA20093	1	1	2	2			Detailed Valuation Policy Document, approved by the Governing Body after consultation with other stakeholders
FED	FED20061	1	1	2	1	2	2	To develop benchmarks
FED	FED20062	2	1	1	1	2	2	<i>Ex ante</i> due diligences
FMI	FMI20074	2	1	1	1	3	4	Initial due diligences
FSA	FSA20051	1	1	2	1	1	2	Best practices
FSA	FSA20052	2	1	1	1	1	2	Obligation of registration of managers of hedge funds with regulators
FSA	FSA20053	2	1	1	1	1	2	<i>Ex ante</i> due diligences
FSA	FSA20055	2	1	1	1	1	2	To promote on shore hedge funds
FSF	FSF20092	2	1	1	2	3	2	Using independent control procedures

Source: Authors' calculations

### Annex 5: Characteristics of informational relationships

Who disdoses to whom ?	different proposals	#	Before crisis	After crisis	Informational disclosure				Aim		Intermediary Objectif			
					discre	contrac	regulator	all	micro	macro	ex ante	ex post	fin inst	systemic
Hedge Funds to all	4	7	5%	3%	0%	0%	0%	100%	71%	29%	71%	0%	29%	0%
Hedge Funds to dients	24	92	47%	59%	18%	82%	0%	0%	100%	0%	40%	60%	0%	0%
Hedge Funds to Prime Brokers	1	4	4%	0%	0%	100%	0%	0%	0%	100%	0%	0%	100%	0%
Hedge Funds to Regulatory Authority	6	31	19%	14%	0%	0%	100%	0%	0%	100%	0%	0%	55%	45%
Prime Borker to Regulatory Authority	4	19	13%	7%	0%	0%	100%	0%	0%	100%	0%	0%	37%	63%
Between Regulatory Authorities	2	11	4%	10%	0%	0%	100%	0%	0%	100%	0%	0%	0%	100%
Regulatory Authority to all	4	15	9%	7%	0%	0%	0%	100%	0%	100%	0%	0%	80%	20%
#	45	179	109	70	17	79	61	22	97	82	42	55	42	40

Source: Authors' calculations

Annex 6: Characteristics of proposals

Proposals of informational disclosure		Total	before crisis	after crisis	Law Draft: UE, US	after crisis except draft law
#		179	109	70	22	48
informational disclosure	discretionary	9%	8%	11%	0%	17%
	contractual	44%	42%	46%	45%	46%
	public authority	34%	36%	33%	55%	23%
	all	12%	14%	10%	0%	15%
Intermediate Objectif	ex ante asymmetry	23%	21%	27%	23%	29%
	ex post asymmetry	31%	28%	34%	23%	40%
	financial instability	23%	31%	11%	9%	13%
	systemic risk	22%	19%	27%	45%	19%
Finality	Micro	54%	50%	61%	45%	69%
	Macro	46%	50%	39%	55%	31%

Source: Authors' calculations

## Annex 7: Characteristics of reports

Report	country	status	#	Informational Disclosure				Aim		Intermediate Goal			
				discretionary	contractual	authoritative	all	micro	macro	ex ante	ex post	financial market	systemic risk
HFVG 2009	1	1	5	20,00%	80,00%	0,00%	0,00%	100,00%	0,00%	60,00%	40,00%	0,00%	0,00%
AIMA 2009	1	1	10	70,00%	30,00%	0,00%	0,00%	100,00%	0,00%	20,00%	70,00%	0,00%	10,00%
HFVG 2007	1	1	5	20,00%	60,00%	20,00%	0,00%	80,00%	20,00%	20,00%	60,00%	20,00%	0,00%
PWG 2008	2	2	4	0,00%	25,00%	0,00%	75,00%	75,00%	25,00%	75,00%	0,00%	0,00%	25,00%
AIMA 2007	1	1	10	20,00%	50,00%	30,00%	0,00%	70,00%	30,00%	30,00%	40,00%	10,00%	20,00%
IOSCO 2006	3	2	7	28,57%	28,57%	42,86%	0,00%	57,14%	42,86%	14,29%	42,86%	14,29%	28,57%
IOSCO 2009	3	2	14	7,14%	50,00%	35,71%	7,14%	57,14%	42,86%	21,43%	35,71%	14,29%	28,57%
PWG 1998	2	2	7	0,00%	57,14%	42,86%	0,00%	57,14%	42,86%	28,57%	28,57%	28,57%	14,29%
UE 2010	1	3	7	0,00%	57,14%	28,57%	14,29%	57,14%	42,86%	14,29%	42,86%	14,29%	28,57%
FSF 2009	3	2	11	0,00%	54,55%	36,36%	9,09%	54,55%	36,36%	27,27%	27,27%	18,18%	27,27%
FSA 2005	1	1	12	16,67%	33,33%	41,67%	8,33%	50,00%	50,00%	25,00%	25,00%	25,00%	25,00%
UE 2009	1	3	8	0,00%	50,00%	37,50%	12,50%	50,00%	50,00%	25,00%	25,00%	12,50%	37,50%
PSE 2007	1	3	18	5,56%	33,33%	33,33%	27,78%	44,44%	55,56%	22,22%	22,22%	38,89%	16,67%
FED 2006	2	2	7	28,57%	28,57%	28,57%	14,29%	42,86%	57,14%	14,29%	28,57%	57,14%	0,00%
G8 2007	3	3	7	0,00%	42,86%	28,57%	28,57%	42,86%	57,14%	28,57%	14,29%	28,57%	28,57%
FSF 2007	3	2	13	0,00%	38,46%	38,46%	30,77%	38,46%	69,23%	15,38%	23,08%	38,46%	30,77%
FMI 2007	3	4	12	16,67%	25,00%	41,67%	16,67%	33,33%	66,67%	8,33%	25,00%	41,67%	25,00%
G20 2009	3	3	3	0,00%	33,33%	66,67%	0,00%	33,33%	66,67%	33,33%	0,00%	0,00%	66,67%
SEC 2006	2	2	9	0,00%	44,44%	44,44%	11,11%	33,33%	55,56%	22,22%	11,11%	33,33%	33,33%
Voldker 2010	2	3	3	0,00%	33,33%	66,67%	0,00%	33,33%	66,67%	33,33%	0,00%	0,00%	66,67%
US treasury 2009	2	3	4	0,00%	25,00%	75,00%	0,00%	25,00%	75,00%	25,00%	0,00%	0,00%	75,00%
FSA 2009	1	1	4	0,00%	0,00%	75,00%	25,00%	0,00%	100,00%	0,00%	0,00%	25,00%	75,00%

Source: Authors' calculations

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